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TO

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"TEAM-WORK" IN WAR.*

BY MAJOR GEORGE O. SQUIER, SIGNAL CORPS, U. S. ARMY, ASSISTANT
COMMANDANT OF THE U. S. SIGNAL SCHOOL.

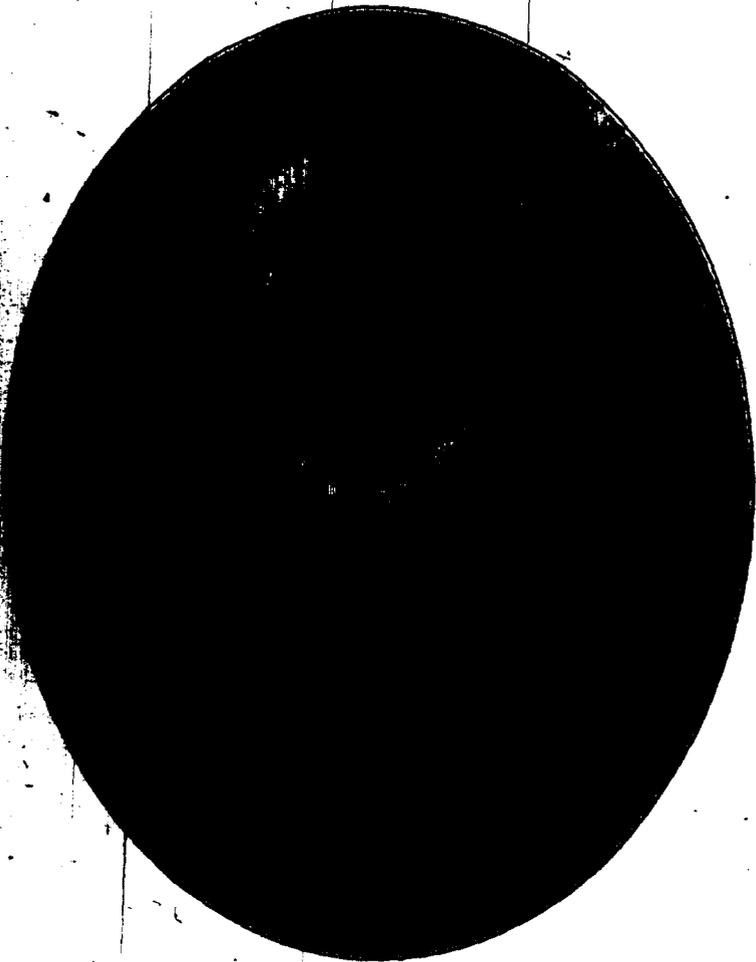
L'union fait la force.

THE underlying cause of the Russian defeat by the Japanese in the recent war was irresistible "team-work." The Japanese infantry soldier was no better, their artillery matériel and their cavalry were inferior, the numbers engaged were approximately the same; yet from the beginning to the end of the conflict the Japanese were successful. Never before in the world's history has there been seen a gigantic team of forty millions of people bending every effort so completely to one common purpose at one given time. From the Emperor of Japan to the lowest coolie in the rice paddies at home, each did his part, great or small, to defeat Russia. On the one side were organization and combination of effort, while on the other were disorder, lack of harmony and intrigue.

The principle of "team-work," when applied to guide

*Abstract of a lecture delivered at the U. S. Signal School, Fort Leavenworth, Kansas.

GEORGE B. DAVIS,
JUDGE ADVOCATE GENERAL, U. S. ARMY.



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The principle of "team-work," when applied to guide

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human endeavor, is the paramount discovery of the present century. It is the principle which has made it possible for the Standard Oil corporation in a minimum time to plan a campaign and defeat its enemies in any part of the world. It is the principle which enables the citizen to travel in comfort and safety from Chicago to San Francisco, a distance of 2,000 miles, in less than three days. It is the principle which has concentrated at San Francisco, after the recent appalling earthquake disaster, unprecedented assistance and succor of all kinds. In fact, it is this industrial discovery which has placed the United States ahead of the world in material progress.

* * *

The one unchanging factor in warfare is the individual physical strength of a man. The soldiers of Cæsar's army were physically no stronger nor weaker than our own. Progress in the art of war, therefore, consists in the realization of certain fundamental conceptions from time to time, and the seizure of one idea at a time, working it out in detail, and applying it before an enemy realizes its importance. These fundamental ideas have been slow to impress themselves upon military leaders, and, therefore, that nation which first takes hold of a new fundamental principle in war, and works it out with the greatest perfection in time of peace, possesses an insuperable advantage when suddenly the conflict is precipitated.

Frederick the Great inherited an army which had been trained in peace, and he soon found that he could march all around his enemies and strike them where he pleased. Napoleon, for the first time, grasped the importance of the relation between the ground and the battle, and developed this single idea until the French nation led the world in war. The electric telegraph was then unknown, but it is not too much to say that if there had been on duty with Napoleon's army at Waterloo a single trained company of signal troops, such as is now at the U. S. Signal School, the history of modern Europe would probably have been different.

The strictly modern art of war began with the campaign

of Metz and Sedan in 1870. The greatest of the fundamental ideas introduced in the art of war at that time concerned the mobilization and accurate assembling of great armies upon the field of battle. The army of the North German Confederation in the peace establishment numbered 12,000 officers, 285,000 men and 73,000 horses. The order to mobilize was telegraphed on July 16. Between July 23 and 25 the army was increased to 22,000 officers, 932,000 men and 193,000 horses, ready for war. The mobilization having been completed in eight to ten days, in eight to ten days more a force of nearly half a million of men and 1,200 guns, with first and second lines of trains complete, was assembled on a line of about ninety miles from Treves to Germersheim waiting for the order to advance. This result was effected by using railroad facilities to an extent unknown before.

With the increased accuracy and range of military weapons and the great size of modern armies, a modern line of battle, as at Mukden, may extend a hundred miles or more, and involve a terrain with widely varied military features.

The most fundamental truths are usually learned from the simplest experiments. Did not the falling of an apple give us the great law of gravitation?

A modern battle may be likened in many respects to that of a foot ball game on a grand scale, in which the various elements of an army correspond to the individual players of the team. The end players correspond to the cavalry on the flanks; the center, guards and tackles to the infantry and artillery of the front line; and the half-backs and full-back, to the supports and reserve, ready to be thrown into the line at a weak point. Offense and defense depend upon which side has the ball.

GENERAL RULES OF THE GAME.

1. "Team-work" with individual intelligence and aggressiveness is necessary to success.
2. Individual excellence without "team-work" is absolutely certain to fail.
3. The whole object is to secure a team in which no

one man shows out as a star; because if one man is a star the machine is imperfect, and is weak as a whole.

4. The object of the team, on both offense and defense, is to move so quickly that the opponent will be met in his own territory and not on neutral ground.

5. Any trick in which more than one man of the eleven is used for deception alone, is discarded.

6. The offensive team starts its game by trying its different methods of attack, and the different points of the opponent's line. As soon as a weak point is found it is hammered successively, with the object of destroying completely the weak individual or individuals who protect that point. This point is continually hammered in general, but other plays must be used enough to prevent its being a certainty, before each play, that the weak point will be attacked.

7. It is a fundamental rule that every play must be as simple in execution as possible.

8. The plays should be so chosen by the team captain, that every play is a surprise and is strong enough to prevent loss of ground if the surprise fails.

9. In the selection of plays every play is discarded in which each man does not have a definite part to perform.

* * *

The above rules of football which were furnished by one of the leading authorities of the game in the United States emphasize a fundamental truth, illustrated by a simple example familiar to all. They apply in principle, almost without change, to the conduct of modern battle. The dominant feature throughout is the necessity for the development of "team-work" to its highest efficiency in order to win the game. The analogy is not without its convincing lesson.

It is not, therefore, the efficiency of the separate arms of the service which measures the strength of an army; it is their complete coöperation and mutual support; or more definitely, the strength of an army is measured not by the number of men it contains, but by the number of rifles and guns it can put into effective action at any one time.

It is a significant fact to note in this connection, that during the entire Civil War there was never a battle in which there were more than 20,000 men engaged on either side at any one time.

Electricity is a messenger which travels at a rate of over seven times around our earth in one single second of time, and is therefore practically instantaneous for any distance involved in war, whereas any other available messenger requires not only an appreciable time to travel one mile, but of necessity requires twice that time to accomplish two miles.

It must be evident then that the only way to attain that perfection of control of the different units of an army which success demands, is through electrical lines of information which follow all the movements of the elements of an army and enable the commander-in-chief to operate his entire force at all times, with the same precision he would attain were he directing the movements upon a map before him. In short, it must be possible for the commander-in-chief of an army, surrounded by his expert staff, to remain in his tent, and from the map before him play the game of war over a front of a hundred miles with the overwhelming force of perfect "team-work." He need not, and best should not, be distracted from his great responsibilities by the excitement incident to proximity to the actual combat. The only hope of securing this is by the development and use of electrical lines of information by highly trained signal troops in number far exceeding that authorized at present for any army in the world. This service must be insured at any cost, since it is the service that welds the whole army into one massive team, capable of being handled by one central intelligence to carry out a definite plan at a definite time.

The professional task before the army at present, is to apply to the utmost the principle of combination of effort to a single purpose in the shortest possible time; in short, it is the attainment of the complete coöperation of the different arms. In general terms, the army which can effect this coöperation to the highest degree, other things being equal, will win in war.

During the past few years we have devoted money, energy and skill to the efficient development of electrical means of *fire-control* for our coast artillery, and more recently to applying the same principles to field artillery, but the professional problem of the present is that of complete fire-control for an army in the field.

Military strategy is impossible to-day, and always has been impossible, without the possession of information of your own situation, that of the enemy, or of both, which is not possessed by your opponent.

The United States now has the three arms of the service, each of which compares favorably with the same arm in any other army. We have efficient regulations for the training of each of these arms separately, but we have as yet reached no full appreciation of the results to be attained by the complete cooperation and support of the different arms of the military service operated as a gigantic *war-team*.

THE GUN SLING.

BY CAPTAIN R. R. RAYMOND, CORPS OF ENGINEERS.

THE purpose of this paper is to throw a little light upon the uses of a gun sling. There has been some little controversy concerning the relative values of the old long sling and the new short one; but the chief arguments appear to be, on the one hand, that the new sling cannot be used as an aid to aiming, and on the other hand, that it can be so used. Perhaps a study of the facts in the case may prove more profitable than the above line of argument.

The uses of the sling are two: To aid in carrying the piece and to aid in aiming. As everyone knows and admits that the sling does assist in carrying the piece, we need not trouble ourselves to prove it; but the value of the sling in aiming is not so well understood. Indeed, the writer, who has for several years been thrown into close contact with many officers and men on the target range, has frequently been amazed by the general ignorance on this subject. As we are to deal with facts only, the writer may be pardoned if he takes a few from his own personal experience. Having fired the complete marksman's course, both with and without the sling, he finds in his own individual case that the sling increases his efficiency as follows: Slow fire, standing, ten per cent.; sitting, ten per cent.; prone, sixteen per cent.; rapid fire, standing, five per cent.; sitting, four per cent.; skirmish fire, twenty per cent.; entire course, sixteen per cent.

The *lowest* score of ten shots he ever made at five hundred yards with the sling was four per cent. higher than the *best* he ever made without the sling.

In 1904, his company, firing without slings, qualified three marksmen, two of whom were later classified as sharpshooters.

In 1905, the same company, firing the same weapon with the sling, qualified twenty-seven marksmen, of whom twenty-one qualified as sharpshooters; and of these, five qualified as expert riflemen. Other changes of method assisted in this improvement, which practically doubled the company's individual figure of merit, but the sling is entitled to a large share of the credit.

These facts, considered in connection with the opinions and actual experiences of numerous officers well qualified to pass judgment in the matter, convince the writer that the sling is an aid to aiming.

Further than this, he is convinced that *a proper use of the sling will increase the efficiency of the weapon more than any improvement likely to be made now in the weapon itself or in its ballistics.*

Inasmuch as men in action must fire while in a state of intense excitement, and occasionally immediately after great physical exertion, the increase of efficiency due to the steadying of the piece by the sling must assume far greater importance than it can ever possess on the instruction range.

One cannot behold the facts above without admitting the value of the sling as an aid to aiming; but right here is where many officers fall into the error that makes horrible the present controversy over the relative value of the two types of sling which have been issued to our army. It is not the mere presence of the sling upon the rifle, nor yet its use as permitted by the present regulations, that makes for increased efficiency. It is the *proper use* of the sling.

What is the proper use of the sling? For carrying the piece a single strap of suitable length, attached to the two swivels, is the simplest and best device. Both types of sling are entirely satisfactory when adjusted for carrying, but the writer tried the experiment of timing two officers in making the necessary adjustment, and obtained the following result: Old sling three minutes and fifteen seconds, new sling twenty seconds. In this respect the new sling is a great improvement over the old one.

Many arrangements of the sling have been used to improve steadiness of aim. Some men release the sling from

the rear swivel and place the foot upon the strap as it lies upon the ground. Others simply slacken the strap and pass it around the leg. Others pass it around the body, and still others use it in various forms attached to the arm. All of the different methods possess some virtue, but when it is considered that any one adjustment, in order to be of value in action, must be equally efficacious standing, kneeling, sitting and prone, all of these same methods fail, with the one exception of that in which the sling forms a loop attached to the front swivel and passing around the arm. After careful tests, the writer feels safe in asserting that this loop is so much better than any of the other methods, that its use should be required instead of being prevented by regulation. Let us look a little more closely into the principle of the loop. The butt of the piece is held against the shoulder, and is as steady as the body itself. Nothing can be gained at this point by the use of the sling, and it is therefore entirely unnecessary to use the rear swivel except for carrying the piece.

It is the muzzle that must be steadied. As a purely mechanical proposition it cannot be denied that the proper procedure is to attach a guy to the piece at a convenient point, and attach the other end of the guy to some steady part of the body. It is also well known that a triangle is the only rigid geometrical figure. If we attach a loop to the front swivel and then pass the arm through this loop so as to bring the loop right up to the shoulder, we shall have the sling, the piece and the shoulders forming a very favorable triangle for the standing aim. Either the half arm or the body rest may be used.

The same argument of the sling is valuable in the kneeling position.

In the sitting position, with the elbows resting on the knees, the body and limbs are so disposed as to form a tripod resting upon the seat and the two feet; and this tripod with one exception, is composed of rigid triangles. Thus: Ground, left lower leg and left thigh; ground, right lower leg and right thigh; left thigh, body and left upper arm; right thigh, body and right upper arm; right upper arm, right forearm

and stock of piece. The exception is the quadrilateral formed by the left forearm, left upper arm, body and piece. The sling supplies the necessary diagonal and makes the whole frame rigid. For this purpose it should be pushed well up to the shoulder, but may also be used at the elbow, although in this latter position it is not quite so effective, as the quadrilateral still lacks a diagonal.

Some very successful shots do not use the sling in the sitting position because they find the frame formed by the body and limbs fairly good without it; but those who have given it a fair trial find that it stiffens the whole and affords great assistance in holding the piece during the manipulation of rapid fire. By referring to the figures of increased efficiency above, it will be noticed that the gain is less for the sitting than for the standing and prone positions, but it should also be noted that the gain is nevertheless positive.



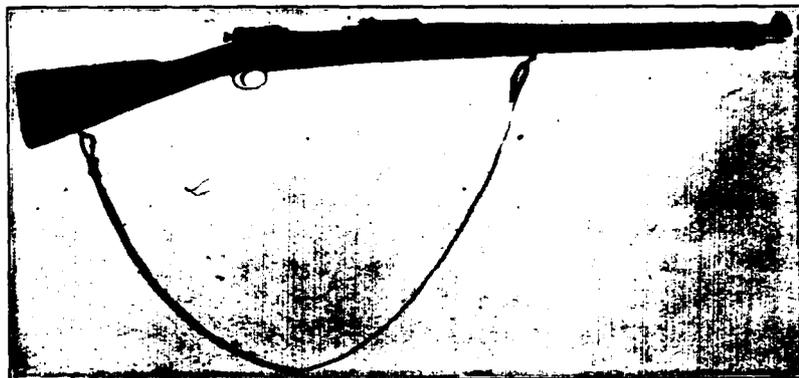
THE PARADE POSITION.

It is in the prone position that the sling loop reaches its greatest value. The right shoulder is braced by the body and right upper arm, and the body is braced by the left upper arm. Thus the shoulder, and consequently the butt of the piece are steady. The piece is also steadied by the two props afforded by the forearms, and even without the sling, is fairly firm; but the left wrist is not rigid, and the right hand holds the piece too far from the muzzle to be really effective. Therefore the sling loop, slipped well down to the elbow immovable on the solid ground, becomes necessary. It enables the left hand to bear with firmer pressure against the piece, and forms a guy which prevents sidewise vibrations. A good prone position with a properly adjusted loop is nearly equal to a muzzle rest.

The same length of loop serves for all positions, provided

that it be independent of the rear swivel; and it should be independent of that swivel, for the butt is the one part of the gun which needs no support from the sling for steadiness in aiming.

Now to return to the two types of sling, we find that the old sling lends itself to adjustment in a satisfactory loop. The new sling used according to regulations is useless to form such a loop. The nearest approach to it is secured by letting out a great deal of slack and then taking a turn around the left upper arm, so that the sling passes from front swivel to the arm, around the arm with a complete turn, and thence to the rear swivel. The length of the strap



THE CARRYING POSITION.

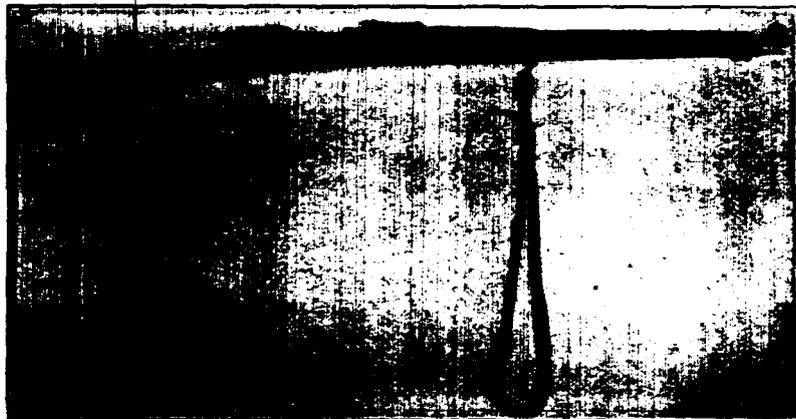
from front swivel to arm should be the same in all positions, but the length from arm to butt must vary. Adjustment of length is therefore necessary for every change of position; and as such adjustment is too difficult to be made in action the new sling therefore fails to perform satisfactorily its most important function. It has been claimed for it that it *can* be used to assist the aim. This is true, but it *can not* be used in the best and most efficient way. This alone is sufficient to condemn it decisively.

We have already seen that the old sling is inconvenient and clumsy when it has to be adjusted for carrying the

piece. It is equally, if not more so, when adjusted for use in firing.

Let us reduce the problem to its simplest terms, and see what the result will be. The sling must be capable of assuming three separate positions, in each of which it should be secure and strong. It should also be capable of passing rapidly and easily from any position to any another. These positions are the normal or parade position, the carrying position and the firing position.

A satisfactory solution of the problem demands that the strap may be stretched tightly between the swivels for



THE FIRING POSITION.

parade; that it may be attached to both swivels and be adjustable in length between them for carrying, and that it may be attached to the front swivel as a loop adjustable in length for firing.

The accompanying photographs show a sling designed on these principles. It consists of a strap securely attached at one end to the front swivel. The other end is passed through the butt swivel and secured by a simple clasp which locks or slides at will upon the strap. By sliding this clasp as near to the front swivel as possible all slack is taken up. Behold the parade position. By sliding the clasp toward the butt

swivel, any amount of slack, limited only by the total length of strap, is obtained. This operation is readily performed in five seconds. Behold the carrying position.

By detaching the end of the strap from the clasp, drawing it entirely out of the butt swivel and passing it again through the clasp and to any desired position, a loop of proper form and length for the most efficient aid to aiming is produced in seven seconds. Behold the firing position.

The clasp locks positively and is composed of only three pieces of metal. The home-made experimental clasp was fashioned from scraps, yet even in this crude form the sling has won the praise of all who have examined it.

It is not claimed that this sling is the best possible to design. It was made simply to test the ideas advanced in this paper. It is absolutely free from the serious defects which the slings already issued possess in such generous profusion.

There surely can be no excuse for issuing a worse sling than the best available, and neither sling already issued is anywhere near the best obtainable.

BETTER MARKSMANSHIP.

BY FIRST LIEUTENANT C. A. BACH, SEVENTH CAVALRY.

"THIS war has burned into my mind as nothing else could have done that the condition of our army constitutes a terrible danger to the existence of our empire. I have learned here that nothing but the very best will do."

When General Ian Hamilton of the British army made this statement, as the result of his experience gained in the Russo-Japanese War, he gave voice to the fear that tugs at the heart-strings of every conscientious military commander. We must have the best of everything; the best of equipment, of supply, of transportation, of armament, of formation; and above all, the best of training for our soldiers.

The army is divided into two parts: the part that plans and the part that executes. Both are inter-dependent. Alone, neither could accomplish results. Just as the arms execute the mandates of the brain, so the army executes the orders of its leaders. But when strategy has played its part and armies have been maneuvered in the theatre of war so that finally they stand face to face, it is the man who decides the fate of battle. The brunt of the struggle, the attack, the assault, the final victory or defeat, rest with the private soldier.

Since we have become a nation our proudest boast has been that the American soldier, because of his superior intelligence, is the best soldier in the world. But the quality of the man alone is not enough. He must be trained to his work. Not only this, but he must be so well trained that he represents the best. This is our ambition; nothing short of this is completely satisfactory.

The efficiency of an army is represented by the individual training of its soldiers. With the perfection of the modern small arm and the consequent necessary abandonment of

mass action, individual efficiency, initiative and intelligent aggressiveness constitute the dominant factors that will be decisive in future warfare.

In larger actions fire control by officers is gradually lost as the distance between combatants decreases; and the soldier at approximately 800 yards, if not sooner, is deprived of the support and control of his superiors just at the time when he stands most in need of direction and encouragement. Who at this critical period is the best soldier? Who at this time will display the greatest coolness, the most self reliance, the greatest aggressiveness? It is the soldier who has confidence in himself; the soldier who, despising the poor marksmanship of his antagonist, keeps his head and makes his fire tell. It is the soldier who knows that he can hit what he shoots at.

There is no need to emphasize the importance of good shooting. Its necessity is such that it appeals to the intelligence of every thinking officer. In garrison, in time of peace, this qualification is lost sight of to some degree, but in action it looms gigantic, overshadowing every other requisite. The ability of the soldier to shoot well is vital to the success of an army in battle.

Years ago, when hardy spirits first populated our Western wilds, every man was a sharpshooter, and even the women were accustomed to the use of the rifle. Conditions were responsible for and made necessary this proficiency in arms. And conditions to-day are equally responsible for the ignorance of the great mass of the American people in this respect. Our safety has been our undoing. The average American of to-day has so little familiarity and skill with the rifle as to make our high sounding phrase, "the Americans are a nation of riflemen," no more than a bitter sarcasm. Our army is recruited from such men. And the army, like the American people, has been forced to recede from the proud position it once claimed of being the best collective body of shots in the world. A careful study of results will show that, since 1894, army marksmanship has steadily deteriorated. There are many causes for this deplorable result. The change, in 1895, from the Springfield to the Magazine rifle, with which no

one was acquainted; the constant movement of troops between posts in this country and between this country and the Philippine Islands; the large number of other interests demanding attention; and lastly, the insufficiency of ammunition, all tended to hamper good marksmanship. In 1898 the allowance per man for ammunition for target practice was \$4.50, an amount that was entirely inadequate. This was raised in 1901 to \$9.00 per man. In 1902 the allowance was fixed at 250 rounds per man, and this was increased in 1903 to 400 rounds.*

However, it is not causes that concern us, it is remedies. How can we better the shooting of our soldiers? I say by a compliance with these four points:

1. Greater proficiency and interest of troop officers.
2. A range at every post.
3. The use of as much ammunition for practice as is necessary.
4. Increased pay to riflemen, graduated according to qualification.

GREATER PROFICIENCY AND INTEREST OF TROOP OFFICERS.

If I wished to study astronomy I would not consult a blacksmith: The man who aims to perfect himself in corporation law will not select as his tutor a tailor. The youth who wishes to become an artist chooses as his instructor an artist of acknowledged reputation. If you were looking for a man to direct and guide you in any walk of life or in any department of science or art, you would choose that man above all others who has demonstrated that he can himself do the thing you desire to learn. That man can best teach who, not alone by theoretical study but by practical demonstration and actual doing, has qualified himself to occupy the position. This is equally true of shooting. The officer who can shoot well is a better instructor than the officer who cannot. He knows of his own personal knowledge and experience the details of wind, mirage, atmosphere, temperature, light, gun barrels, and the adjustment of sights for various conditions. He has the confidence of the men because

*For 1906 the allowance amounts to 360 rounds.

they know that when he makes a statement he speaks as one having authority; because they know that he can "make good." In this matter of shooting, the soldier is in the position of the man from Missouri. You must show him. And the officer who can not do that, can not expect that his advice and directions will have much weight with his men. Even though his instructions be perfectly correct, the soldier, after having in accordance with orders made some change in adjustment and, through a personal error, missed the target, will inevitably say to himself, "Well, he doesn't know as much about it as I do," and change his adjustment. You say this is a lack of discipline? I don't agree with you. It is simply human nature. No man desires to receive instruction from a man less capable than himself. An officer desirous of becoming an expert rifleman would not consent to be instructed by another officer who is a third class man. No more, then, is it fair to force upon an enlisted man an instructor less capable than himself.

And this ability to shoot well lies within the power of every officer, with few exceptions. Dr. W. G. Hudson, an acknowledged authority on rifle shooting, says: "There are certain individuals who seem to have born in them a special aptitude for accurate work with the rifle, and who require little training or instruction to grasp the whole subject and keep in trim. These of course will naturally progress much faster than what one may term the average person. Then there are others who seem never to be able to shoot well, no matter how hard they try to learn. But the great majority belong to the intermediate class, and any of them can learn, with perseverance and well-directed practice, to become at least fair shots."

No officer can inspire his men unless his heart is in his work. On the other hand a well directed zeal seldom fails to bring results. That troop or company will shoot best, even under somewhat adverse conditions, whose officers are enthusiastic and interested in the subject of rifle firing. But this interest to be effective, must be a personal and living one. It must extend from the captain, through the lieutenants, to the lowest ranking non-commissioned officer. It

must manifest itself in a personal and sympathetic supervision of and a close individual attention to all the details of preliminary sighting drills and gallery and range firing. It cannot flag without a corresponding reaction on the part of the enlisted men. It may be irksome at times but the officer can rest assured that the results will richly repay the effort; not alone in the satisfaction that comes to every man from the knowledge of a duty well performed, nor yet in the increased efficiency and fighting value of his command, but in the assured belief that in developing a good shot he has developed a good soldier. For a good shot is usually a good soldier. The knowledge of his greater proficiency generates a sense of superiority over his fellows and develops an added self-respect that tends to hold him aloof from many of the temptations that beset enlisted men. A troop commander, in raising the marksmanship of his command, raises its morale.

A RANGE AT EVERY POST.

In tables showing the comparative proficiency attained at different posts in the United States in rifle and carbine firing, for the year 1903, we note one significant fact. Of the first sixteen posts mentioned in these tables, fourteen had rifle ranges at the post.

There is only one way in which a good shot can be developed: by intelligently directed and constant practice. This practice should be held under all the varying conditions of light, wind, weather, temperature and atmosphere. The soldier who finally graduates as a good shot from such a systematic course of instruction can shoot well anywhere, at any time, and under almost any conditions; and in time of battle the confidence that his proficiency gives him is worth pounds of lead to his commanding officer. But such instruction is not possible except the post and the range be very near each other.

The writer of this article has in mind the difficulties experienced by his own regiment in developing good shots. During the seasons of 1903 and 1905 the target practice was held at a range about 120 miles from the post. The time consumed in marching to and from the range was two weeks.

One month was allowed each squadron for range firing. Deducting Sundays and rainy days, approximately twenty working days remained for the four troops. Twenty days in which to teach recruits how to shoot, and develop older men to a greater expertness. Twenty days out of 365 to instruct men in the most important and essential qualification of a soldier.

I venture to say that there are few posts in the United States near which, within a radius of ten miles, ground for a suitable rifle range cannot be found. And at such posts, where, because of proximity to a city or from other causes, the extent of ground necessary for an open range cannot be obtained, protected or safety ranges in which, by means of screens and prepared ground, erratic shots can be controlled, could be constructed at a minimum of cost.

The immense advantages to the general marksmanship of the army derived from the establishment, at each post, of a suitable rifle range are easily apparent. Sighting and aiming drills and all theoretical instruction, and even gallery practice, could be conducted during the winter months, and in the spring, as soon as the weather would permit, range firing could begin. In this way from four to five months of actual range practice each year could be obtained, to terminate in the latter part of August or early September with the various competitions.

THE USE OF AS MUCH AMMUNITION FOR PRACTICE AS IS NECESSARY.

In order to conduct such an extended program of range firing it might be found necessary to increase the amount of ammunition allowed for this purpose. But if the men are impressed by their troop officers with the necessity of saving empty shells, such an increase would not be a great one. However, under no circumstances should the development in marksmanship of a soldier be hampered or retarded because of the expenditure of a few additional rounds of ammunition. Such restrictions would be penny wise and pound foolish.

INCREASED PAY TO RIFLEMEN, GRADUATED ACCORDING TO
QUALIFICATION.

Increased pay for marksmanship, graduated according to qualification, would powerfully stimulate the interest of enlisted men and bring out the best of which every man is capable. It may be argued, because enlisted men are in the employ of the government, that the government is by this fact, entitled to their best efforts. Theoretically this is correct. Practically it fails to work out. The monthly pay of the soldier is not such a princely sum as to draw within the folds of the army a class of men who could be appealed to solely on ethical and moral grounds. In no way is the average man reached so successfully as through the medium of his pocket-book. Personal opinion, political and even religious convictions, are strained to the breaking point by such an appeal. The soldier is human. He is susceptible to human influences.

In the ordinary business affairs of civil life, the better workman receives the higher wages. Why should not this principle, with equal justice, be applied to the army? Nobody questions the fact that, other things being equal, the better marksman is the more valuable soldier. Then, if that be true, why not acknowledge the fact in such a substantial and potent manner as to impress the soldier with the desirability of being a good shot?

In the year 1903 this army of 67,000 men produced only 58 expert riflemen, 349 sharpshooters and 500 marksmen. A little more than one-fiftieth, about two per cent., of the entire field strength of our army qualified as marksmen or better—a pitifully small percentage.

Should each marksman receive fifty cents, each sharpshooter \$1.00, and each expert rifleman \$2.00 additional per month, the entire added amount would, for 1903, be only \$715,000 per month or \$8,580,000 per year. This is a small sum to give an army as both a stimulus and a reward for extra exertion. There is no doubt, however, that if such an increase of pay were allowed, this sum would be doubled, perhaps trebled, in the course of two years. And it would be money well spent.

In connection with this subject of better marksmanship it might not be inappropriate to invite attention to a few changes that could advantageously be made in our present small arms firing regulations.

1. In order to secure the best results in skirmish firing, it is essential that the skirmishers should know exactly the proper elevation and the amount of drift of the bullet fired at the various ranges. This can be accurately determined only by actual firing. Under the present course there is no instruction practice at 350 and 400 yards, but the soldier is required to fire at these ranges in making a skirmish run. I would suggest, therefore, that two scores, slow fire, at each 350 and 400 yards, be added to the instruction practice, marksman's course, but not to the record practice.

2. In rapid fire, unfired cartridges count as misses. In skirmish, for each unfired cartridge at a given range, five points are deducted from the score. Five points are also deducted for each shot fired after the signal "cease firing." There is no provision or ruling in the Firing Regulations to prevent the skirmisher who finds himself at "cease firing," with an unfired cartridge on his hands, from taking careful and deliberate aim and scoring on the prone figure. He has fired a cartridge after the signal "cease firing," and is penalized five points—which he has just made. On the other hand should he fail to fire the cartridge he loses the five points he might make with that cartridge and is penalized five additional points; a total penalty of ten in case he does not fire, and of five in case he does. For the above reason I believe that the same ruling that governs in rapid fire should prevail in skirmish, *i. e.*, each unfired cartridge to count as a miss.

3. Skirmish firing is the most important individual firing done on the range. It approximates war conditions most nearly. If the number of skirmish runs, instruction practice, were increased to four, it would materially aid in steadying the soldier and raising his average. While it is true that troop commanders may of their own accord conduct additional skirmish runs, in actual practice it is not frequently done on ranges that are used by more than one or

ganization, because the necessity for haste is perpetually emphasized. If, however, four instruction skirmish runs were prescribed, it would insure the additional practice.

In all sports or enterprises that are wholly or partially competitive in their nature, the spirit of emulation develops, frequently to an extreme. Army rifle shooting is not free from this. While many safeguards have been devised to insure the absolute accuracy and reliability of target records, they will all fail of their object unless troop officers indicate to their men, in a manner not to be misunderstood, that nothing short of perfect honesty will be tolerated. Such an example will be more effective in eliminating "jockeying" than any other means that could be adopted.

No man can estimate distances, with absolute accuracy, at long range. They can only be approximated. And if, by persistent practice, any man had so perfected himself as to judge distances with a considerable degree of exactitude, he would find his estimates utterly valueless under different conditions of atmosphere and weather. This inaccuracy in estimating distances is so great as to neutralize, in a large measure, the advantages to be derived from the modern magazine rifle with its flat trajectory and increased range. A small portable range finder, issued one to each troop and company, after first being duly tested and approved, would solve the problem.*

If the government, by establishing a suitable rifle range at every post, will offer the opportunity for men to perfect themselves in shooting, allow sufficient ammunition for this purpose, give increased pay for increased skill and efficiency, and furnish a range finder to accurately determine distances, I feel safe in saying that the army will do the rest. Good marksmanship is our mightiest safeguard. The rifleman is the bulwark of the nation.

*See infra (page 30) a proposed system of range finding for infantry and cavalry.

SMALL ARMS FIRING AT UNKNOWN DISTANCES.

BY MAJOR H. L. RIPLEY, EIGHTH CAVALRY (GENERAL STAFF).

THE following exercise took place at Fort Sill, O. T., in June, 1905. Previous to the exercise, the commanding officer had located the position for the enemy (target) and had determined the positions that would probably be taken to solve the problem. From the nature of the country and the conditions given, there was practically but one solution to it.

The enemy was represented by a line of sixteen "E" targets at about a yard interval, supported by a second line of "D" targets, some fifty yards in rear and on higher ground, and at a yard interval. It was assumed that these thirty-two silhouettes represented a delaying detachment or rear guard of a force which the cavalry were pursuing. The position taken by the enemy was a strong one, on the foot-hills of the mountains, with an open country in front to the east for some two miles, where the approaching cavalry could be plainly seen. Although the hills were more or less wooded, for convenience a place had been selected for the target which was partially open and where the figures could be plainly seen after they were once "picked up."

Two troops of the Eighth Cavalry, under the command of Captain F. were taken out some four miles west of the post, and upon arrival at a certain point he was informed by the commanding officer that he had been fired upon from the front and had suffered several casualties among his men and horses and that he was still under fire. Although no enemy had been seen, the troops were quickly moved at a gallop by the flank and placed under cover in a wooded ravine. Careful search by the officers with field glasses soon discovered the enemy. The problem then was to dislodge him and drive him away.

The cavalry had been fired upon at a distance of approximately two thousand yards. This distance was known only to the commanding officer. Examination of the ground showed that a position some three hundred yards in advance of the point where they had been fired upon could be obtained by going up a small swale from where the horses were. This position was at once occupied by one troop dismounted, and under conditions of the problem no farther advance could be made to the front without heavy loss.

On the right flank, however, high hills extended from near where the horses were, well up to the left flank of the enemy's position. By going back of these hills, completely sheltered, until a point was reached nearly flanking the enemy, a position could be gained which commanded him, and being thus gained would render his position untenable and he would have to retire.

It was estimated by the commanding officer that such a flank position would be about one thousand yards from the enemy, and the character of the country and the conditions of the problem, precluded getting any nearer. Captain F. sent one troop, mounted, back of these hills to obtain such a position, occupy it dismounted and open fire. In the meantime the troop in front practiced on the enemy with a few select shots and several volleys, trying to get the range, but the target being on a rocky knoll and the distance so great, no indication in the way of dust could be obtained, and it could only be approximately estimated. The flank troop having gained its position and opened fire, the troop in front began firing, and this firing was continued by both troops until their ammunition was used up. Each troop had been provided with twenty ball cartridges per man. Recall was then sounded and the exercise closed.

When the troops were assembled, an examination of the ammunition showed that in the engagement the two troops together had fired fourteen hundred and thirty-two rounds. Examination of the targets showed that eleven hits had been made, and from their position it was estimated that the enemy had suffered a loss of four killed and seven wounded. Not quite .0077 per cent. of hits to shots fired.

The next day the other two troops of the squadron, under the command of Captain D., were taken to the same point and given the same problem. The solution was identical with that of the previous day, but with a slightly different result. Out of twelve hundred and ninety-five rounds fired, twenty hits were made, estimated as before, at twelve killed and eight wounded. About .0158 per cent. of hits to shots fired.

In both cases it was apparent that the enemy was driven from his position, but it had taken the cavalry an hour and a half to do it. Taking the whole squadron, the average per cent. of hits to shots fired was .0118, and yet these were good shooting troops, which had just completed a target season on the range and each had attained a general figure of merit of over seventy.

The problem was a simple one. The conditions (not attainable except at a very few posts) approached about as near actual hostilities as it is possible to have them. It was a long range fight, as most fights are in these days; ball cartridges were used and distances were unknown. The first intimation the troops had of the immediate presence of the enemy was the information that they were being fired upon. The only things lacking to have made it real, were the actual receipt of the volley with its attendant casualties and the invisibility of the enemy. The invisibility in this case could, and in actual warfare would, have been made practically complete. The enemy would have done his work just as well, suffered less loss, and it would have taken a much longer time to have driven him away. It is safe to say that in actual warfare the percentage of hits to shots fired would have been reduced at least one half or more.

The vast difference between results obtained when the firing is over known distances and when it is over distances which are unknown, is strikingly illustrated in this exercise and emphasizes the necessity for some sort of a range finder, in the hands of troops, which will be fairly accurate.*

*See infra (page 30) a proposed system of range finding for infantry and cavalry.

A PROPOSED SYSTEM OF RANGE FINDING FOR INFANTRY AND CAVALRY.

BY LIEUTENANT F. WHARTON GRIFFIN, ARTILLERY CORPS.

THE range finders in use by the U. S. army to-day are unsatisfactory with the exception of those used by the coast artillery. In recent years numerous experiments have been made with the range finders of foreign make, such as the Zeiss stereoscopic binocular range finder and the Forbes telemeter, but these also have proved unsatisfactory.

The essentials of a good range finder are that it should be accurate, easily carried in the field, a short time and few men required to obtain the range, and of course the less complicated the parts of the range finder and the method of obtaining the range the better. It is easier to find short ranges with accuracy than long ones with all range finders, and for this reason this system is proposed for use by the infantry and cavalry, and if it should be tried and any one of the methods proves to be satisfactory a similar method will be presented for trial by the field artillery.

The best range finder for troops in the field now in use is the Weldon. This range finder is used by the field artillery, and in theory it is sufficiently accurate, but unless it is in the hands of a well trained man it is very inaccurate, and even in the hands of a well trained man errors sometimes occur.

The principle by means of which the range is obtained in this proposed system is similar to the method employed by the Weldon, but the instruments (there are two of them used in conjunction) are entirely different.

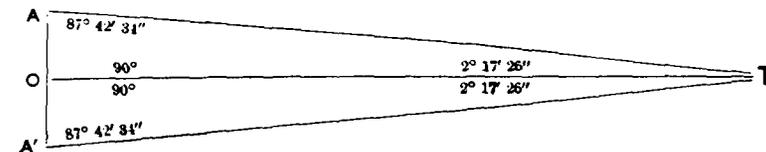
Before describing the proposed instruments a discussion of the principle will be given. An attempt has been made to eliminate all the errors that are liable to occur when using the Weldon and to make the instruments almost as accu-

rate when used by untrained men (but men who understand the principle) as it is when used by trained men.

FIRST METHOD.

This method depends upon the solution of one side of a right angle triangle; the angles of the triangle always being constant and hence the two adjacent sides of the 90° angle are in proportion.

The natural tangent of $87^\circ 42' 34''$ is 25. Therefore in all right angle triangles containing an angle measuring $87^\circ 42' 34''$ the sides adjacent to the 90° angle are in proportion of one to twenty-five.



It will be seen in the figure if O represents the point from which the range is to be obtained and T represents the target, that if a 90° angle be measured at O, and the point A be found where the angle between AT and AO equals $87^\circ 42' 34''$, the side TO is 25 times as long as the side OA.

The proposed instruments to be used to obtain the range consist of two instruments that will measure the 90° and the $87^\circ 42' 34''$ angles, and a tape line from which the range can be read at once, *i. e.*, without having to multiply the distance AO by 25.

The instruments to be used to consist of rigid cross sights mounted on pointed staffs. One of these instruments to have the sights permanently fixed at right angles and similar to the surveyor's cross. The surveyor's cross sights would not be the best sights for range finding, and in their place I would suggest two metal wedge-shaped sights. The front sight the same as the rear sight.

The other instrument to have one sight at an angle of $87^\circ 42' 34''$ to the other, and the same kind of sights described for the first instrument. These instruments to be

detachable from their staffs and provided with the ball and socket movement similar to the Jacob's staff. The sights to be carried in leather cases swung over the shoulder.

If the staff of the 90° instrument be made several feet shorter than the staff of the instrument containing the $87^\circ 42' 34''$ angle and one of the sights of the 90° instrument be telescopic and provided with stadia wires, ranges can be read directly by having the graduation on the staff of the $87^\circ 42' 34''$ instrument read 25 for one.

If the stadia method be used, the cross arms of the ninety degree instrument should be provided with level tubes.

A time saving device for the $87^\circ 42' 34''$ instrument would be a movable center similar to the transit, but having more play.

The dimensions of the instrument and the metal or combination of metals out of which they should be made will be determined later if this system is approved. The instruments in their leather cases will not be much larger than the cavalry sketching case.

The tape need not be over eighty yards long, for this length tape will measure a range of 2,000 yards, $80 \times 25 = 2000$. This tape might be self-winding on a reel in a box and the box provided with some arrangement to hold it in place, as a pin to be stuck in the ground.

It will be seen from the figure that the range can be found by laying off the right angle triangle either to the right or to the left of the line T O.

Two men are required to find the range, and for convenience I will call them No. 1 and No. 2.

No. 1 sets up the instrument which has the sights permanently fixed at right angles on the target. He then directs No. 2 on the line O A until he has found the point A with the other instrument, and the distance O A, measured by the tape gives the range. If the stadia be used the range is read as soon as the point A has been found, but unless O and A are on very nearly the same level the tape line would have to be used. If the right angle triangle is laid off to the right of the line T O No. 1 directs No. 2 along the line O A'

until he has found the point A', and the range is found as before explained.

In order to prevent confusion on the part of No. 2 the sight which he is to point towards the target should be marked. It will be seen in the figure that this sight when used on the right of the point O is revolved $87^\circ 42' 34''$ from the position that it is when used on the left of the point O. The sight to be used on the right should be marked R and the sight to be used on the left should be marked L. Then no confusion is possible.

Three men could find the range quicker than two. No. 3 goes with No. 2 and uses the target sight, while No. 2 uses the other.

When three men are used without the use of the stadia no staff is necessary for the $87^\circ 42' 34''$ instrument, for the sights can then be used as a hand instrument.

SECOND METHOD.

Consist in using a permanent base and measuring the angle at the point A or A'. The instrument to be used at the point O to be the same as the one used in the previous method without telescopic sight or level tubes. The tape to be forty yards long. At the end of this tape the second instrument is to be set up. This instrument is similar to a small azimuth instrument, but mounted on a Jacob's staff and provided with the ball and socket movement and level tubes. It should also have a movable center. The sight need not be telescopic, but like the sights described in the first method. It should also be provided with a vernier, vernier clamp and vernier tangent screws. The instrument should be set up reading $0^\circ 0' 0''$ and pointing at O and the angle T A O should be read.

This gives the range immediately if a range table has been prepared beforehand. The natural tangent of the angle multiplied by forty is the range. Thus if the angle be $87^\circ 42' 34''$ its natural tangent is 25, and $25 \times 40 = 1000$ yards. The sights on this instrument should be very little above the vernier plate in order to make the instrument as flat as possible.

THIRD METHOD.

The instruments used are the same as those used in the second method except that the 90° instrument should be provided with a telescope and stadia wires, and stadia graduations should be marked on the staff of the other instrument.

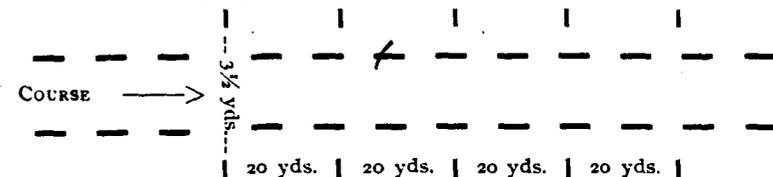
The range is found by means of a plotting board. A base is measured any convenient length and the angle read at the end of it. This base is measured on the plotting board and the angle plotted and the range read from the board.

SABER VERSUS REVOLVER VERSUS CARBINE.

BY LIEUTENANT COLONEL JAMES PARKER, THIRTEENTH CAVALRY.

DURING the month of October, 1905, at Fort Riley, Kansas, a number of experiments were made in field firing. Among these were: First, a test of the comparative execution of pistol and saber, advancing mounted at full speed in a straight course, lined by a number of silhouette targets; Second, a test of the comparative accuracy of the pistol and carbine, circling the regulation riding track at a gallop, firing at silhouette targets. These tests, while not conclusive to any great degree, developed some facts which are of much interest. They were witnessed by all the officers of the cavalry subpost.

The test of the saber *versus* revolver was conducted by Captain W. H. McCornack, Ninth Cavalry. He selected ten men of average proficiency with the pistol and saber. These men had three preliminary drills of two hours each. The horses were average. The course was 117 yards long, which each trooper had to pass over at a rate of sixteen miles an hour. At each twenty yards along the course there was a silhouette of a soldier, standing, on the right side of the track, with another on the left side, the interval between the silhouettes being three and one-half yards. The silhouettes faced toward the starting point. That is, there were ten silhouettes of infantry, ranged in column of twos, the interval between men being three and one-half yards, the distance between twos being twenty yards. Down through the center of this column a trooper with pistol and saber rode at a charging pace. (See cut.)



The ten men made four runs each, with a pistol, in two runs firing to the right and in two runs firing to the left. They also made four runs with the saber, on the first run cutting to the right, on the second run thrusting to the right, on the third run cutting to the left, and on the fourth run thrusting to the left. The results are shown in the following table:

FORT RILEY, KANSAS, Nov. 7, 1905.

Record of pistol and saber test. Course straight away, 117½ yards. Targets 5 prs. of standing silhouettes (H) perpendicular to course; 20 yards between pairs; 3½ yards between targets of each pair.

ORDER OF RUNS.....	PISTOL. NO. OF HITS				SABER. NO. OF HITS			
	Right	Right	Left	Left	Cut to the Right	Point to the Right	Cut to the Left	Point to the Left
	1st	3d	5th	7th	2d	4th	6th	8th
Sergeant Finney.....	3	5	4	4	5	5	5	5
Sergeant Jackson.....	2	4	1	0	5	5	4	4
Sergeant Bledsoe.....	5	5	5	5	5	5	5	5
Sergeant Briggs.....	3	5	4	4	5	5	4	4
Corporal Sampson.....	3	2	1	4	5	5	5	5
Corporal Newton.....	3	2	2	3	4	4	5	4
Corporal Williams.....	4	4	4	3	5	5	5	4
Farrier Mulford.....	3	5	2	3	5	5	5	5
Private Wilson.....	3	4	5	4	5	4	3	5
Corporal Ringo.....	5	4	4	5	5	5	5	5
Total.....	34	40	32	35	49	48	46	46
Percentage.....	68	80	64	70	98	96	92	92
Per cent. for two runs	74		67		97		92	
Per cent. for four runs	70.5				94.5			
Shortest time for 1 run	12 seconds				13 seconds			
Longest time for 1 run	15 seconds				15.5 seconds			
Average time of all runs	12.5 seconds				13.5 seconds			

Misfire counted as misses.

An examination of this table indicates the following facts:

There were 34 per cent. more hits with the saber than with the pistol.

The percentage of hits with the saber was much larger

than with the revolver, whether the saber was used to cut or to thrust, whether the target was on the left or on the right.

It should be noted that the troopers in this test had the alternative, if they desired, of placing the pistol *against the target* before discharging it.

Why more hits were not made with the pistol can be explained only by the fact that a horse at a run is a mighty unstable platform from which to shoot, and it is much easier under such circumstances to hit an object with a saber than with a pistol; for proof of which I recommend that doubters practice this experiment next year. It only requires a few cartridges.

It will be noticed that the time of the run averaged less with the pistol. This is due to the difficulty of controlling the horse while shooting.

It is impossible to reproduce on a drill field the conditions of war. If it is necessary to solve the question of saber *versus* pistol, we must work it out by actual war experience—either in the past or in the future. This fact, however, would seem to be fairly well indicated by this experiment—that at the moment of collision between two masses of cavalry, the saber is a surer weapon as far as hits are concerned, than the pistol.

The second test of the pistol *versus* carbine was conducted by Captain Lanning Parsons, Ninth Cavalry. He selected ten ordinary pistol shots, with average horses, and put them through a short course in using the carbine mounted. Captain Parsons found that while in firing to the left the carbine can be used with best effect by aiming from the right shoulder, it was not possible to aim from the left shoulder in order to fire to the right. Supporting the butt of the weapon on the hip was tried and found very handy, but the men invariably fired too high. This defect, however, might have been cured by preliminary dismounted practice. The best results in firing to the right were obtained by holding the carbine in the right hand, just as a pistol is held, and extending the arm. This test was as follows:

With the targets selected of standing figures arranged as in Figure 1, Plate 28, Firing Regulations, the targets ten

yards from the track, five circlings of the track at a gallop for each soldier, firing five shots in each of the five directions, namely, to the right, left, right front, left front and right rear, or twenty-five shots in all. The results of these tests are shown in the following table:

REVOLVER PRACTICE

Names.	R		L		R. F.		L. F.		R. R.		Total.
	%		%		%		%		%		
1st Sergt. McGhee	0	0 0 0 2	0	0 0 0 0 0	2	0 1 0 1	2	0 0 0 0 0	2	0 0 2 0	40
Sergt. Johnson	2	0 0 2	0	0 1 0 0 0	0	2 0 0 1	0	0 0 1 0 2	0	0 0 0 0 1	12
Corp'l Harcounbe	0	2 2 2	60	1 0 0 2 0	30	2 0 0 2 0	40	0 0 0 2 0	20	2 0 0 0 1	12
Corp'l Hipsher	0	0 1 0 0	10	0 2 2 0 0	40	1 0 0 1	20	0 0 0 1 0	10	0 0 0 0 1	18
Corp'l Johnson	0	0 0 0 2	20	0 1 0 2 2	50	1 2 1 0 0	40	2 0 0 0 0	20	0 1 0 0 2	10
Private Benton	0	0 0 2 0	20	0 2 0 0 0	20	1 0 0 1 2	40	0 0 0 0 0	0	2 0 0 0 2	17
Private Gaines	0	0 0 0 1	10	0 0 0 0 0	0	0 0 0 0 0	0	2 0 0 0 0	20	0 0 0 2 2	40
Private Hampton	0	0 0 1 0	10	0 0 0 0 0	0	0 0 0 0 0	0	0 0 0 0 0	0	1 0 0 0 0	7
Private Johnson, D	2	2 2 0	60	0 0 0 0 0	0	2 0 2 1	50	2 1 2 0 0	50	0 0 0 1 1	18
Private Clark	0	0 0 0 2	20	0 0 0 0 0	0	0 0 0 0 0	0	1 0 0 0 0	10	0 0 0 0 0	2
			27		15		26		18		25
											111
											222

CARBINE PRACTICE.

Names.	R		L		R. F.		L. F.		R. R.		Total Points.
	%		%		%		%		%		
1st Sergt. McGhee	0	0 0 0 0	0	0 0 0 0 1	0	0 1 0 1	20	2 0 0 0 2	40	0 0 0 0 1	8
Sergt. Johnson	0	0 0 2 0	20	2 0 0 1 0	0	0 0 0 0 0	0	0 0 0 1 0	10	0 1 0 2 1	10
Corp'l Harcounbe	0	0 2 0 0	20	2 0 0 2 1	50	0 1 0 2 0	30	2 0 0 0 0	20	2 1 0 0 1	40
Corp'l Hipsher	0	2 2 0 0	40	0 2 0 0 0	20	0 0 0 1 1	20	0 0 0 0 0	0	0 0 0 2 2	16
Corp'l Johnson	0	0 0 2 1	30	0 0 2 2 0	40	0 0 0 2 0	20	0 0 0 0 1	10	0 2 0 0 0	10
Private Benton	2	2 2 2	80	0 1 0 0 2	50	2 1 2 2 0	70	0 0 0 1 0	10	0 0 2 0 0	12
Private Gaines	0	1 0 0 0	10	0 0 1 0 1	20	0 0 0 0 0	0	0 0 0 0 0	0	0 2 0 0 0	21
Private Hampton	0	0 0 0 0	0	0 2 0 2 2	60	1 1 0 0 2	40	0 1 1 1 1	40	2 2 0 0 2	5
Private Johnson, D	0	0 0 1 0	10	0 0 0 2 0	20	0 0 2 0 0	20	0 1 1 0 2	40	2 2 0 1 0	20
Private Clark	0	2 2 0 0	20	1 0 0 2 2	50	0 0 0 0 0	0	2 0 0 0 0	20	0 2 0 0 0	11
			23		33		22		19		30
											127
											254

Total miss fires—Revolver 15.

Total miss fires—Carbine 17.

This table shows: First, the total score of the carbine was sixteen per cent. greater than the total score of the pistol (this superiority was even greater and more uniform during the preliminary instruction); second, the carbine score was fifty-seven per cent. better than the pistol score, shooting to the left and left front; third, the carbine score was practically equal to the pistol score, shooting to the right.

The result of this test, like that of the first, was a surprise. This test raises the questions: First, to how great a degree the carbine can replace the pistol; second, whether the carbine is not an efficient reserve of the pistol, to be used when the pistol has been emptied; third, whether carbine practice mounted should not be taught, in order to take advantage of its possibilities.

In considering these questions, we must remember that, while the pistol is more handy than the carbine, and can be discharged more rapidly, it cannot be reloaded with the same facility as the carbine. Our new carbine, using the clip, can be reloaded almost by a single movement. The Colts 38 caliber revolver has to be reloaded by laboriously inserting the cartridges one by one; the Luger pistol is unsafe in the hands of the ordinary soldier.

One great difficulty about our revolver is the fact that its shots are exhausted immediately and it is practically impossible to reload in action. The writer was, on one occasion, for what seemed to be three or more minutes, riding through a body of Philippine insurgents drawn up in column along a road. In the first twenty seconds all his five revolver cartridges were fired. After that he could only rely on the "moral effect" of pointing at each man an empty pistol. To try to reload would have been fatal. The two men who accompanied him were in the same fix, and neither one thought of drawing his carbine, for neither had been instructed to make use of the carbine when the pistol was empty.

It seems strange that this use of the carbine in place of or as a reserve to the pistol has not been more discussed by those who favor the use of projectile weapons on horseback; for it must be remembered that in the magazine carbine we

have now a weapon which, for use from the saddle, is vastly superior to the old single-loader.

Let us suppose that projectile weapons were desirable in a charge, and that two detachments of cavalry, equal in other respects, charge each other in line of foragers, one armed with the pistol, the other with the carbine. In what degree would the pistol have the advantage? Let it be remembered that the men with the carbine would naturally shoot to the left front, and would, therefore, if these experiments have any value, have a large advantage over the pistol. Also, that they could reload more easily. Also, that the appearance at close quarters of the muzzle of a carbine is decidedly more formidable than that of the muzzle of a pistol. And, further, that the wound of the carbine is more deadly to man and beast.

The experiments may afford some matter for thought to those who favor the use of the pistol, when mounted, to the exclusion of all other weapons. As for me, I believe the great utility of cavalry lies in its readiness for any emergency. In my opinion, for each of these weapons, carbine, saber and pistol, there are emergencies for which it is best suited. The weight of the saber or the pistol is inconsiderable. It is not too much to ask of a soldier to be able to use effectively, mounted, all of these three weapons.

REVOLVER VERSUS SABER—REPORT OF THE
CAVALRY BOARD.

EXTRACT FROM MEMORANDUM REPORT (No. 26) OF THIRD
DIVISION, GENERAL STAFF.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF STAFF.

WASHINGTON, February 27, 1905.

* * * * *

"(c). The arming of each trooper in a selected regiment of cavalry with three or four revolvers and the careful training of the regiment in revolver firing, with a view to making a practical test of the expediency of substituting the revolver for the saber."

* * * * *

Official copy respectfully referred to the Cavalry Board, Fort Riley, Kansas, for report.

The question as stated is not, it is believed, sufficiently to the point.

The Board is not advised, as it should be, to assume the saber sharpened, effective as a cutting and pointing instrument, troops properly instructed in its use, conditions possible and expected to prevail; and under such assumptions the board should report whether or not the saber is of such little value as to justify its abandonment as an arm of the cavalry soldier.

(Sgd.) CHAFFEE,
*Lieutenant General,
Chief of Staff.*

With reference to the above recommendation of the Third Division, General Staff, the board is of the opinion:

1. That the practical test proposed can not be made in any way so as to be conclusive, except on the field of battle.

(a) While time lacks for citing authorities, it is known that many instances occurred during the Civil War when cavalry armed with pistols fought cavalry armed with the saber. The pistol was a revolver little inferior to the revolver of to-day for practical purposes, for it carried a heavier ball, and, while it was loaded with a paper cartridge, it is a well established fact that in the mêlée the pistol can seldom be reloaded, whether it fires metallic cartridges or not, and thus the advantage of the present ammunition is not so great as appears at first sight. The saber thus used was often not sharpened. While there may have been troops skilled in the use of the pistol on the one side, there were, apparently, few troops expert in the use of the saber, on the other. Under these circumstances, it would appear that, as a result of these combats, there was testimony claiming the superiority of the pistol, and there was testimony, equally strong, in favor of the saber. It is understood that there was no testimony of importance condemning the carrying of both arms on the ground that one was superfluous; and it is also understood that there were several instances where Confederate cavalry commanders asked that their troops, armed with the revolver, be given the saber in addition. As one of these instances, may be mentioned General Early, who, after his defeat in the valley, complained bitterly of the disadvantages he was under through not having his troops armed with the saber.

(b) The pistol, in a charge against cavalry, must be fired to the front. Practice in firing to the front at a gallop, which can be regarded in some degree as a test of this kind of firing, was had in the United States army during the years 1889 and 1890. See reports of target practice for those years, G. O. No. 1, A. G. O. 1890, and G. O. No. 1, A. G. O. 1891. This practice, briefly, was as follows:

Four silhouettes, representing infantrymen, were placed in line, five yards apart. An equal number of troopers, five yards apart, in line, moved toward the silhouettes at a gallop. The pistols were loaded with five cartridges. Firing commenced at eighty yards, and each trooper invariably reserved one cartridge for the moment when he reached the

target assigned to him, often placing the muzzle of the pistol against the target as he fired the last shot. This practice demonstrated the following facts:

In shooting to the front, the muzzle of the pistol being near the horse's ear, many horses were made gun-shy and intractable.

To prevent troopers from shooting each other, it was necessary that exact line be maintained during the advance. To accomplish this, the advance was usually made at a very slow gallop, approaching a canter. In spite of all precautions, men and horses were sometimes shot. To this fact, and to the injury to the temper of the horse, was partly due the discontinuance of this class of pistol practice.

In spite of the fact that the last shot was fired at saber-length distance, or less, the percentage of hits in the ten regiments of cavalry was: In 1889, only 13.01; in 1890, only 16.63. That is, in the whole number less than one out of every five shots hit the target, since a score of twenty per cent. would have represented an average hit of one out of five.

It is probable that in most cases the hit was the last shot fired; the shots fired in the advance, while at a distance from the target, being as a rule misses. It is also probable that had the troopers been armed with the saber and the advance made under the same conditions, against a similar line of targets, the percentage of hits would have been as great, for it is not likely the average trooper would have missed hitting the target as he passed it. In the case of the saber, probably the casualties to men and horses from accident would have been small.

(c) The board is of the opinion that, no matter how carefully trained in the use of the pistol a body of cavalry may be, an attempt to test the effectiveness of the pistol by charging at a line of targets under conditions such as obtain in war, riding in line, boot to boot, at full speed, firing to the front, would be useless and so dangerous to men and horses as to be impracticable. A horse at full speed proceeds by a series of tremendous leaps. From such a platform, accuracy is impossible. The horse is held in ranks with difficulty. In this state of excitement, a pistol fired close to his ear will

often cause him to bolt, carrying his rider in front of a line of charging men, firing without accuracy and at random. Casualties would, under these circumstances, be most difficult to avoid.

In a real attack in battle, these conditions are still worse. The least courageous men will fall to the rear, and it is these men who will probably be the first to fire. The most courageous men will urge their horses to the front, and run the risk of being hit in the back by the cowards. The officers will be unable to ride in front, and the element of leadership and the resulting control will be absent.

2. It is further the opinion of the board that, no matter how many pistols be carried, and no matter how carefully the men are trained in the use of the pistol, the saber should be carried as well.

It is believed that the principal occasions in which cavalry may attack are as follows:

(a) Against infantry, when routed or worthless. In such a case, the pistol may be used, though history recites occasions without number when terrible slaughter has been caused by the saber under such circumstances. In this case, if attack were made by using the pistol, the saber would come into use when the pistols were emptied.

(b) Against artillery. For this attack, ordinarily made as foragers, riding against the flank of a battery, the pistol is probably the most desirable weapon, but the saber would come into use as a reserve when the pistols were emptied, and also to hamstring the horses and cut the traces.

(c) In partisan warfare, in making sudden attacks on small towns, villages, etc., stampeding the inhabitants, local guards, and police, the pistol is useful. The saber would then be carried as a reserve weapon, to be used in case of a counter attack of cavalry.

(d) In riot duty. Experience in this country, and more especially abroad, has shown that usually the most effective way of handling a mob is by the use of cavalry. Infantry, pressed upon by a mob, is in a difficult position. The infantryman is in danger of having his rifle wrenched from his grasp. When the disorder becomes great and an attack is

imminent, the only recourse of infantry under these circumstances is to fire; killing the innocent as well as the guilty. The cavalryman, on the other hand, is raised by his horse above the crowd, which is afraid of being trampled upon. The streets can be cleared with ease by charging the mob, using the flat or the edge of the saber. In this country, where the danger of mob rule is increasing with the crowding of cities and the spread of anarchistic doctrines, the saber should be retained as a cavalry weapon if for no other reason than the above.

(e) Against cavalry. When cavalry fighting is limited to small bodies of troops, such as squads and platoons, one against the other, and does not take place in a confined space, such as a narrow road or lane, the tendency of cavalry is to make the charge with intervals or as foragers. Under such circumstances, the pistol is a very useful weapon, although the saber should be carried as a reserve, to be used in the *mêlée* when the pistol is emptied. But, in the case of a charge in a confined space, or of a charge over open ground of large bodies of cavalry against each other, where there is no room for deployment, the contest is usually decided by the shock of men riding boot to boot at full speed against each other. In the *mêlée* which follows this collision, the troops are more or less jammed up against each other, horse against horse. In this *mêlée* a pistol, discharged at an enemy, may easily kill a friend, and, in any case, the pistol is no match at arm's length for a sharp sword. The pistol may hit five times; it is then useless. The saber, on the other hand, can strike an infinity of blows, and, if sharp, its wounds are terrible. Such combat will be decided by the most determined men and the strongest horses, and by the most skillful use of the sharpest saber.

"The charge is the decisive and most important and characteristic cavalry movement." The advance of modern armies is covered by a screen of cavalry. When such armies approach each other, the rôle of cavalry is, to attempt to pierce and beat down the screen of the enemy. This leads to great cavalry combats, taking place far in advance of the main body of the army. These combats must be decided

largely by shock action. No cavalry, not in a strong position, will dare to fight dismounted an enemy superior enough to operate on its flanks. The use of the pistol is incompatible with shock action. Shots fired while the horse is in motion are wasted, and it is impossible to make men withhold their fire until the collision. Further, the instincts of men armed with the sword are, to close; of men armed with the pistol, to hold an enemy at a distance. A regiment armed exclusively with the pistol might well adopt the tactics of receiving the enemy's charge at a halt, since at a halt accuracy of fire is possible, were it not that all experience shows that to receive a charge at a halt is disastrous.

Cavalry is an arm which depends upon opportunity. The emergency may call for the use of the carbine, of the saber, of the pistol; for mounted action, or for dismounted action. The opportunities are fleeting. The best cavalry is that which is prepared for any emergency. The saber weighs but little. History shows that, if sharp, it is, at close quarters, a most formidable weapon. The rôle of the pistol and the rôle of the saber are different; one cannot displace the other. The cavalry that is without the saber will be unable to take advantage of all the opportunities of a war.

The board is of the opinion that much of the prejudice against the saber is due to the fact that the saber generally in the hands of our troops is so dull as to be little more than a steel club. This saber, if sharpened and kept keen as a razor, becomes at once a formidable arm, a blow from which is sufficient to place an enemy out of action. In the opinion of the board, the sharp saber as a cavalry weapon is valuable and should not be abandoned.

(Signed) E. S. GODFREY,

Colonel 9th Cavalry, President.

A TRUE COPY.

JOHN W. WILEN,

1st Lieut. and Sqdn. Adjt. 13th Cavalry, Recorder.

This report and the convictions of the board are concurred in by the Chief of Staff.

Approved:

CHAFFEE.

A PLEA FOR PISTOL PRACTICE.

BY FIRST LIEUTENANT F. G. TURNER, SIXTH CAVALRY.

CONGRESS appropriates yearly large amounts for the encouragement and furthering of proficiency in rifle firing, both in the regular service and in the organized militia of the several States and Territories.

This appropriation covers supplies and repairs in large amounts for rifle ranges, and the construction of butts, pits, and firing points, to say nothing of the ammunition expended.

The government undoubtedly should endeavor that each and every citizen, liable to military service in case of emergency, should have, at least, a fair working knowledge of how to use the military rifle, and incidentally, the general principles of trajectory, line of fire, danger space, safety zone and the various forces that act upon a bullet from the instant of expulsion from the chamber of the rifle until its flight is arrested.

As an encouragement to this end, the National and the various State governments have established certain figures of merit, or percentages of the score possible to be attained, and have classified them under these heads, i. e.: "Expert Rifleman," "Sharpshooter," and "Marksman," with the result that all in the military service strive harder to become proficient, and are better satisfied with their records when the necessary score to qualify is attained than if not classified under one of these heads.

This is as it should be; but what has been done toward the encouragement of proficiency, in the arm furnished to a cavalryman or a soldier in the field artillery? Many officers of experience advocate the abolition of the saber, claiming that it is obsolete and that the pistol answers every purpose for which the saber can be used. Some go to the extent of

recommending that two pistols be issued to each trooper. Be this as it may, the fact remains that a trooper is issued a pistol, the use and need of which has been clearly demonstrated in the fact that there were numerous encounters at close quarters in the Russo-Japanese War. In our own service the pistol is not given the prominence it properly deserves, nor is the course of firing as a rule entered into with the amount of interest that should be shown. How many troopers can tell the direction of the rifling in the pistol barrel, and what effect this twist has upon the flight of a bullet?

The establishing of certain grades of proficiency in pistol firing would greatly encourage a soldier to do his best under all circumstances, and make him strive to attain the highest score possible. If classifications were to be assigned to the various grades, the individual records would be improved in proportion to the zeal and interest brought to bear upon the men by the troop or battery commander.

Proficiency in rifle firing is divided into several classes; a like grading for pistol firing would bring about an improvement in the shooting with that arm as has been marked in that of the rifle.

The only encouragement now extended for good shooting with the pistol is that the best shot may represent his organization at the division competition, while the other men are not classified, and there is nothing to show whether the soldier's record was second or last in his troop, other than the retained record of the pistol report.

The National Guard of the State of New York and Connecticut award decorations for pistol firing under the following conditions: New York, marksman's class, fire at target "A" for officers and enlisted men armed with the pistol, without rest or support of any kind for the weapon or arm.

1st, at 25 yards, five shots, minimum qualifying score	18
2d, at 50 yards, five shots, minimum qualifying score	16
3d, at 75 yards, five shots, minimum qualifying score	15

Aggregate... 49

A score of 49, or 65 1/3 per cent. or more, as above, will constitute a marksman's qualification.

All qualifying as marksmen receive the State decoration, one bar of which has a figure indicating the number of years that the recipient has qualified.

The question of the decoration for the higher grades of excellence in practice has been discussed, but as yet no official action has been taken in the matter.

In addition to this, Squadron "A," N. G. N. Y., Major Bridgeman, commanding, awards a decoration for armory practice to those who qualify with both pistol and carbine.

The opportunity is not given in this State to conduct mounted practice.

In Connecticut, dismounted pistol firing is conducted as in the regular service, the kinds of fire, ranges, and targets being identical, with the following qualifications:

A score of 60 per cent. to 69 per cent. inclusive, qualifies as marksman; a score of 70 per cent. to 79 per cent. inclusive, qualifies as sharpshooter; a score of 80 per cent. or better qualifies as expert.

To those qualifying in any of the foregoing classes, the State decoration is awarded.

It is suggested that a similar decoration be awarded by the government to keep up interest and friendly rivalry, and as an encouragement to proficiency to those in the regular service armed with the pistol.

Certain percentages might be established for mounted and dismounted practice combined; for instance, 70 per cent. sharpshooter, 60 per cent. marksman, and all who fail to attain a record of 40 per cent. in the dismounted course should shoot again in a supplementary season.

Bronze decorations of different designs, one for each class, similar to those made of silver and now issued to all who qualify as sharpshooter or marksman in the rifle firing, slightly modified, so to read "pistol mounted" on the bar, is suggested.

The service is sufficiently familiar with the significance of these insignia, and the word sharpshooter or marksman might be omitted without in any way causing any conflict or ambiguity as to their meaning.

The awarding of these insignia to those qualifying in

these two classes, would be but a small cost to the government and the expenditure would be slight compared with the benefit derived in the proficiency attained.

The allowance of pistol ammunition for the season 1904, of 200 rounds per man, was increased to 400 rounds for the season 1905. This allowance was for mounted and dismounted practice combined. As a result of this increase the following improvement in the record of one troop under my supervision is of interest:

	1904.	1905.
Mounted	17.89 per cent.	49.17 per cent.
Dismounted	56.72 per cent.	70.82 per cent.

Therein showing that the expenditure of the extra amount of ammunition was justifiable, in that the shooting was materially improved. This increase is probably to be found in the majority of troops completing the course in 1905.

The Firing Regulations, 1906, prescribe the following number of rounds to be fired in the mounted and dismounted courses: Mounted, instruction and record, 115 rounds per man; dismounted, instruction and record, 105 rounds per man. It will be noted that the authorized firing will take 220 rounds, whereas, but 200 rounds are allowed.

To accomplish this, the mounted firing in the instruction practice at ten and fifteen yards, is left to the discretion of the troop commander. The record firing, mounted, is at ten and fifteen yards; the compulsory instruction course is at five yards.

As a parallel case why not give the instruction course for rifle at 200 yards only, and then require the record to be fired at 500 and 600 yards? The inadequate supply of ammunition develops these conditions; troop commanders rarely, if ever, put a trooper over the ten and fifteen yard course in instruction practice. To do so would run ahead of the allowance, and the officer would be called upon to make good the excess; furthermore, the poor shots require more instruction practice than those who have attained a fair degree of proficiency, and in consequence, must take more than the prescribed minimum number of scores at the range where their deficiency is most marked. There

is no allowance or provision for this, and it is a problem of doing the best one can under the circumstances, with the reduced allowance of 200 rounds of ammunition per man.

This last difficulty can hardly be remedied by drawing carbine ball ammunition for the empty shells turned into the Frankfort Arsenal, and changing them for pistol ball, yet this is the only resource to which troop commanders may turn, provided it is desired to give the men the full benefit of the instruction course over the ranges prescribed by regulations.

To maintain the best interest of the service, by attaining the greatest degree of proficiency possible with the arm issued, and as an incentive to such, the awarding of badges would be of inestimable value.

THE FEDERATED MALAY STATES.*

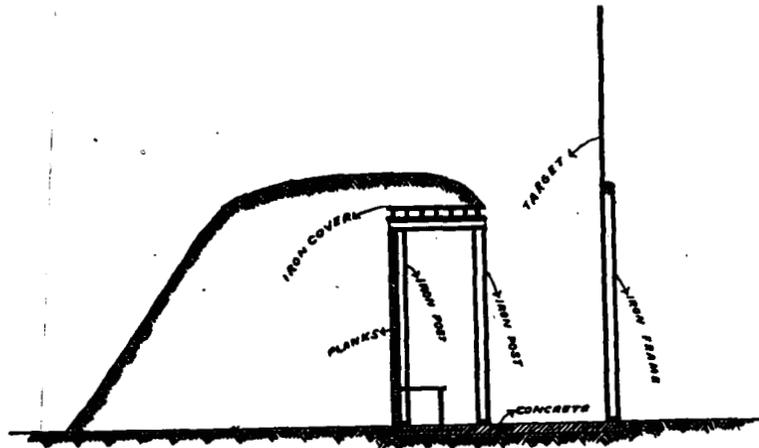
BY CAPTAIN GEORGE T. LANGHORNE, ELEVENTH CAVALRY,
A. D. C. TO MAJOR GENERAL WOOD.

THE military force of the Federated Malay States consists of a regiment called the Malay States Guides, to which is attached an artillery corps. It is composed almost entirely of Sikhs and Pathans. The latter are sometimes spoken of as Mohammedan Sikhs, and do not wear beards. Both Sikhs and Pathans are splendid looking men, and their profession is soldiering. They are very submissive to discipline, careful and proud of all the forms and ceremonies. They are said, however, to lack initiative, and although fight bravely when well led, still the moment they are deprived of their white leaders their value in a great measure is gone. The field and most of the company officers are those of lower grade from the British army. The lieutenant colonel commanding is a very energetic and active man, and one of great ability. The adjutant, Captain E. I. M. Barrett, of the Lancaster Fusiliers, is an especially energetic and capable officer. There are a number of native officers. The regiment is about a thousand strong, quartered as follows: Two companies at Kuala Lumpur, State of Selangor, and six companies and headquarters at Taiping, in the State of Perak. They are uniformed with the handsome turbans, and even their khaki uniform is striking. For dress occasions they have the British red coat. For the field their equipment is very simple. They use a khaki cloth haversack, which has the advantage of being cheap, and perhaps is durable enough for their service. They have for fatigue work a light blue flannel shirt without a collar and a handsome green turban. The British Resident of each of the four

*Extract from a report on Sarawak, Java and the Federated Malay States. The report was made from personal observation during a visit to these places.

native states has a guard furnished from this regiment, principally for display. The Sultan and many of the native chiefs are received with guards of honor whenever they visit the Resident or the state capital.

The target range at Taiping is one of the very best I have ever seen. The long distance firing is up to 1200 yards; the butts are against a mountain. This figure shows a cross section; the overhanging cover enables the space between the butt and the target to be small, thus preventing the loss of many good shots.



TARGET BUTT AT TAIPING, PERAK.

The targets were on an upright iron frame, and had vertical motion, working on chains over wheels at the top. These frames or stands permitted three sizes of targets to be used. The butt was floored with cement; the cover was upheld by iron posts and iron rails. Like everything else in the British and Dutch colonies, the targets and the butts were nicely painted or whitewashed. One of the main advantages of the range was that it approached service conditions, the jungle on either side, the rough ground, and shooting over a road which crosses the range at five hundred yards.

There were many disappearing targets very simply arranged, some on the open ground, some imitation men

behind breastworks or shelter, a gun with silhouette cannoneers, a track running across a portion of the range on which an imitation armored car with a gun and crew, offering fine moving target. Another target arrangement, representing a column of troops marching down a hill towards the shots, was suspended on a wire, and consisted of a number of groups of silhouette figures arranged as in a column of troops. There was a painted canvas on a frame, to represent the front of a house, with a window and a door which could be opened and shut presenting the figure of a soldier in the window and in the doorway. A very good simple moving target was the silhouette of a soldier creeping, with his gun carried about the knees. This was on a light frame about four feet square, and was carried on a pole like the signs which one sees carried about in the streets. A man carrying this moves up and down behind the butt. The target appearing above the latter makes a very good moving objective.

Captain Barrett and the soldiers were particularly good shots, especially those I saw, which were the best from each company practicing at competition targets for a match to be shot off in a few days between that garrison and the garrison at Singapore. Officers from each garrison were sent to the other to watch the firing of the competitors. The teams shot at the same hour on the appointed day at Taiping and Singapore, and the results were telegraphed. In addition to these matches they have regular competitions similar to ours.

In Singapore the troops are, a regiment of British infantry, one of Madras infantry (native soldiers from India), and artillery, both British and native. These serve a tour in Singapore of so many years. The armament of the coast defenses about Singapore is said to be very good. The artillery were doing some excellent shooting with rapid fire guns at a moving target at the western entrance as we passed on the steamer.

I dined with Captain Anderson, adjutant of the Madras regiment, and member of the Indian Staff Corps, at Alexandria Barracks, where they are to erect new permanent barracks for the native infantry.

The officers at present are living in nipa shacks about like the temporary shelters used by our officers in the Philippines. They have excellent lawns and many flowers about the houses.

He said that many of the natives of India were excellent shots, much better shots than the British soldiers as a rule, and for that reason there was a different course of instruction for the native and white troops, in order that the two could not be compared by the natives in favor of themselves.

To encourage interest among the European residents in the Malay States and the Straits settlements the government invites them to use the target ranges, to receive instruction from the military, and supplies them with an annual allowance of ammunition for use on the range, and the use of government service rifles.

In the English colonies in the tropics the army officers use a very simple, inexpensive and neat mess jacket, with the same collar and strap ornaments as are used on the khaki or white blouse. This custom enables one to dress for the evening in a cool dinner dress which answers every requirement in that warm climate.

The police of the Malay States is formed of Sikhs, Pathans and Malays. The Malays are perhaps not so trustworthy, but are said to have more brains than Sikhs, and they will often assume responsibilities and direct the Sikhs in emergencies when the Sikhs are waiting for orders, and are willing to obey anyone who will assume to give them orders. The system of constabulary and police for the Malay States, although the material is not the best, is creditable. They are used extensively in patrolling the roads. The police always look clean and soldierly.

There are small police stations all about the country. The court rooms, which are in simple, small, open buildings, are near the police stations. The latter are clean and well suited to the purpose. The magistrates, who are designated by the Resident, generally in addition to their other duties as district administrative officials, move about constantly and appear at generally fixed dates at the various places where

they hold court. In each police station there is a lockup for the temporary safe keeping of prisoners.

The uniform is khaki with canvas puttees.

The constabulary and police regulations are taken from the Indian government and adapted to use in the Malay States.

The so-called Kitchener helmet is an excellent head dress, both with khaki and white. For comfort and appearance it is the most attractive headgear I have seen in the tropics.

I noticed carefully many British soldiers dressed in their khaki. They were as a rule not so well set up nor as fine looking as our men, nor were their clothes of as natty a cut as those that our neatest men wear. But their helmets gave them a striking military appearance.

The same is true of the officers, both in white and khaki.

All of these native troops are comparatively inexpensive, and efforts are made to keep them so.

INDIVIDUAL TARGET COACHING CARDS.

BY CAPTAIN WM. T. LITTEBRANT, TWELFTH CAVALRY.

FREQUENTLY on the target range an officer is dumfounded at finding a soldier who has, in spite of his thorough preliminary instruction, completely forgotten how to adjust his carbine sight for elevation as well as for windage, or having fired, fails upon subsequent occasions to remember the adjustment.

The accompanying card is submitted, hoping that it may remedy some of the trials of the range, and promote better individual results.

Each carbine has its own individuality—different in different men's hands. A graphical record of the carbine that I had last season I found a valuable aid in my own shooting.

It is also a noted fact that ideas vary as to what 5, 10, 20, or 40 mile winds are, as well as their effects. This system concerns only effects. Where the winds are inconstant in intensity they must be mentally averaged; the system is simply a rough, though valuable method of joggling the memory.

Rarely does a man shoot his preliminary and record shots when the winds and the light are the same, and even if he did, he would find it difficult to recall the exact previous settings of the sight. The windage taken at all ranges is the same for one position of the range flags, hence, by keeping a record of the windage and elevations as indicated by the sight, the man will, in a few days, have a complete graphical record of the effects of certain winds as indicated by the flag, and certain lights as indicated by his record of them, to guide him in his shooting. He should keep his card by his side while shooting, frequently consult it, and

make his notes thereon under the proper flag, when he finds himself satisfied that he has the proper setting for wind, light and range.

The forms on the card, furthermore, contain information that will assist the fine shot probably more than the poor



Fig. I.

one. The card may be simply a half sheet of foolscap paper, and when not in use, kept on an ordinary bill file, and taken to the range with the other troop records.

Fig. 1. This represents the flag in the various positions that we see them on the range, numbered for convenience 1, 2, 3, 4, 5, 6, 7, 8 and 9. When the wind is of greater intensity than that just sufficient to extend the flags to the position occupied by flags Nos. 1 and 9, the shooter must estimate for himself, or learn by experience how much windage to take.



The diameter of the circle below the target represents, first, the horizontal projection of the target in vertical position; second, the vertical projection of the horizon. The circumference of the circle is used to indicate the position of the sun, and the character of the light.

To illustrate:

The circle in the first circumference indicates a bright sun, unobscured by clouds, at sunrise; the corresponding position at the other extremity of the diameter representing sunset; intermediate points on either circumference or diameter representing hours corresponding to the time of day that would find the sun in that position.

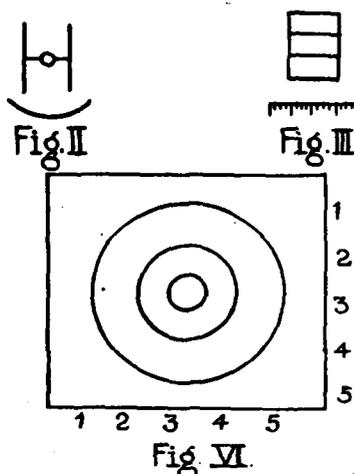
The second indicates a bright sun at noon. The position of the circle corresponds to the XII on the clock dial. With

reference to the plane of the target it is observed that the sun is behind its horizontal projection, hence, the sun shines on the back of the target.

The third indicates a sun overhead at noon (for the tropics).

The next indicates a bright sun unobscured by clouds, at 9 A. M.; the sun shining on the face of the target, hence represented as passing over the lower semi-circle, the middle point of which would represent noon.

The last indicates a cloudy day, about 3 P. M.



Sgt. Howxy.

This is a refinement that probably most men will not at first grasp, but it shows the possibilities. This record of time and sun should be connected with the record of elevation and windage, by a line or by an alphabetical reference, as shown on the individual range card submitted.

Figure 2. This form represents a sight-leaf on a carbine, and a windage-circle, and, when marked by pencil or ink on the range, as on the accompanying card, will plainly indicate the elevation and windage taken at the time, and under the conditions represented; it is especially valuable to record elevation. In my experience of seventeen years I have not

found one carbine that in shooting I adjusted according to the marked elevations on the sight; and this experience extends from sea-level at Batangas, P. I., to the ranges at Wingate and Bayard, N. M., over 5,000 feet elevation.

Figure 3. This represents the sight of the new weapon—being a blank form, the figures representing the ranges, and the center line indicating the windage taken, being inserted on the range by the man firing.

Figure 4. This contains empirical information, in the absence of the man's own. These figures are the result of my own shooting. Thus, I find that, when the wind is a little stronger than that indicated by the flag occupying the

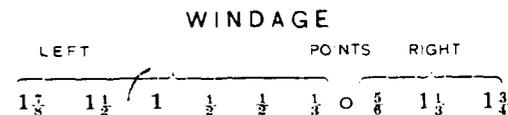


FIG. 4.

sixth position, I take no windage, either to the left or right. (See range card on page 63.) The next stage of wind from the right, shown by the flag (7), immediately caused me to take five-sixths of a point of windage to the right, whereas no wind at all as shown by flag (5), necessitated windage to the amount of one half point to the left. Likewise, a little more wind from the left, flag 4, necessitated no more windage; flag 3, however, caused a jump to one point.

A wind indicated by flag 6 would necessitate one-third point of windage to the left.

I observed on the range that the long flags supplied by the Ordnance Department, plainly indicated by the number of their folds, or the absence of them, decided difference in wind velocities. Those shown in the diagram are enough to note; they mark successive noticeable steps. The windage valuations are my own for one carbine. If they do not suit another person, he should cross them out, and substitute such others as he finds correct. In using this stamp care must be exercised to have the extreme bracket ends embrace

the outer flags; shifting it to the right or left makes the data incorrect.

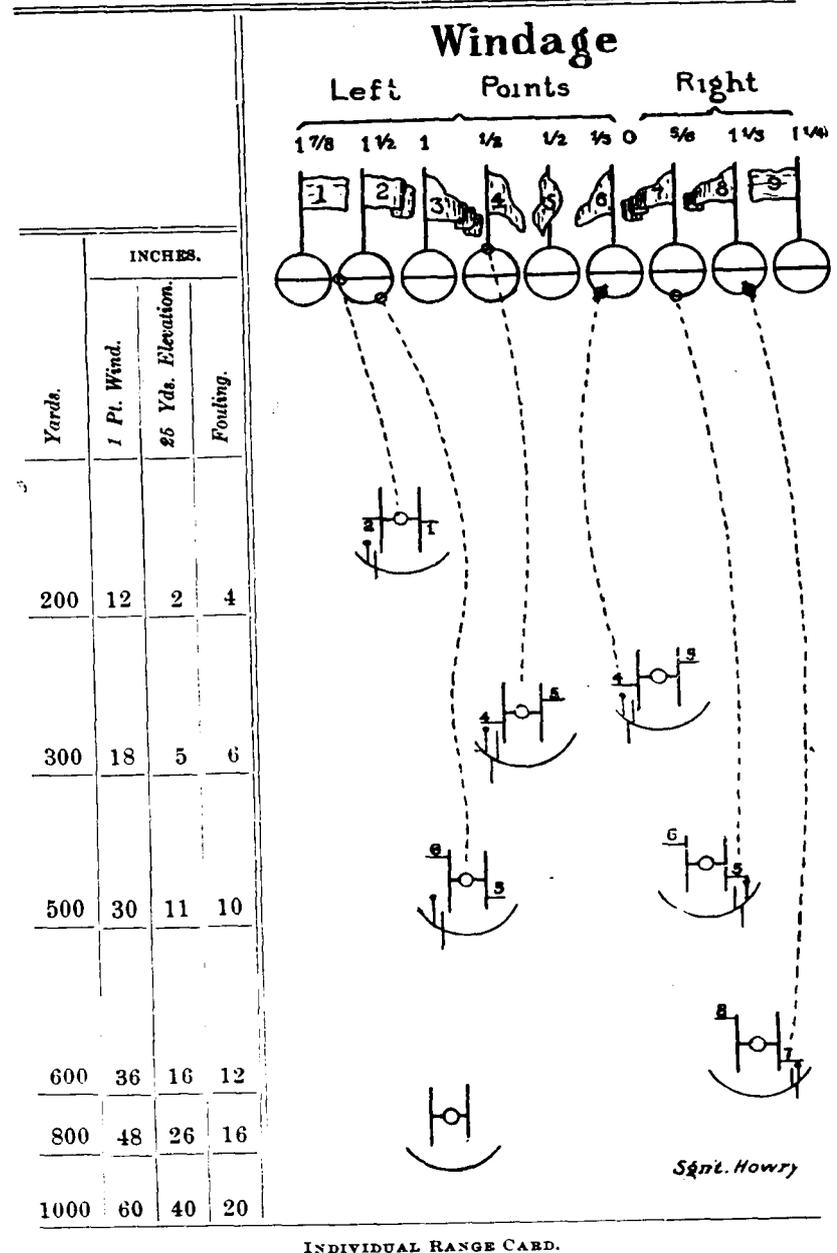
Figure 5. This contains the range indications and the value on the target of one point of windage, twenty-five

Yards.	INCHES.		
	1 Pt. Wind.	25 Yds. Elevation.	Fouling.
200	12	2	4
300	18	5	6
500	30	11	10
600	36	16	12
800	48	26	16
1000	60	40	20

FIG. 5.

yards elevation, and the allowance for fouling at the various ranges. These figures are taken from Lafin & Rand's table, and Lieutenant Mumma's pamphlet.

Figure 6. (See page 60.) This record should be kept on a separate pad by some one detailed to keep it. It should record accurately the location of the individual shots. Attention to this will prevent men sleeping and lounging on the range when there is a possibility of their learning something.



EFFORT—OPPORTUNITY.

By COLLIN H. BALL, FIRST LIEUTENANT FOURTH INFANTRY.

[Response to a toast at a banquet to Brigadier General J. Franklin Bell, Chief of Staff, given by the Service Schools at Fort Leavenworth, March 17, 1906.]

MR. TOASTMASTER, GENTLEMEN:—It goes as good philosophy, that given knowledge and native ability, success among men depends in great measure upon two important factors—effort and opportunity.

We all know that fame does not grow on a brier bush, nor do all things come to the man who waits. St. Peter's did not lift its own noble dome to overlook the Tiber and the Seven Hills of Rome in simple obedience to a dream-wand in the hand of Michael Angelo. The cities, the canals, the ships and mills—everything, to the hewing from a primal wilderness of the fairest, grandest country since man recorded time, is evidential of effort.

For Hannibal to cross the Alps, work; for Peter to build an empire, work; for the First Consul to weld a militant rabble into a splendid force and lead it into the vineyards of northern Italy and strike the blow that founded a dynasty, work. Work built this house; work built yonder city; work produced every railroad; work made the clothes we wear; work composed and sung every oratorio. "In the sweat of thy brow shalt thou eat bread," was uttered as a blessing and not a curse.

There is a road which leads from ambition to success, but it's not paved all the way. He who would eliminate time, distance, effort—who would violate the inimitable laws of compensation and take from the gods their treasures without a trial, had as well move to another world than this.

These be truths which apply alike to kings and men, and whether you are forging out the constitution for a State or preparing a restaurant bill of fare, in order to excel, you must burn the midnight oil and use your wits and ink.

With this then in mind let us remember that a state of individual preparedness for whatever we may be set to do, should be our aim, and then look out for opportunity.

Even before our species began to carve their cryptographic messages on stone, they understood the value of precept and example. The drawing of parallels has ever been a favorite method of education, and certainly we younger men can do no better than to reflect upon the career and position of our distinguished guest of to-night. To a thoughtful mind he represents a coördination of three things, possession of which precludes every possibility of failure—ambition, ability, energy.

This school is designed to prepare the able and energetic for high place, and I honor those who win. The head-hunter and the tenth-hunter are similar, the former being in quest of real, and the latter figurative gore. Their scramble, to an outsider like myself, is amusing and picturesque, and I feel like Pedro, who, on Sunday afternoon goes forth in starched *camisa* to applaud the cock that wins.

I knew a bright young man, who stood first in his class in college, and on graduation delivered a remarkable valedictory address. It was academic and precise. Jake Hammil said it was like the Platte River—three hundred miles long and three inches deep. But we expected great things of him. We fully believed he would lunch on earth and dine high among the stars. He did neither. He starved for a while, then developed a *penchant* for signing other people's names to things, and finally learned the lock-step.

This incident is not dragged in, my friends, to prove that all stars go wrong, for they don't, but to illustrate the well-known fact, that you can never succeed on knowledge alone, but must climb, and do it in the right way. The moon nor any considerable part of the solar system is to be had on bogus paper.

I recall to-night a noted general, who stood high upon a peace-pedestal of fame. He had translated Jomini's Napoleon, and he rode that book during nearly four years of a great war, but it went down under him at last, and he was passed over by a serious, tireless soldier, who, standing on the field at Appomattox, wrote his name on the scroll of immortality.

So when you have learned all there is to know, take example from our guest, and upon a solid foundation build a superstructure that will endure by keeping busy throughout your career. And to one thing ever be alert—opportunity, a jewel of great price, frequently lying around and usually overlooked. Valuable indeed is that remarkable sonnet, rich in philosophy and of tuneful muse, born in the mind of a distinguished Kansan, who, a few years ago, said of opportunity,

"Master of human destinies am I!
Fame, love and fortune on my footsteps wait.
Cities and fields I walk: I penetrate
Desert and seas remote, and passing by
Hovel and mart and palace, soon or late
I knock unbidden once at every gate!
If sleeping, wake: if feasting, rise before
I turn away. It is the hour of fate.
And they who follow me reach every state
Mortals desire, and conquer every foe
Save death; but those who doubt or hesitate
Condemned to failure, penury and woe,
Seek me in vain and uselessly implore.
I answer not, and I return no more."

REGULATIONS FOR PACK TRAINS AND PACKING, U. S. ARMY.*

PULLMAN PACK OUTFIT AND HOW TO USE IT.

"THE Pullman Pack Saddle and Panniers" (Plates 1 and 2) is designed to use with the aparejo, of which it becomes a part, without in any way displacing the aparejo and its usefulness as the safest and best method ever devised

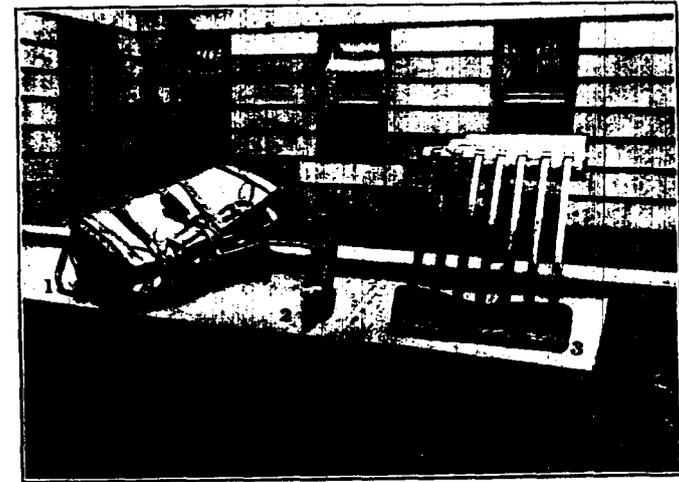


PLATE I.

1. Panniers folded for shipment.
2. Pack-saddle folded for shipment.
3. Daly's frame and ribbing for aparejo front.

for protecting the pack animal's body from the wear and tear of heavy load.

*This article is a reprint from the Regulations for Pack Trains and Packing, Quartermaster General's Office. (Chapter I.)

In order to awaken interest in a subject so fraught with importance to the cavalry as packing, the JOURNAL reprints this here. It is followed by an article

The Pullman Pack Saddle and Panniers, as connected with the aparejo, does away with all ropes, lair, sling, lash and cargo, and the diamond hitch method of fastening the pack to the aparejo; with all canvas heretofore used, lair, pack and cargo covers; and reduces to a minimum, if not entirely, the necessity for employment of the experienced and skilled packer.

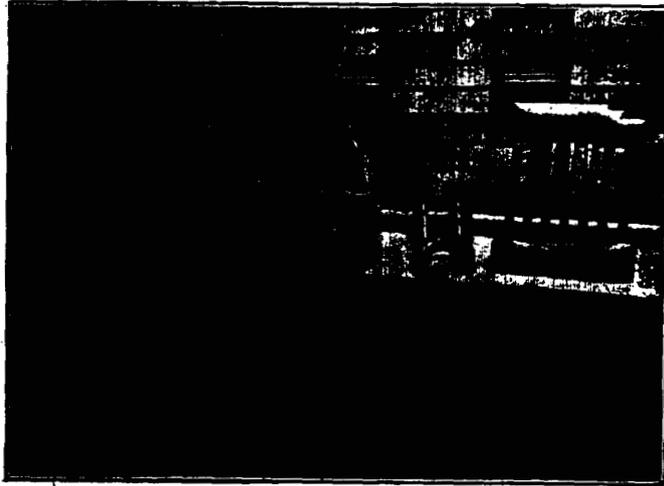


PLATE 2.

1. Panniers open.
2. Pack-saddle open.
3. Daly's ribbing for aparejo, back.

This pack outfit can be handled quickly, efficiently, and on observation by the ordinary laborer or soldier.

The panniers, when loaded and hung on the saddle and cinched, become a fixed part of the aparejo, and cannot move or get out of balance or come off unless the aparejo cinch breaks and the aparejo comes off.

upon the same subject by Mr. W. H. Daly, Chief Packer, U. S. Army. Our officers will be glad to read anything that Mr. Daly has to say about a subject upon which he is the recognized expert of the army. The JOURNAL expects later to give its readers some of the experiences of Mr. Daly during his forty years' service with the army. But at present we wish to call the attention of officers to the subject of packing. Are we ready to do away with the expert

They are weather and water proof, and preserve intact, without danger of loss by breakage of cargo packages, contents of the panniers.

The panniers are planned standard sizes, and will hold the standard sizes of all packages—bags, boxes, chests, bales or crates—of the ordinary field supplies of all departments, — Quartermaster, Commissary, Medical and Ordnance.



PLATE 3.
Panniers Loaded and Covers Fastened.

In case it becomes necessary on any odd occasion to pack packages of an extraordinary character and unusual odd sizes, the aparejo is still there intact, and can be utilized as heretofore, and in order to provide for such contingency, every eighth pair of panniers in a pack train will be equipped with and carry habitually one lash rope in the nigh pannier, and one sling rope in the off pannier, to be used when required.

packer? The JOURNAL most emphatically says No; but we shall be glad to hear other opinions and give them the space they deserve.

We trust the entire subject may be seriously considered by our officers and that valuable suggestions may be made. We print an excellent order from the Philippine Division upon this matter.

The JOURNAL is under obligations to the Quartermaster General's Office and to Colonel John W. Pullman for the use of the plates which illustrate this first article.

TO USE THE PULLMAN SADDLE AND PANNIERS.

1. The cargo or articles to be packed being at the depot, camp, or place of departure of the pack train, will be carefully assorted by the packmaster and his men, and prepared in pairs of equal weight packages, and as near as may be of the same articles or class of supplies—one pack for the near side pannier and the other pack for the off side pannier.

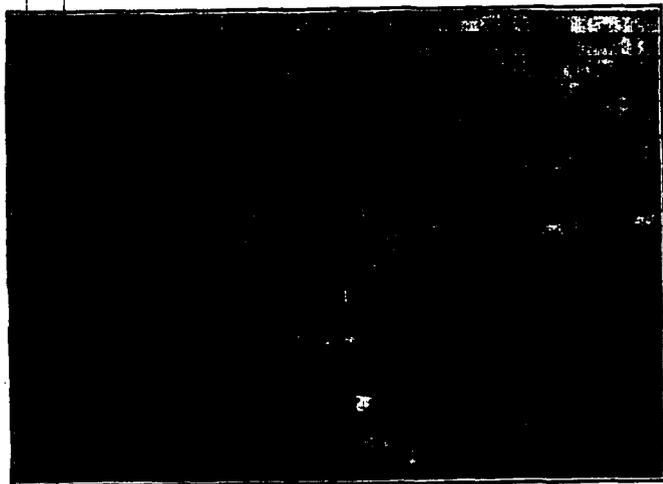


PLATE 4.
Pullman Pack-saddle in Place.

2. The panniers are all numbered in pairs, in plain numerals, stamped on the exposed side in black figures, from the number 1 and so on, 2, 3, 4, 5,—up to any number of panniers fabricated and issued.

3. The packmaster will see that the cargo to go into each pair of panniers is secure and in good condition, and as near one hundred pounds in each pannier as he can conveniently arrange, giving to each mule two side packs of about 100 pounds each, or a load of about 200 pounds to each mule, which is considered a heavy enough load for military packing and for animals which it is desired to keep well, free from

sore backs, and capable of keeping up in long marches with the cavalry horse and his rider.

4. After the cargo is assorted, as above, and arranged into pairs of packs of as equal weight and nature of stores as may be, the packs will be placed in the panniers, pair by pair, and covers securely fastened (Plate 3).

5. The packmaster will, during the process of packing the panniers, take a list, in a proper memorandum book pro-



PLATE 5.
Putting on the Off Pannier.

vided for that purpose, of the number of each pannier and pair of panniers and the contents of each, thus:

No. 27 and 28—Flour.

No. 17 and 18—Oats.

No. 45—Horseshoes. No. 46—Horseshoe nails; etc., etc. This list will be made in duplicate and one copy furnished the quartermaster of the command, and the other retained by the packmaster; the object being that at all times, any special class of stores, or any article from the cargo being needed, the proper pannier can be at once identified by its number and its contents obtained, without searching the whole cargo.

6. The cargo being thus all prepared for shipment, the panniers will be placed in pairs in a row, ready for loading on the animals.

7. The aparejos having been assigned and fitted to each animal by the packmaster, the Pullman saddle will be placed on top of the aparejo and fastened to it by buckling down the rear and front hold back straps (Plate 4). The aparejos are placed on the mules as usual, and the aparejo cinch is



PLATE 6.
Putting on the Nigh Pannier.

passed over the aparejo and saddle and tightly cinched (Plate 4). The saddle thus becomes a rigid part of the aparejo, but the hinge renders it flexible, giving with the swaying of the animal's body or of the loaded panniers.

8. To pack the mules, the off packer picks up the off pannier of the pair of loaded panniers assigned to the mule being loaded (the pannier having the cinch affixed to it), and places it well up on the mule's back, top up and back side of the pannier against the saddle. The nigh packer quickly slips the slots of this pannier over the nigh side hooks of the saddle and presses the pannier flap securely down (Plate 5).

9. The nigh packer then picks up the nigh pack (the pannier having the latigo cinch strap affixed to it) and places it in a similar manner on the saddle, nigh side, the off packer at the same time slipping the slots of the pannier flap over the off side hooks of the saddle.

Both packers then settle the panniers securely down and against the aparejo, balancing them evenly by a little pull and sifting motion with both hands (Plate 6).

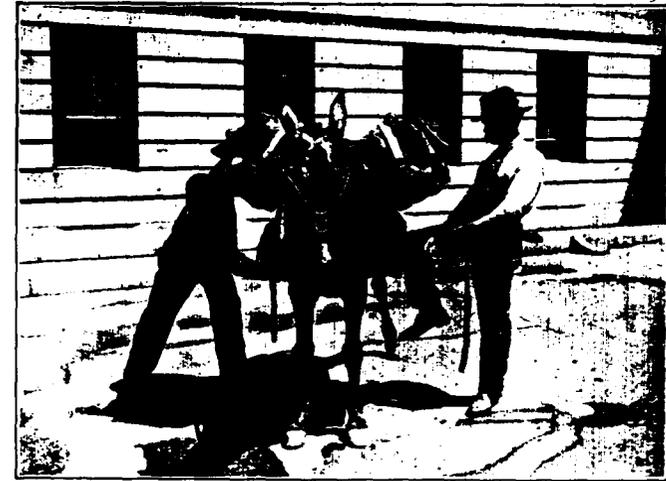


PLATE 7.
Cinching the Loaded Panniers.

10. The off packer passes the pannier cinch under the mule's belly toward the nigh packer, who seizes it, slips the latigo strap through the cinch ring, and cinches securely (Plate 7).

11. The blind is then taken off, head halter strap secured, and the animal turned loose (Plates 8 and 9).

12. In arranging cargo, odd sized or shaped packages which rain will not injure, such as long handled shovels, axes, crowbars, large bales of hay, etc., can be placed in the panniers and the ends allowed to stick out to the rear, front or upwards, as may be convenient, and the pannier covers

left open, or only partly buckled down, as may be practicable.

13. *For Foraging.*—The outfits will be found very useful, as any articles of food or provisions, such as loose or shelled grain, vegetables, meats, etc., can be stowed loosely in the panniers and conveyed safely to camp.

14. *For Supplying Ammunition to Firing Line.*—The empty panniers can be filled at the ammunition supply train with

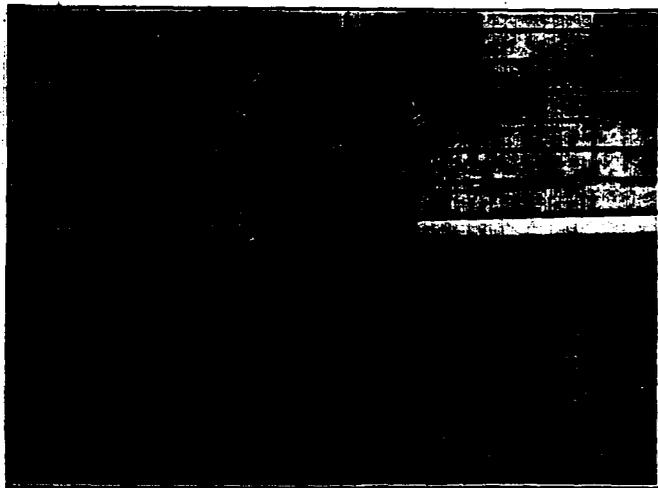


PLATE 8.
Rear View of Animal Packed.

loose packages of small arms ammunition, and each animal so loaded can be led and trotted along and supply passed out to the men on the line, no matter what kind of terrain they are operating in.

15. Under emergency, pack mules and aparejo are not necessary for this service. The horses of a cavalry troop can be utilized. The odd numbers dismount, unsaddle, remove their saddles, and cinchas with latigos, cinch the Pullman Pack Saddle to the horse on top of the saddle blanket with the saddle cinch and hang on the loaded panniers. The even numbered troopers then lead the loaded horses along the firing line and deliver the supply. In the same

manner, and under emergency, draft animals can be unhitched from wagons, artillery horses not in action from their carriages, and similarly utilized for this temporary service.

To provide for such contingency, a limited supply in number of the saddles and panniers with aparejo cinch might be carried along with and in the wagon train, one or two to each regimental train, and with the reserve ammunition wagon of each battery.



PLATE 9.
Front View of Animal Packed.

PACK TRANSPORTATION.*

BY H. W. DALY, CHIEF PACKER, U. S. ARMY.

PRIMITIVE man, in seeking a mode of transportation beyond that of the personal burthen, naturally brought to his aid the most docile and tractable of the animal kingdom, as nature provided by environment. The elephant, camel, llama, ox, horse, mule, burro, reindeer and dog, all have paid tribute to relieve him. As a sequence, pack saddles of various design, suitable to the conformation of the animal employed, necessarily followed.

History records that Isabella of Spain, in 1486, for the conquest of Granada (expulsion of the Moors) organized, equipped and maintained pack trains aggregating sixty thousand mules and burros. These carried supplies and munitions of war for her army of forty thousand infantry and twelve thousand cavalry.

In Mexico, on the road from Vera Cruz to the City of Mexico, a stone paved road (*calzada*) laid out by Cortez, and nearly three hundred miles long, I have seen, before the advent of the railroad in 1873, pack trains loaded with coffee, sugar and spices. These packs were made up to weigh from one hundred to one hundred and twenty-five pounds each, and were wrapped in coarse matting, made from the fiber of the *agave* and other indigenous plants. One peculiarity of the sugar, it was always in loaf form, of a color one may term a dirty white, and hard as adamant, but withal full of saccharine matter, and very pleasant to the taste. Silver was also carried from the mines (in brick form) of Zacatecas, Guadalajara, Guanajuato, etc., to the ports, to be shipped to

*The JOURNAL is indebted to the United States Military Academy Press for the first eleven figures in this article.

Spain. Rates for freighting, ranging from thirty to seventy-five cents per ton per mile, or for the service of the animal for the trip from eighteen to twenty-five dollars, compared favorably with the rates charged after the discovery of gold in California when pack trains, controlled by Americans,

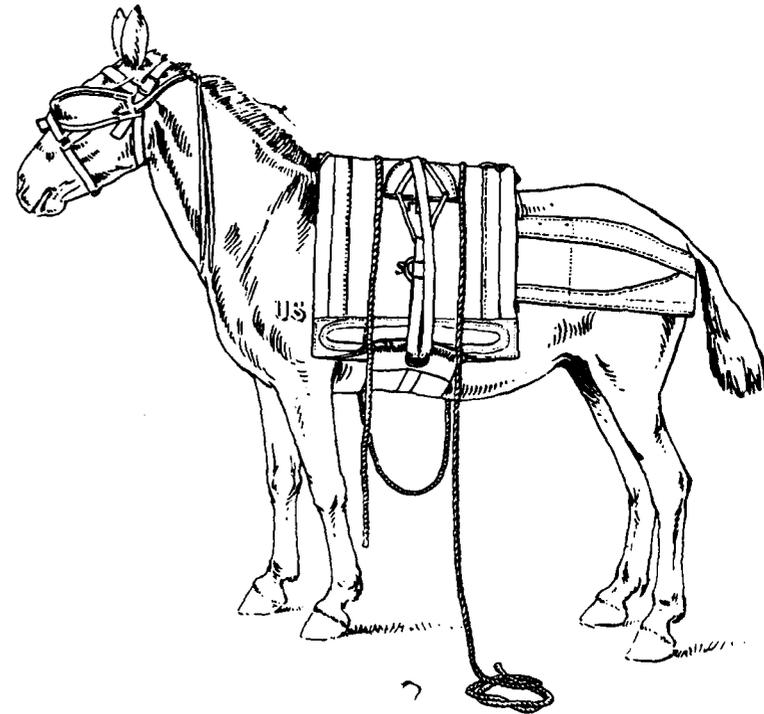


FIGURE 1.

The sling rope in position on the aparejo, ready to receive side packs or load.

dotted the hills, carrying provisions, furniture, mining supplies, etc., to the mining towns in Oregon, Washington, Idaho, Nevada, Montana, and California.

In the early fifties and sixties on the trail from the Dalles to Umatilla Landing, Walla-Walla, Lewiston, Kootenay, Salmon River, Frazer River, etc., could be heard from hill to hill the tinkle of the pack train "bell wether," that in-

dispensable factotum in guiding the unwary and oftentimes fractious shave tail into proper observance and method of keeping position in due form when climbing a mountain side, or passing points of danger. The "bell" was ordinarily a sheep bell attached by a strap to the neck of the horse. The latter is termed the "bell horse," and is alluded to as "the bell," in such expressions as "get the bell," "lead the bell," "stop the bell," "call the bell." A peculiarity of the animal—mule—is evidenced by its fondness for the horse, and it will fight for position nearest him; in this sense no mule following is allowed to take position ahead, unless lack of endurance from a long day's travel causes some to lag to rear. Mules showing fondness for the bell (horse) are alluded to as "bell sharps."

The whistle of the "arrieros" (packers) to their pets encourages them in their climb on the mountain side, and the relative merits of their mules they discuss in friendly rivalry when squatted round the camp fire. The packers will spend odd hours of loving toil upon the grupera and corona, (crupper and saddle cloth) working in the representation of some animal, bird, or insignia, in silken threads of various hues. In government service this custom obtained prior to the Spanish-American War, 1898.

On the discovery of gold in California, the adaptability of the pack mule for carrying supplies into the mining camps not accessible by wagons, was readily recognized by the Americans. The mule and his aparejo were in constant demand, and the organization and employment of pack trains became a source of profit to many individuals.

The service rendered by civilian pack trains employed by General George Crook in the latter sixties in operations against the hostile Shoshones and Bannocks in Nevada and Idaho, led to the purchase of these trains by our government. From that time pack trains were used by officers of our army, such as Generals Crook, McKenzie, Howard, Terry, Gibson, Custer and Miles, in the subjugation of the hostile tribes, notably the warlike Sioux, Cheyenne, Nez Percé and Arapahoes in the Northwest, the fleet and vindictive Kiowa and Comanche through the Middle West, and last but

not least, the wily, slippery and bloodthirsty Apache tribes overrunning Arizona, New Mexico and Texas.

Through all the arduous field service necessitated by campaigns against these various tribes, the pack mule has borne his part, and now may be regarded as thoroughly identified with our army as an important means of transportation. Years of hard experience have made known the capacities of the mule, and have developed by a gradual evolution a greatly improved form of aparejo or pack saddle, and an ex-

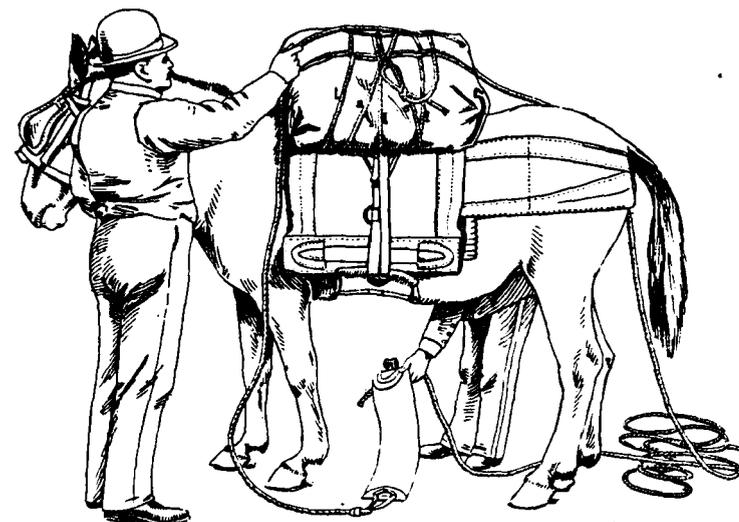


FIGURE 2.

The right hand holding lash rope near the top of load, the free or running portion between the packs and on off side of animal's haunch.

peditious and satisfactory method of attaching the load to the aparejo. A brief description of the two pack saddles most in use with civilized men herein follows.

PACK SADDLES.

1st. The aparejo; 2d. The cross-tree or saw-buck.

Of these two it is hard to determine which holds priority in respect to antiquity. The former is from Arabia and the Ganges, the latter from western Europe and British Isles.

The aparejo was introduced into Spain by the Moors on the conquest of that country in the eighth century, and the Spaniards under Pizarro and Cortez carried it into South America and Mexico.

Roughly speaking the aparejo consists of two rectangular pieces of heavy leather, sixty inches long and twenty-four inches wide, sewed together along the edges and across the

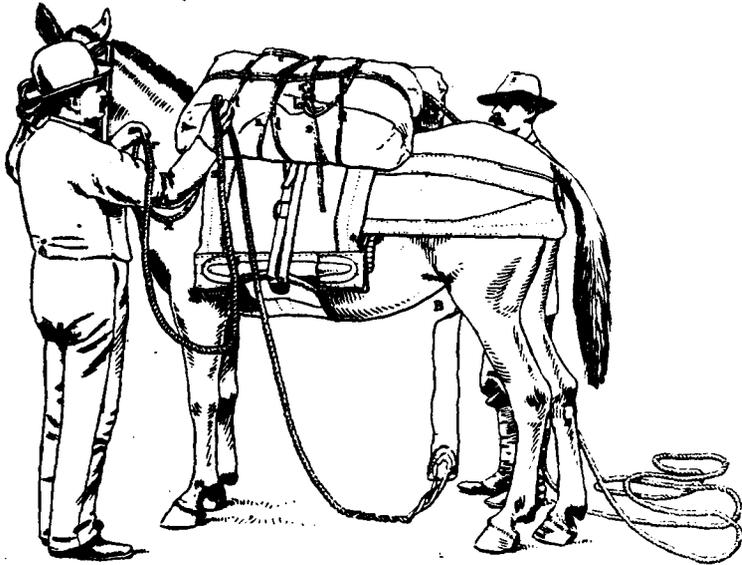


FIGURE 3.

The near packer holding the standing rope in the right hand, the running rope in the left, the loop of rope hanging downward on the outside of the right arm ready to throw the standing rope over the center of the load to the off packer.

middle. Two pouches are thus formed, into which hay or other similar material is stuffed so as to form pads, fitting the contour of the animal's body on either side of the animal's backbone. A broad crupper twelve inches wide and seventy inches long, cut in at the middle to form a "dock" to fit under the animal's tail, is supplied to keep the aparejo in position on the animal's body. A canvas cover is placed over the body of the aparejo to protect the leather from wear

and tear and the inclemency of the weather, and a broad canvas chincha, employed to cinch the aparejo on the pack animal with its accompanying saddle pad, form the makeup of the aparejo proper.

This brief description would not be complete without adding the essentials necessary for carrying commercial packages, etc. They are (1) The lash rope; (2) The sling

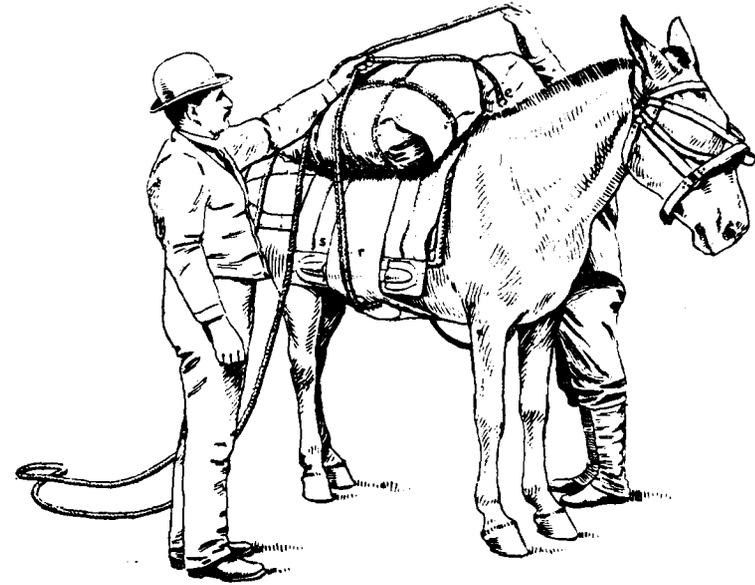


FIGURE 4.

The near packer assisting the off packer to bring the running rope to the center of the load, the off packer holding the end of rope under the running rope, the end of the rope partly over the animal's neck.

rope; (3) The lair rope; (4) The pack cover. The covers are used to protect such packages as may need it from inclemencies of the weather, the lair rope to securely wrap cover around packages forming a pack, or "side" pack, the sling rope to connect two or more packs forming a load for one pack mule, the lash rope for securely lashing the load to the aparejo. Such was the form of pack saddle and method of

carrying supplies employed by the Mexicans, as observed by the Americans on the discovery of gold in California.

2d. The cross tree or saw-buck.

This form of pack-saddle consists of two saddle bars, connected at front and rear by cross pieces shaped like the letter X, supplied with a breast strap, breeching and quarter straps, holding cincha and latigo or strap for cinching, accompanied by a saddle pad or blanket.

The essentials necessary for carrying supplies, are similar to aparejo, with the exception of slinging the packs forming a load, as also the method of lashing.

In slinging the packs, two half hitches are formed on the front prongs with the sling rope, the free end of rope on each side is placed over a prong at rear, the packs are lifted to position and the free end is brought under pack at center on each side, then up towards center of packs, and tied. The load is lashed by what is known as the "cross tree" hitch, and where this is not known, as among cattle men (cowboys) the "stirrup" hitch is employed, they oftentimes using an ordinary saddle for such purpose. This form of saddle (cross-tree) being devoid of pads to protect the animal's sides, prohibits its use for carrying box loads and unwieldy supplies. It is used rather by the individual miner or prospector, whose wants are few, consisting of his grubstake and mining tools.

In Europe and the British Isles, wicker baskets, open at the top and constructed so as to fit over the prongs of the saddle, are made, into which marketable supplies are packed. As the Missouri mule is practically unknown, the donkey takes his place, and it is not unusual for the baskets to be unevenly loaded; in such cases a billet of wood or mayhap a few stones are thrown in to equalize the load. I have seen a sack of wheat taken to the mill, with a large stone placed in the opposite basket to equalize the load, as also a live pig on one side (taken to market) and a live goat in the other, each animal being hobbled to prevent their jumping out, with a bunch of live chickens tied by the legs thrown in with the goat to equalize the load. A night serenade by Tomcats could not equal it.

In Cuba and Mexico I have seen "pouches" made of matting, placed over the aparejo, into which dressed pigs and goats were piled and taken to market. In both countries the mule is of small stature, and when loaded with grasses for the market the animal is completely hid by its load of grass. Eight or ten animals are tied head and tail, and thus driven to market by one or two individuals, and as oftentimes happens with the individual mounted on top of the load.

For the military service, however, where the pack animal may be called upon to perform long and arduous marches, to carry heavy loads and keep the road day after day, something more has been found requisite, and a gradual evolution has developed the aparejo now in use in our service.

An improvement in the quality of material used and in the details of construction, has been made. The principal improvement, however, lies in "ribbing-up" the aparejo, as it is termed. For this purpose two "boot" bars are introduced inside of the aparejo at ends or boots. Two "saddle" bars are likewise introduced inside and at top conforming to the "collar," as shaped in the aparejo; on each bar slots are provided to receive "ribs" of wood to give the aparejo stiffness to hold up a load, the ribs being tapered to give conformation to the body of the animal. The surface of the aparejo that rests on the animal's body is stuffed with suitable hay in such manner as learned by the expert packer. The boot and saddle bars are strapped so as not to cause bearing on the body of the animal, their purpose being to keep the aparejo in proper shape and avoid the necessity of the constant "setting or ribbing up" of the aparejo, as is obtained by the old method of willow sticks. See Daly's Manual of Instruction in Pack Transportation, published by the West Point Military Press for the use of cadets, 1901.

Hitches In Use In Pack Train Service.

- 1st. The diamond hitch.
- 2d. The double diamond.
- 3d. The Oregon diamond.

- 4th. The double hitch.
- 5th. The squaw hitch.

With the Cross-tree or Saw-buck.

- 6th. The cross tree hitch.
- 7th. The stirrup hitch.

The latter two are known in Europe and the British Isles and Canada, and I may add in Cuba and Mexico.

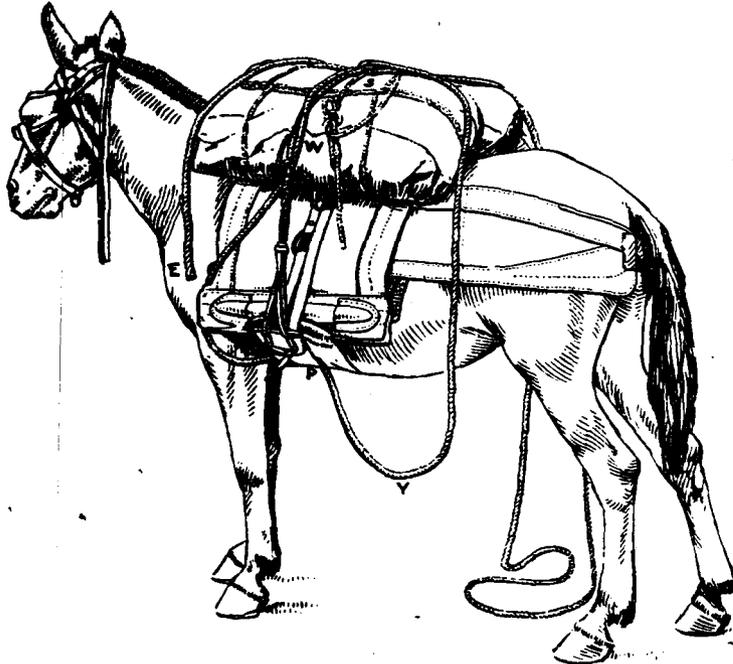


FIGURE 5.

Showing formation of the hitch ready to tighten. Near side.

The Sling Rope.

For slinging certain loads we employ:

- 1st. The single sling.
- 2d. The double sling.
- 3d. The cross sling.
- 4th. The double cross sling.

With the cross-tree we employ the half-hitch sling.

The Lair Rope and Pack Cover.

This rope is employed to wrap such packages as may deteriorate by exposure to rain and dampness. Certain defined methods of lairing packages are employed to hold the pack cover securely around a package or packages, forming a pack, termed, in the nomenclature of packing, a "side pack," that is, that portion of the load carried on one side of the aparejo.

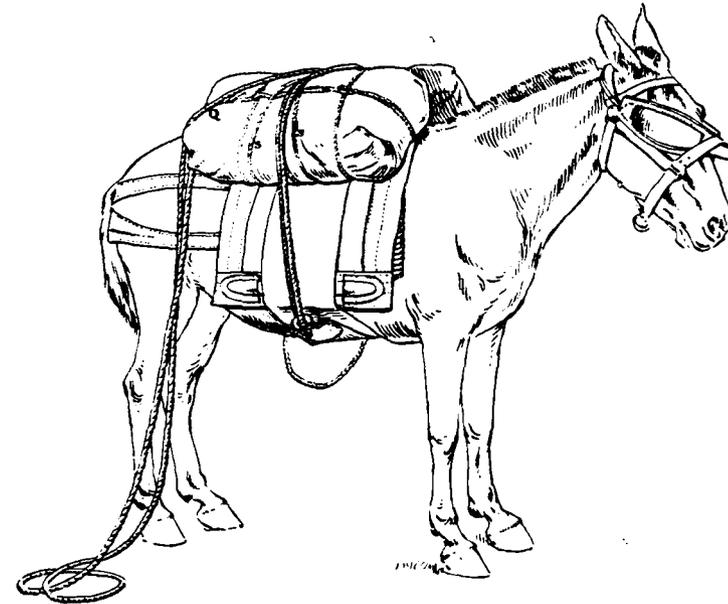


FIGURE 6.

Showing formation of the hitch ready to tighten. Off side.

A description of the "diamond hitch" may not be amiss. Ordinarily speaking, the sling rope forms a "hold fast" for two side packs on the aparejo, prior to securing the load by the "lash rope."

In the formation of the diamond hitch and tightening of the load, two packers are employed. One, termed the "near packer," stands on the "near" side of the animal looking toward rear; his mate, termed the "off packer," stands on

the "off" side facing towards front. The sling rope being in position on the aparejo ready to receive the side packs or load (see Figure 1) and the "square knot" tied thereon at center of load (Figure 2), the "near packer" throws the end of the lash rope in rear of the animal and the cincha portion under the animal's belly convenient to



FIGURE 7.

Position of near and off packer in receiving and giving slack.

the off packer, who picks them up and holds them in the left hand as indicated in Figure 2 and stands erect.

The near packer now picks up the rope about five or six feet from cincha, with both hands, the right forward of the left, holding about two feet of rope between the hands, and stands forward from the load close by the animal's neck with both hands extended downward; he now draws the right hand backward to give impetus to the motion, and with one motion he swings the rope forward and upward to the center of the load, clearing the animal's haunch in the action,

allowing the rope held by the left hand to drop. (See Figure 2.) Now holding on to the rope held in the right hand, he draws on the running portion between the packs, bringing the right hand down by the side, arm's length, and reaches up with the left hand and grips the rope, so as to have the

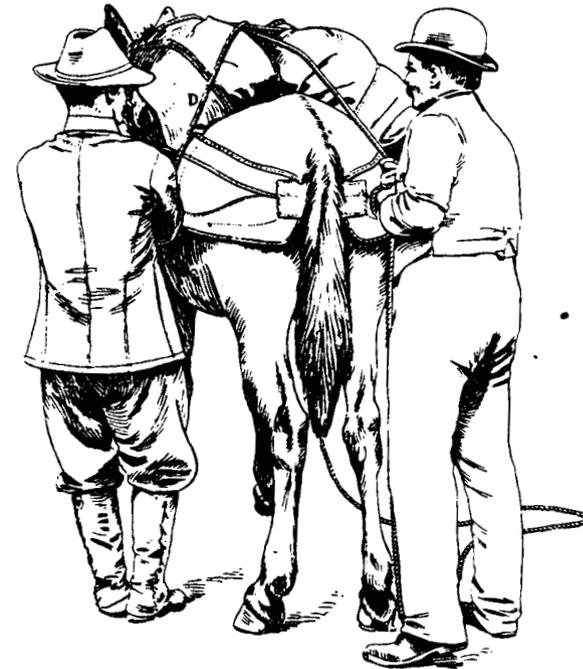


FIGURE 8.

The near and off packer in position ready to give and receive slack.

back of the hand upward. This brings the thumb under the rope (do not get the fingers under); he then draws on the running portion between the packs in similar manner as done by the right hand, bringing the left hand down by the side, arm's length; do not let go of the rope held in each hand. Now with an outward and circular motion, bring the left hand holding the rope to the elbow of the right; this leaves the rope or loop on the outside of the right arm, and raise both hands to the position as seen in Figure 3. Next, bring

the right hand to the center of the pack, and with one motion, both hands assisting, throw the "standing" rope held in the right hand over the center of the load to the off packer, the "running" rope held in the left hand over the mule's neck. (In this action the back of the left hand rests on the mule's neck.)

(*Note.* The separating of the standing from the running rope is done purposely, to avoid confusing the off packer; both ropes should never be thrown together. Further, when throwing the standing rope over the load, *do not* give the rope a wild outward and circular swing, else the standing portion below the hand will become engaged around the rear corner of the aparejo, and cause delay, with perhaps a strenuous expression from the off packer.)

Now draw sufficient slack on the running portion between the packs, about six or more feet, and throw this rope to the rear of the *near* pack allowing the rope to go free from the hands (this rope now becomes the "rear rope"). Next take hold of the running rope on the mule's neck, the left hand forward of the right, and with the assistance of the off packer, bring this running rope to the center of the load (*see Figure 4*) by the side of the standing rope; the right hand now slips down the rope to a point about midway between the pack and end of aparejo, termed the "boot," and passing the left hand *between* the standing rope and the aparejo, grip the running rope above the right hand, now both hands slipping down the rope and parting from each other, on each side of the standing rope, holding the rope in a horizontal position, with a space of about six inches between each hand; jam this portion down between the two cinchas under the aparejo, and the hitch is "*formed*" on the *near* side ready to tighten. (See Figure 5.)

To avoid confusion, I have explained the formation of the hitch, by the *near* packer, in the first instance, as is customary in the practice of instruction. Now, we will take up that portion in the formation of the hitch devolving on the *off* packer.

The *off* packer, having picked up the end of the rope and hitch (*see Figure 2*), stands erect and waits for the standing

rope to be thrown over the center of the load (*see Figure 2*.) As the rope comes over, he grips the rope as high as the arm will conveniently reach, and immediately places the cinch hook in position under the aparejo, about six or eight inches, and draws down the slack on the standing rope by one or two quick pulls, and lowering the hook, so as to be convenient, he engages the standing rope onto the hook,

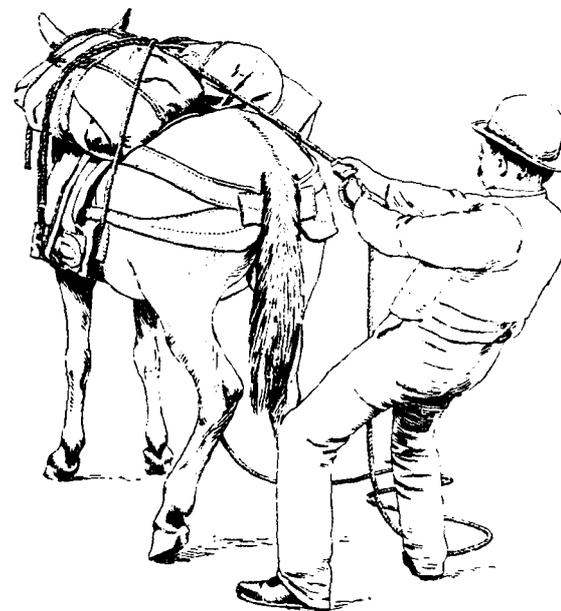


FIGURE 9.

The *off* packer taking slack on the "rear" rope.

from in, out, or from above, down; this leaves the standing rope next the aparejo and the running rope on the outside of the hook. (*See Figure 4*.) (It is understood the mouth of the hook faces forward; after engaging the rope, do not hold the rope taut on hook). Now place the left hand holding the end of the rope on top of the running rope, between the right hand and hook, and grip both ropes, the thumb under the running rope; now allow the right hand to slip upwardly on the running rope, and with the assistance of the

near packer bring this rope to the center of the load. In this operation the left hand will immediately follow the right to the center of the load; this will bring both hands together. Now with the right hand draw the end of the rope forward, held by the left hand, so that about twelve inches will fall on the near side of the animal's neck. (See Figure 4.) And the hitch is formed on the off side ready to tighten the load. See Figure 6 for the off side, Figure 5 for the near side.

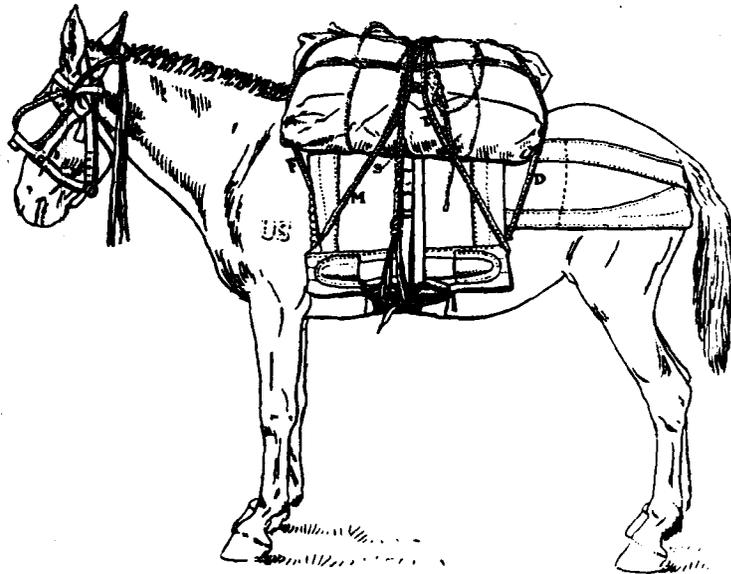


FIGURE 10.

Completion of the diamond hitch. "Near side view."

To tighten the load, the near packer places the left hand, palm down, on the side and center of pack; with the right hand he grips the running rope in the rear of the standing rope on the side of the pack (see Fig. 5) and brings it between the thumb and index finger of the left hand; now bearing against the pack with the left hand as a brace, he holds the running rope taut, and calls out, "Go," indicating he is ready to receive the slack from the off-packer. (See Figure 7.)

The *off packer* at the word "Go" takes hold of the running rope as near the hook as possible, and placing the left knee against the end or boot of the aparejo as a brace, he pulls all the slack possible by bending the body well over as seen in Figure 7, and gives the slack to the near packer quickly, in such manner as if trying to hit the aparejo with both fists. Now, give a second and similar pull and call "Tie," indicating no more slack can be taken on the standing

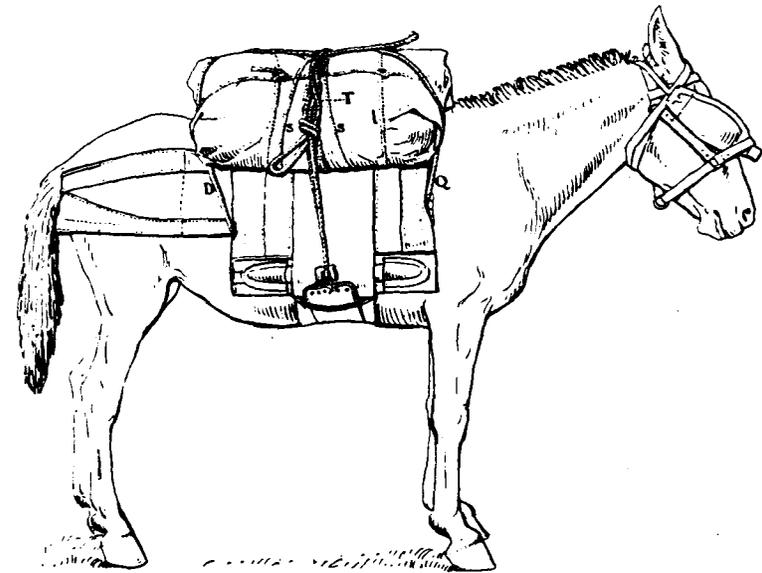


FIGURE 11.

Completion of the diamond hitch. "Off side view."

rope; now step quickly to rear and throw the "end" rope forward of the pack (this rope now becomes the "front rope"), and grasp the rear rope between the packs, ready to receive the slack from the near packer.

The *near packer*, at the call "Tie," brings the right hand holding the slack down toward the aparejo in the rear of the standing rope; the left hand receives this slack by bringing the hand under the standing rope, and gripping the running rope above the right hand, and brings it forward; the right

hand now assists the left in jamming the running rope upwardly, between the standing rope and pack; the running rope is thus held firmly, as if caught in a bight; now bring the free or running portion around the front corner or boot of the aparejo with the left hand (this is termed the marking rope), and with the right, grip the rope in rear of the cincha and pull the slack taut from the left hand; bring this rope up in the rear of the boot and place the left hand below the right, bringing the rope up quickly to the upper corner of side pack, and hold the slack taut with the left hand compressed against the pack, the right hand indicating how much slack has to be taken in by the off packer, who receives it, hand over hand quickly and prepares to set on the rope. Now take hold of this rope, termed the rear rope, with both hands and pull the rope taut; do not let go of this rope until you see the body of the off packer "setting" on the rope, then let go of the rope quickly; learn to turn the rope loose at the proper time; the difference will be noted. (See Figures 8 and 9.) Now step forward of the load and face to rear and grasp the end of the rope, and wait for slack from the off packer.

The *off packer* having taken in the slack from the near packer hand over hand, takes a wrap of the rope around either hand, and leans the body forward toward the animal's haunch and sets back on the rope with all his weight. (See Figures 8 and 9.) He now holds the slack with the left hand and with the right brings the free or running portion under and around the boot of the aparejo to the front and steps forward and faces towards rear; now grip the rope with the left hand below the right, and bring both hands quickly to the upper corner of pack, the left hand holding the rope compressed against the pack, the right indicating how much slack has to be taken by the near packer. This is termed the front rope.

The *near packer* having gripped the end of the rope proceeds to take in slack hand over hand, until he has about six feet; this portion or end of rope is thrown over the center of the load to the off packer, and then continues to take in the remainder of the slack; now likewise take a wrap of the rope

around either hand and lean the body forward toward the load and "set" back on the rope as described for the off packer, giving the slack in similar manner; the near packer now holding the slack with the left hand, brings the free or running portion under and around the boot of the aparejo and partly toward the center of the load, and calls out "Rope."

The *off packer* having given the slack to the near packer steps to the center of the load and grasps the end of the rope and at the call "Rope," takes in all slack, hand over hand, coiling the rope in the operation, and holds coils in the right hand. The near packer noticing the off packer has received the rope grips the "top rope" with both hands and places the right knee against the boot of the aparejo as a brace, and calls out "Take slack," and gives it quickly as described for the off packer. The off packer receives the slack in similar manner as described for the near packer and raises the "top" rope with the left hand; with the right he places the coils under the "top rope" at center of the load on top; keeping sufficient slack he takes a wrap of the rope from right to left between the standing and running ropes and pack; holding the end or loop in both hands he jams them well up so as to be caught in a bight and takes a similar turn between the standing and running ropes and jams it up likewise, and the load is tightened. See Figures 10 and 11, showing completion of the hitch.

Note.—The act of tightening the rear and front ropes forms the diamond on top of the load, hence the name given this form of hitch; in its formation a single knot is made, and when undoing the hitch, the end or top rope when freed, is pulled or drawn from between the standing and running ropes to free the knot. In the formation of the diamond the rope has six designated names. On the near side we have the standing, running and marking ropes, and the front, rear and top ropes.

On the off side we have the standing, running, front, rear and top or end ropes.

The standing rope is that portion encircling the mule and load to point of engagement on hook. (See Figures 4 and 6.) The running rope from hook going back over center of

load to center of pack on the near side. (See Figures 4 and 5.) The marking rope from the center of side pack on the near side from point where jammed under the standing rope and front corner of hook of aparejo. (See Figures 5 and 10.)

The front rope passes over the front corner of the load, the rear rope in similar manner over the rear corner; in both cases on each side the rope passes under and around the boot. (See Figures 10 and 11.) The top rope from the rear corner on the near side running up toward and across the center of the load, to the center and side of the off pack, where the wrapping of rope indicates completion of the hitch. (See Figures 10 and 11.) I may add, there are various methods of finishing the hitch, as conditions of loading may suggest to the experienced packer.

The formation of the diamond hitch and tightening of the load is performed in from twenty to twenty-five seconds.

The operation of loading a pack mule, this includes the aparejo, is performed by experts in from forty-five to fifty seconds.

Two members of Captain R. D. Walsh's Troop, "G," Ninth Cavalry, Fort Leavenworth, during the athletic events in the latter part of November, 1905, put on two aparejos and loads on pack mules in one minute and forty-two seconds, or an average of fifty-one (51) seconds per pack mule; not a bad showing for ten days' training.

THE SKILLED PACKER.

Ordinarily one versed in the usages and customs of pack train service.

As instancing the requirements necessary for the proper discharge of his duties, the following may be enumerated:

He must understand the principles of "ribbing-up" the aparejo, to keep the animals' backs sound.

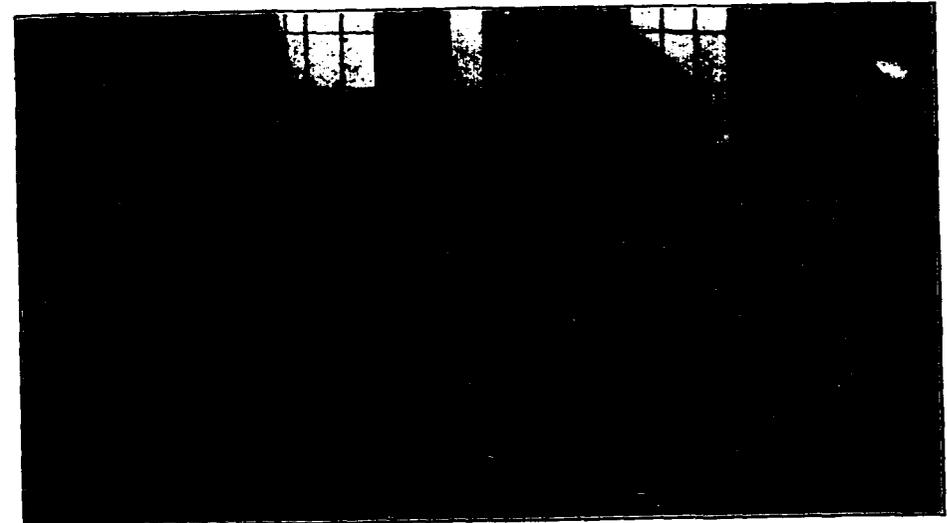
He must understand the relative toughness in different classes of wood suitable for the ribbing of aparejos.

He must understand the gradual tapering to give "ribs" necessary for conformation to the body of the mule.

He must understand how to select grasses (hay) suitable for filling or padding for aparejos.

He must understand where and how much filling is necessary in the aparejo, to give perfect conformation to the body of the animal, and the relative thickness necessary for the holding up of certain weighty loads, bearing on the proper surface on either side of the backbone and withers.

He must understand the causes of "bunches" or wounds



Pouches for Carrying Implements. Engineer Corps.
Off Side View Showing Position of Crowbars.

on any part of the animal's body covered by the aparejo and cincha, and the proper adjustment to correct the same.

He must understand the cause for the animal's "dock" becoming sore, and the proper remedy to correct the same.

He must understand how to fit, lace and cinch the aparejo to the mule, with due regard to the proper size of aparejo necessary.

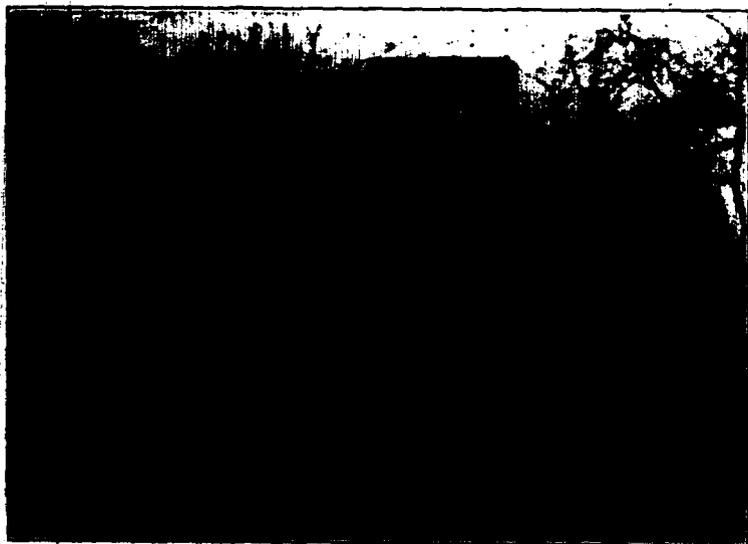
He must understand how to make repairs to rigging (aparejos) and sew canvas.

He must understand the conformation of the hoofs and

how the animal should be properly shod for warm and cold climates.

He must understand how to select "pack" and riding animals, with due regard to endurance, strength and docile qualities.

He must understand what remedies to apply in case of cutting of blood vessels.



How Colt's Automatic Machine Gun is Carried on Aparejo.

He must understand what remedies to apply in case of snake bite, and how to prepare the wound for same.

He must understand how to prepare, "form" and cover cargo, and tie down properly.

He must understand how to arrange "aparejos" in an orderly manner, cover and tie down, when in bivouac the nature of the ground will permit.

He must understand all hitches, knots and splices, customary in pack train service.

He must understand how to construct a travois to carry

wounded, and how to improvise a stretcher for similar purpose.

He must understand how to put on a load in the most expeditious and satisfactory manner, requiring not over one minute for ordinary loading.

He must understand how to catch a pack mule when his load needs attention.



How Wooden Ammunition Boxes Are Attached to Aparejo, the Metallic Cases Being Taken From Box Without Disturbing Position of Box on Pack.

He must understand how to quickly readjust a load, by sight and sense of touch, in less than one minute.

He must understand when traveling up or down a mountain how to cut, or take as many turns as necessary to conserve the strength of the animals.

He must understand how to guard against accidents when crossing a stream, either fording or swimming.

He must be attentive to animals and loads, that none of the latter may fall off, impeding the progress of the train.

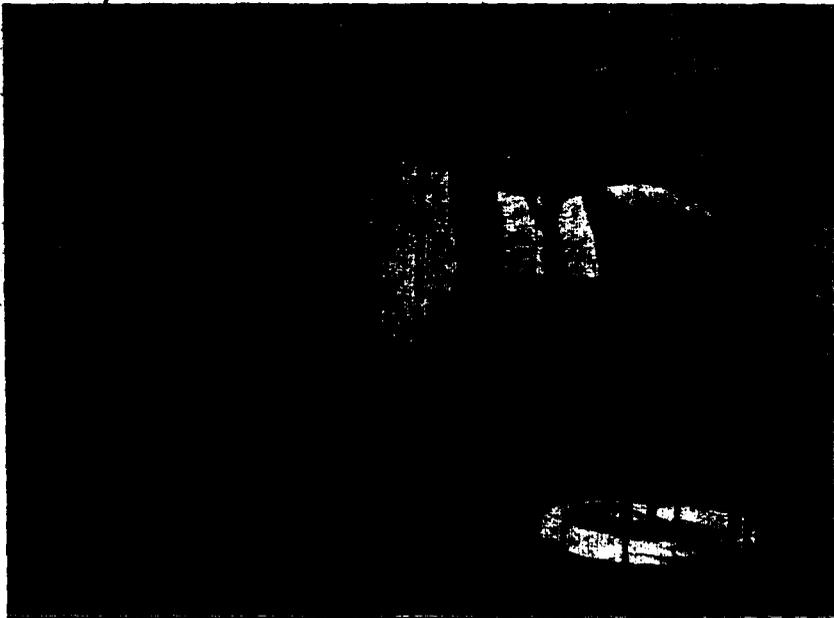
He must be quick to note weakness in animals during travel and relieve the same.

He must be quick to note conditions of country that may endanger the life of the animal and guard against accidents.

He must be watchful both day and night during travel that none may go astray.

He must be kind in his treatment of animals in his care.

He must have a knowledge of the component parts of a ration and the allowance for thirty days; also the allowance of grain, hay and bedding for horse and mule.



Ready for Pack Reel; Reel on Ground Showing How Coil of Wire is Engaged.
(Pay Out at Rear.)

He must have a fair knowledge of cookery, especially the art of making good bread.

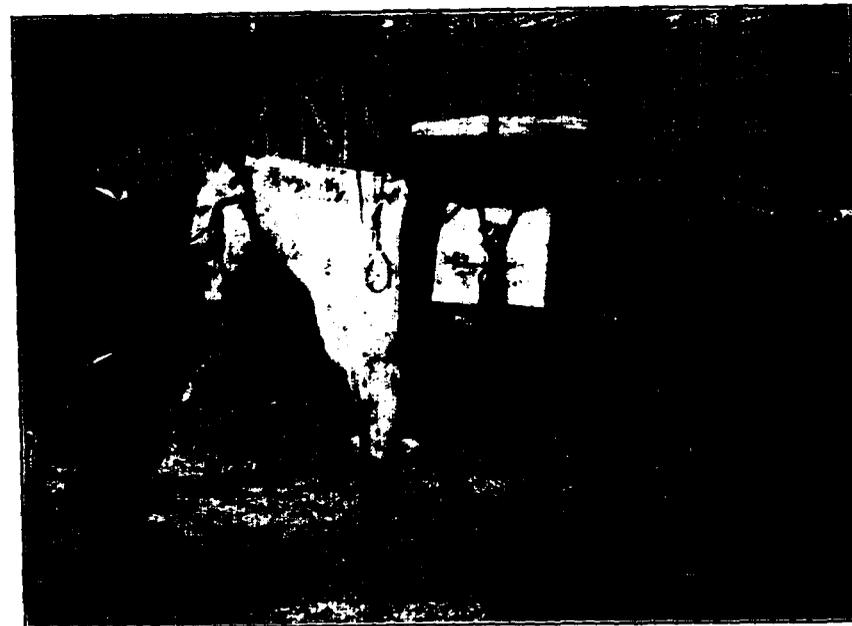
He must be prompt to obey all proper orders emanating from the pack master, or other proper authority.

He must always be ready for duty in all conditions of country and clime.

He must be honest and honorable in all his dealings with his fellow man.

THE NOVICE OR UNSKILLED PACKER.

One not versed in the usages and customs of the pack train service.



The Reel Packed and Paying Out.

THE ENDURANCE OF THE PACK MULE UNDER PROPER CONDITIONS.

As a prerequisite, he must be not less than thirteen and one-half and not over fifteen hands high, of blocky build, weighing not less than 850 and not over 1200 pounds, sound in body and limbs, age from three to seven. Head well formed and intelligent looking, broad between the eyes, eyes clear, large and full, ears flexible, teeth and tongue free of blemishes, neck full and inclined to arch, withers low and

broad, back short and straight, belly large and deep, dock low and stiff, legs straight, standing well apart at front and rear, the former indicating good lung power, the latter full in buttocks, the hoofs sound, broad and full, giving strength to climb.

The mule should have a pack saddle that will protect the body from all manner of loading, that is capable of being adjusted so as to support heavy loading when necessary with-



View Showing How Single Litter, With Patient, May be Carried on Aparejo.

out injury to the withers, and with a proper bearing surface on either side of the animal's backbone. For such a purpose there is no form of pack saddle that has ever been devised by the hand of man comparable to the "aparejo."

There must needs be intelligent or "skilled" packers, *i. e.*, men accustomed to travel by pack, ever watchful of the animals during travel, always prompt to render assistance to the weak, to conserve their strength, and ready to meet points of danger, guarding against accidents, men whose ready knowledge tells them the carrying capacity of every

mule in their care. In age from twenty-one to thirty-five years, height from five feet seven inches to six feet two inches, weight from one hundred and sixty-five to two hundred and ten pounds, sound in body and of athletic build, and not addicted to the excessive use of intoxicants, or display of bad or ugly temper, and thoroughly imbued with an "esprit-de-corps" for the service.



Arrangement for Carrying Double Litter.

ORGANIZATION.

As the success of a general is dependent very largely in the proficiency of the unit, in the art of war, yet none the less is he dependent on the efficiency of the commissary and transportation supply.

No organization, that is assumed to be a needed want to thoroughly equip an army, can be said to be an expensive item, else we leave a loophole for the antagonist to outmaneuver and strike the enemy where weakest.

If we admit the fact "that armies will always need pack animals," certainly a properly equipped and thoroughly

organized pack train service will come nearer filling such a want, much better, than will a shiftless, unreliable personnel—a personnel wherein every member follows his own bent and inclination, thoroughly ignorant of the fundamental principles of the profession which he assumes to follow.

It may be taken as an axiom, "that ignorance never yet filled a needed want." As a sequence the time of peace is the time of preparedness.



Train 29, Matanzas, Cuba. Pack Mules at Rigging. (Roy Baxter, Packmaster.)

Opportunities have developed the fact, that transportation by pack animals, under certain conditions, have demonstrated their usefulness as a mode of rapid transportation.

The intelligent and "skilled" packer of to-day knows more of the conditions necessary to keep mules' backs sound, than was ever understood by the very best of packers in the campaign of 1876, known as the Sioux campaign, when "Custer" met his fate on the banks of the Little Big Horn, thirty years ago.

In those days we had expert packers, but we absolutely had *not one* that understood the proper principles of "setting-

up" the aparejo to keep animals' backs sound. We must admit the mule is not to blame for the ignorance of man, and ignorant packers never did and never will supply a want for competent and satisfactory transportation.

I may qualify this statement by saying "sound backs will always carry a load, sore backs never will."

The "aparejo" is a simple study, easily understood by any ordinary intelligent and thinking man, and if we desire to keep sound animals, I cannot help but emphasize the fact that after forty years' practical experience, no other form of pack saddle will supply the need of the aparejo.

The cross-tree or saw-buck and the "Moore" pack saddle, after years of experience in their use, have been found to be both brutal and revolting, and demoralizing the sense of justice in man to the dumb animal.

To maintain organization, both men and animals must be taught their duties, and regular practice marches be had, together with stated inspections of both men, animals and equipments to maintain efficiency.

PACK TRANSPORTATION.

The Aparejo Proper.

- | | |
|---|--------------------------------|
| I. The body of the Aparejo. | I I. The Aparejo Cover. |
| a. the belly piece. | n. shoes or protecting sticks. |
| b. the back piece. | III. The Aparejo Cincha. |
| c. the boot piece. | p. leather facing. |
| d. the boot facings. | q. lacing of the latigo. |
| e. the front facing | r. the latigo, or cinch strap. |
| f. the rear facing | s. the rendering ring. |
| g. the center facing | t. the finger loop. |
| h. the front facing | u. curved pipe. |
| i. the rear facing | IV. The Crupper. |
| j. the carrier pieces. | V. The Corona. |
| k. the hand holes. | |
| l. the collar. | |
| m. the center stitch line. | |
| o. thongs for attaching cover to aparejo. | |



THE APAREJO.

Accessories of the Aparejo.

- | | |
|-------------------------------|-----------------------------|
| 1. The Pack Blanket. | 3. The Sling Rope. |
| 2. The Lash Rope with Cincha. | 4. The Lair Rope. |
| v. the cincha. | 5. The Manta or Pack Cover. |
| w. the cincha hook. | 6. The Blind. |

G. O. 13.

HEADQUARTERS PHILIPPINES DIVISION,
GENERAL ORDERS, } MANILA, P. I., February 26, 1906.
No. 13. }

I. At the monthly inspections and reviews by post commanders, wheel transportation and loaded pack trains will be paraded with the troops.

At all posts of this division having pack trains, a systematic course of instruction in packing for all line officers below the grade of field officers, will be commenced at once, and will be continued until all such officers are fully capable of instructing packmasters, cargadores and packers in their respective duties. Drills will be had twice each week at such time as may be designated by the post commander, and he will report the names of officers qualifying to these headquarters, excusing them from further attendance at such drill.

At least two enlisted men of every foot organization, and all mounted men of the cavalry and artillery, will receive as thorough a course in packing as practicable. Such men as show special aptness will be reported to the Chief Quartermaster of the Division.

The subjects of the setting up, changing and fitting the aparejo, the preparation and equalization of cargoes, and the maintaining of the animals in sound condition while on the march will be especially dwelt upon.

II. During this instruction a competent and energetic officer will be detailed by the post commander to have supervision over the drill, exercise, care and instruction of the pack trains while in garrison, and all officers are enjoined to do their part in bringing these trains up to the highest degree of efficiency and in maintaining them in that condition.

III. All pack trains when in garrison and not engaged in regular work sufficient to keep them in good condition will make practice marches of from five to ten miles per day, so as to keep the animals in hard muscular condition, and in order that daily examination may be made as to whether the "rigging" is properly fitted. (Any defects in the "rigging" or equipment should be noted and steps taken at once to remedy them.)

On these practice marches the men will be instructed in their duties, both in bivouac and in camp, and the animals will be trained.

Post commanders will be held responsible that the following instructions and regulations for the care of government transportation are thoroughly carried out, that pack trains receive necessary service and exercise to maintain them at the top notch of efficiency; and ready for active service.

IV. Care of Public Animals.

All animals should be carefully groomed at least once a day; in camp this should be done twice a day. All draft, riding or pack animals will be fed and watered regularly, the feet of the horses and mules examined and cleaned twice a day; they should be shod when necessary, the blacksmith being required in all cases to fit the shoe to the foot instead of trimming or rasping down the foot to make it fit the shoe.

Animals should be watered before being fed in the morning and evening, and also during the day.

In feeding, the greater portion should be given in the evening. Wagons are provided with feed boxes for draft animals, and pieces of canvas should be provided for use in feeding pack and riding animals.

The full allowance of salt should be fed twice a week. When animals eat the wagon bed or feed boxes, or lick one another's hide, it is certain they are not getting enough salt.

At night the trains should be parked and the animals tied to the wagons so that the grain may be fed to them in the feed box. Where a picket rope is used see that it is securely fastened, so as to hang about four feet from the ground, and that the halter is long enough to allow the animal to lie

down. If the animals arrive in camp in a heated condition they should be allowed to cool before feeding and watering.

In all cases where animals are suspected of being infected with contagious or infectious diseases, they will be promptly isolated.

Where surra has infected the animals at any place, the temperatures of all animals will be taken twice a week, and all having temperatures of 102° or over will be promptly isolated, and an examination made of their blood for surra parasite. A failure to find the parasite at one examination is not proof that the animal is free from surra. Several examinations may be necessary and on different days. Once a case of surra has been positively diagnosed with the microscope, prompt action under the provisions of paragraph 790, Army Regulations, will be taken, to prevent the spread of the disease and stamp it out. Brushes and currycombs which have been used on infected animals will not be again used on other animals. The soil of a stall occupied by an animal developing surra will be dug up to a depth of at least one foot, thoroughly saturated with a solution of chloride of lime and refilled with fresh dry earth.

All animals with their harness and equipment, will be kept under shelter when not actually in use. Each animal should have its own designated stall, which should be provided with a rack for the harness belonging to that particular animal.

V. Care of harness.

Harness will be examined daily and kept in repair. Note particularly if any stitches are broken; if any parts of the leather are worn thin, badly cracked or cut, and if any of the buckles, toggles, snaps, hames, chains, bits and rings are cracked or broken. Never permit harness to be thrown on the ground, as the mud and dirt on parts which rub against the skin of animals will cause abrasions and sores. Should a teamster or any other employee having public animals in charge, permit such animals to develop sore shoulders, sore backs or other abrasions, the result of carelessness in this respect, he should be discharged at once.

In having harness repaired, care should be taken that

knots are not made on that side of the leather which comes in contact with the skin of the animal. Harness will be taken apart, cleaned and oiled at least once a week, and whenever necessary, by reason of it becoming wet or muddy. Keep all leather free from grit, soft and pliable. To clean harness use a bucket, warm water, sponge, harness soap, harness dressing, neatsfoot oil and lamp-black; provide a rack to hang the harness on for cleaning, and wet the sponge in clean water, changing it as often as may be necessary, and pass it over the harness until the dirt becomes soft. After the harness has been thoroughly rinsed and sponged in clean warm water, the sponge should be rubbed on harness soap until a good lather is obtained and the leather given a good heavy rubbing until all dirt is removed, scraping with a thin piece of wood where necessary to remove the dirt.

After the harness is thoroughly clean, work up a thick lather, coat the leather with it and allow to dry without further rubbing; after the lather has been absorbed and the leather is dry, put on a light coat of the harness dressing, prepared as below; which should be applied with a perfectly clean sponge, without rubbing. The dressing should be kept in an air-tight vessel when not in use.

When the harness has not been cleaned for some time and is hard, or when being used for the first time, it will first be cleaned as above (omitting the harness dressing), and afterwards treated as follows: Take a full pint of neatsfoot oil for each single set of harness, pour it into a pan and mix with lampblack in the proportion of one teaspoonful to each pint of oil and stir this mixture thoroughly; it should then have a glossy black appearance; it should then be applied to the harness, while it is still damp, with a clean sponge free from grit and well rubbed in. Harness treated in this manner should not be used again for at least a day. After the leather is thoroughly dried the harness dressing should be applied.

Each teamster should have specially assigned to his care certain animals, with their harness, and no interchange of harness should be permitted.

In case any animal is suspected of having any contagious or infectious disease its harness will be disinfected in the following manner: Before being used on any other animal, the bits, buckles and all metal parts will be removed and subjected to boiling for thirty minutes or to a dry heat of about 220° *Fahrenheit* for about ten minutes; this can be accomplished by putting them in a closed Dutch oven, and building a fire under it, throwing live coals on the top, or by laying the articles on top of the live coals in the blacksmith's shop, care being taken not to fuse such parts as are fusible. The leather portions of the harness should be thoroughly washed with lukewarm water and soap and then soaked in a five per cent. solution of carbolic acid, or a solution of Tricresol or Creoline about one to one hundred parts of water for several hours; the harness should then be removed, rinsed, washed with soap, oiled and cleaned, as before described.

VI. Wagons.

Wagons in constant use will be greased at least once each day, the old grease being scraped off before the new grease is applied. All teamsters will be required to report at once any repairs necessary to their wagons, and any failure to do this will be a subject for discipline. Wagons will be inspected before going out and also on coming in, in order to ascertain if all tires are tight, axle nuts well screwed on, all bolts are in place and nothing broken about them. Every wagon train will carry a few spare parts, nuts, bolts, wrenches, so that minor repairs may be made at any time.

All persons in charge of wagons or pack trains, which pass through or stop over night at a garrison place or camp, will report to the quartermaster thereof, or if there be no quartermaster, to the commanding officer, the number of animals, teamsters, etc., and amount of forage or repairs required, making known their destination and applying for shelter for animals, wagons, pack saddles and personnel of the trains as the case may be.

List of articles to be carried on each wagon:

- 1 Ax, front of wagon,
- 2 Axle nuts, extra, in tool box,
- 1 Bucket, G. I. under rear of wagon,
- 1/2 Piece buckskin, in tool box,
- 1 Brush, horse, in tool box,
- 1 Comb, curry, in tool box,
- 2 Cans, grease, axle, in tool box,
- 2 Hames, extra, under wagon,
- 1 Lantern, in bucket,
- Nails, horseshoe, extra, in tool box,
- 3 Open links, in tool box,
- 1 Pole, wagon, extra, on side of wagon,
- 1 Pickax, on side of wagon,
- 1 Reach, extra, on side of wagon,
- 150 Feet, rope, 3/8 or 1/2 inch, on side of wagon,
- 1 Spade, on side of wagon,
- 3 Straps, hame, in tool box,
- Straps, extra, in tool box,
- 3 Strings, hame, in tool box,
- 1 Shoe for each animal, previously fitted to hoof, in tool box,
- 2 Singletrees, under wagon,
- 1 Doubletree, under wagon,
- 1 Wrench, wagon, in tool box.

Receipt for Waterproofing Canvas Covers on Hospital Ambulances.

Make a mixture of the following ingredients: To each gallon of raw linseed oil add 12 ounces of beeswax, 1 pound of white lead, and 12 ounces of common resin. Now boil this mixture, stirring it at the same time, and apply it while warm to the upper side of the canvas. Be sure to wet the canvas with a sponge on the under side before applying this mixture, or sizing.

VII. Regulations for Pack Train Service in the Philippines Division.

Each train should consist of the following:

- 50 Pack mules,
 - 14 Riding mules,
 - 1 Bell animal,
- With proper equipments for all animals.

Employees.

- 1 Packmaster,
- 1 Cargador,
- 1 Blacksmith,
- 1 Cook,
- 10 Packers.

Should the number of pack animals be permanently reduced below fifty, the number of packers will be reduced so that there will not be more than one packer for each five pack animals.

No pack mules will be used as draft animals.

Whenever there are two or more trains stationed at one post, recommendations may be made for one assistant chief packer.

The standard load for pack animals in this division is two hundred pounds per animal.

The Quartermaster.

The quartermaster accountable for pack trains will be responsible for their proper maintenance and equipment, and for the discipline, proper organization and the instruction of all employees in their duties.

When pack trains shall be assigned to a station, the quartermaster accountable will provide a corral and supply material and conveniences for placing cargo and "rigging." Platforms should be provided to keep the "rigging" and cargo off the ground.

While in garrison, the officer in charge of pack trains, or in his absence, the assistant chief packer or packmaster, will procure from the quartermaster of the post suitable loads wherewith to exercise the animals of the respective trains.

These requirements are necessary for the purpose of training the animals and for the instruction of the men, and have for their object the daily simulation of service conditions.

It will be the duty of the quartermaster to make inspections of all pack trains for which he is accountable, at least once a week.

He will also make thorough inspections of pack trains prior to their being dispatched on detached service, and will again inspect such trains on return from detached service.

On the return of the pack trains to their proper posts, from detached service, the officer in charge of pack trains will report to the quartermaster of the post any inattention to duty of any member of such trains, and in all cases of abuse of animals or neglect of duty, he will report employees responsible for same, also the condition of the animals in the respective trains, and condition of their bodies, whether sound or otherwise.

It will be the duty of the quartermaster to furnish to each packmaster a small blank book to be known as the "Property Book." This book will contain a list of all public property of the pack train, including the aparejo complete, together with all spare parts as follows:

1st, the body; *2d*, the crupper; *3d*, the cover or "sobrejalma;" *4th*, the cincha; *5th*, the corona or saddle pad (above referred to as the "rigging"); *6th*, the aparejo blanket; *7th*, the lash rope with cincha; *8th*, the sling sope; *9th*, the lair rope; *10th*, the pack cover or "manta."

The number of extra lash ropes without cincha, sling and lair ropes, and pack covers.

The number of cargo, "rigging" and feed covers.

The number of saddles and bridles, blankets, blinds and head halters, with shanks and snaps. Bell with snap for the bell animal, hobble, whether common or "Snow" for bell animal.

The number of tool sacks, moss or "hay pads," clothes or "war bags," cargador's box with "kit," blacksmith's mule shoe boxes (2) with "kit." The tools in the "kits" should be enumerated.

Picket line with iron pins, if any.

The number of kitchen or "mess boxes," and all "mess" and cooking utensils enumerated.

Also a list of material for needed repairs.

A duplicate of this book will be kept in the office of the quartermaster.

On detached service the officer in charge in the field will be called upon to furnish a memorandum receipt to the post quartermaster for property of the pack trains sent out in his charge.

In the property book will be kept a descriptive list of all animals of the train, giving the number and name of each pack animal according to sex, age, color, height, weight and marks or blemishes, not including aparejo or pack saddle marks. In this list the bell animal shall be included. The corona number of each animal should be given, from one to fifty. The use of corona numbers above that figure will not be permitted. If pack animals in excess of that number are in the train they will be designated as "extras."

In this same book will be recorded the personnel of the pack train, giving the names of the packmaster, cargador, blacksmith, cook and packers, and showing length of service with the pack train. This book shall also state the length of service of each employee, when and where first employed, and in what capacity. It shall also show in what States, Territories or foreign possessions the men have had former experience as packers. Expert packers, suitable for packmasters, will be reported to the chief quartermaster.

A separate record book or time book will be kept, showing the roster by which members of the pack trains report for duty.

The post quartermaster or acting quartermaster shall require a daily morning report of each packmaster.

The morning report will state the hours of daily exercise, and the distance traveled; of what the cargo was composed, the average weight of the load per pack animal; the condition of the animals and their bodies; the condition of the rigging and equipments; the hours of watering, herding, grooming and feeding; the amount of grain fed per animal; the amount of straw for bedding, if any; repairs to rigging,

etc. Also the number of rations per train and the number of men for whom furnished; any accidents happening to men or animals, and cause thereof; the date of employment of men and in what capacity; and any disobedience of orders on the part of members of the train, etc.

In connection with the morning report there should be a space for remarks when the train is in the field, in which should be given a brief account of the country passed over, the distance traveled each day, the condition of the country as to wood, water, grass, and, in short, everything affecting the movements of the pack trains, together with any incidents of note that may have occurred.

The acting quartermaster of expeditions in the field will have the same responsibility for pack trains as the post quartermaster has in garrison.

He shall arrive in camp or bivouac in time to have the parking ground selected so that the train will not be kept loaded an unnecessary moment after its arrival.

The quartermaster will instruct the chief packer where to park his trains, which will be in as convenient a manner as the nature of the ground will permit. The highest ground will be given to the cargo, the next highest to the "rigging," and the next highest to the picket line.

All cargo, "rigging," etc., will be placed in as orderly a manner as possible.

Duties of Assistant Chief Packer.

The duties of the assistant chief packer will be to see that all packmasters and other employees are thoroughly instructed in their duties and competent to perform all the duties devolving upon them in connection with the pack service.

He will be held responsible for the condition of the animals and the perfect management and discipline of the train under his charge.

He will require packmasters to maintain supervision over the care of the animals and property, and hold them strictly accountable therefor.

During travel, whether by day or night, the assistant chief packer, or the packmaster on detached service, will ride in advance of the train or trains, to gait the rate of travel and to look out for bad or dangerous places.

The assistant chief packer will hold packmasters accountable for "squaring" of side packs by tying the corners of sacks together before "lairing" up. By this precaution sacks of flour, sugar, coffee, beans, rice, grain, etc., will be prevented from bursting, should they be dropped on the ground through negligence or carelessness of packers.

He will hold packmasters responsible for the proper "forming of cargo" in the tying of animals to their respective loads, and for the expeditious preparation of the train for the day's travel.

He will hold the packmasters responsible that animals are properly trained to come to "rigging" (aparejos), technically called "run to rigging." This will be done in the morning, after the night's herd, also in the evening. This practice must be had daily in order to expedite the placing of the aparejos on the animals and the adjusting of their respective loads.

Packmasters will be instructed to place packers in such manner as to give safety to animals along the trail in the neighborhood of bad or dangerous places. Similar precautions will be taken in crossing streams, either by fording or swimming, and in each case there will be a thorough examination made of the stream before pack trains are permitted to enter it, and also necessary men will be stationed on lower side to keep animals well up, to avoid accidents.

The assistant chief packer, or packmaster on detached service, will report every evening to the quartermaster for instructions for the next day's travel, and will have the train in readiness promptly at the time specified.

Duties of the Packmaster.

The packmaster will be held accountable for the proper and complete equipment of his train and the management and discipline thereof.

A lack of thorough knowledge and understanding of the art of "setting up" an aparejo will be a disqualification for this position.

The packmaster, whether in garrison or in the field, will cause animals in their trains to be brought to "rigging" in the evening; while there is light, if possible, and will then verify the train by count. The animals will then at once be thoroughly groomed, and particular care will always be given to the parts where aparejos, cruppers and cinchas come in contact with the skin. Careful attention and treatment will always be given to "bunches" that may have arisen during the day's work, however small.

The packmaster will assist, and instruct, when necessary, the cargador, in readjusting the filling of the aparejos, in such manner as will result in preventing "bunches" or sore places and in keeping the animal sound.

He will exercise supervision over packers at all times and see that they give due attention to the animals' packs and that none fall off or become disarranged during the travel. When found necessary the cargo will be readjusted. Should an animal show signs of weakness it should be relieved of a portion or all of its load.

It will be the duty of the packmaster to inspect, after each day's travel, the condition of the animals' bodies. He will observe the condition of the coronas, as to cleanliness, when in bivouac, and will cause all wet or damp canvas or blankets to be spread out and dried, provided the opportunity offers.

It will be the duty of the packmaster to count all "rigging," and report to his immediate superior anything found missing, and see that the following rules are enforced:

In bivouac all saddles, bridles and blankets will be placed on the cargo and the whole will be covered by canvas and securely tied down.

In garrison the animals will be daily "run to rigging" between the hours of seven and eleven. Before being "run to rigging" all animals will be properly watered. Between the hours of four and five in the evening, they will be watered, whether at stables, or herded, or at picket line.

During travel the animals will be watered as opportunity presents itself, and in bivouac they will be watered before being taken to herd. They will also be watered before being "run to rigging" in the evening.

The watering and feeding of the animals of the trains in all cases will be supervised by the packmaster.

When tied to picket line the animals will be fed on feed covers provided for that purpose, if grain is available.

Grooming will be regularly practiced every day, Sundays included, between the hours of four and five, while animals are at "rigging." They will be taken singly therefrom for this purpose, in order that the condition of the animals' backs can be noted. Should "bunches" arise during the day's travel prompt attention must be given.

No grain will be fed to pack animals in the morning, as experience shows that grain, especially, tends to sour in the animal's stomach, from the heat of travel.

During practice marches it will be found advantageous if the animals can have an hour's grazing in the early morning before being "run to rigging."

When pack trains are herded it will be the duty of the packmaster to assign a suitable number of packers as guard for the animals.

Care should be taken during halts to avoid the necessity of animals of the train standing in the immediate neighborhood of dangerous places.

In garrison, if stables are provided, the wagons and harness, and necessary implements for keeping stables clean and in good condition, should be procured from the post quartermaster.

The rigging should be kept clean. The leather parts will be frequently washed with sponge and lukewarm water and soap as described for harness, the leather softened and kept pliable with neatsfoot oil. Blankets and canvas should be kept clean and free from mud and grit; they should never be thrown on the ground. Pack saddles of all descriptions will be habitually kept under cover.

General Instructions Governing Packmasters and Their Duties.

The packmaster will be held personally responsible for the safe keeping and delivery of his cargo.

In case of any loss or damage to cargo, the quartermaster may, at his discretion, stop value of loss against the pay of the packmaster or against that of any packer found responsible, pending action by a board of survey.

Packmasters should have authority for granting a few hours' leave of absence to employees of the train in case of application by packers. Should a packer desire a leave of absence extending over twelve hours or more he should be required to make application in writing through his packmaster and assistant chief packer to the quartermaster, giving his name, position and necessity for the leave. Absence without permission for the period of twenty-four hours may be considered cause for discharge.

Packers found in any way mistreating the animals under their care in such a way as to impair their usefulness and gentleness will be discharged, as provided by law. This rule will be rigidly enforced with all members of the pack service.

Duties of Cargadores.

The cargador must, under the supervision of the packmaster, set up the "rigging."

He will be expected to keep the animals' bodies sound, and failure to do this will prove his unfitness for the position.

He must attend to needed repairs to aparejos and equipment, supplying himself, through the quartermaster, with suitable cargador's "kit" and material for this purpose.

He will see that cargo, such as tentage, field rolls, etc., which may be ruined by lair ropes, or animals sweating, or by rain, is covered by manta.

He will be responsible for making up all cargo, equalizing the packs and loading the animals according to their strength and condition. He will keep a watch on animals and packs while traveling, and on packers, to see that they

attend to their duties, and will promptly report any inattention or disobedience of orders to the packmaster.

The cargador will cause the cargo "rigging" and picket line to be placed as indicated by the packmaster, and will take charge of the train in the absence of the packmaster.

He will keep a memorandum of all cargo received and to whom issued, together with dates, marking and tagging packages when necessary.

In bivouac he will see that all halter shanks are gathered and placed on "rigging," and all blinds placed between the two last "riggings," and all saddles, bridles and blankets placed on cargo before being covered up.

He will be responsible that all aparejos are marked with the number of the animal's respective corona, and that all coronas are kept clean.

Duties of the Blacksmith.

The blacksmith will be provided with the blacksmith's field kit; will keep on hand for field service two hundred shoes properly fitted, together with the necessary number of nails; he will also be equipped with other requisites for properly shoeing the train. He will fit and shoe all animals of the train, and must have a thorough knowledge of the approved methods of fitting shoes, and of the intelligent care of the frog.

He will, when required, give assistance in packing, and while the train is being packed his duties are to keep the animals close to the bell animal, keeping correct count of the animals as they are turned loose, reporting any accident promptly to the packmaster or cargador.

While traveling his duties are to ride up behind, keeping watch on the feet of the animals, so that he may know how many shoes have been slipped during travel.

He will call attention of packers to any load that may need attention.

Duties of the Packers.

Packers must have a thorough knowledge of the "diamond hitch" and all other hitches used in packing, for the purpose of securing the loads, and must be able to effect a proper adjustment of the loads.

Inattention to the loads, or permitting them to fall off the animal, will be considered a cause for discharge.

No reading matter will be taken by packers on herd to distract their attention from the care and watchfulness of the animals, that they may not stray off or stampede.

Duties of the Cook.

The cook will have his meals in readiness at the time specified by the packmaster, and must have knowledge of the economical preparation of the prescribed ration.

He must closely and compactly stow the rations and mess utensils in the boxes in such manner that their weight will be equally distributed, causing the packs to ride evenly. Carrying heavy or unnecessary utensils on the march is prohibited. When kitchen utensils are ready to load he will mount his animal and keep the animals of the train rounded up.

At the call "Bell," he will untie the bell animal and lead out in the direction indicated, gaiting the animal as directed by the packmaster, and will maintain the proper distance in the lead, noting whether the gait be too fast or too slow, and reporting any accident.

The fact that certain instructions are herein given relative to the duties specifically prescribed for each employee shall in no wise be construed as relieving any employee from responsibility for the general welfare of the train and of the interests of the service to the utmost extent of his ability in every sense, nor does the specific assignment to certain duties imply that there shall exist or be permitted in the slightest degree any lack of concert between employees in the discharge of their duties.

By command of Major General Wood:

GEO. ANDREWS,
Colonel, Military Secretary.

THE STOPPING POWER OF A BULLET.

BY FIRST LIEUTENANT G. C. LEWIS, FIRST INFANTRY.

IN a recent article of the CAVALRY JOURNAL upon the relative stopping powers of the .38 and .45 Colt's revolvers, the interesting suggestion was made that it might be still possible to utilize the .38 issue pistol in action, without hopelessly handicapping the user, by changing the character of the ammunition to give a lower muzzle velocity.

In view of the acknowledged danger of attempting self-defense with that weapon as at present issued and the large expense involved in the proposed equipment of the service with another pistol of larger caliber, any alterations which will make the weapon reasonably efficient by a change of ammunition is deserving of investigation.

Since the object of the proposed decrease of muzzle velocity for the .38 ammunition is to increase the shocking effect or "man-stopping power" of the bullet, it is desirable to review the factors upon which this stopping power depends.

The gauge of the stopping power is the number of foot pounds of destructive energy expended by the bullet upon the animal tissues during its passage through the target. The test of relative penetration is a most misleading criterion of bullet energy.

The fact that a 100 foot pound blow expended upon the femur would not have the same effect as if expended upon the spine, and also the further fact that blows of the same force and location will have different effects upon individuals of different constitutional characteristics—savages or civilized men—may be ignored in the comparison of stopping effects of two bullets, for the chances of striking sensitive portions are equal for the two bullets in the long run. Great care is

necessary in individual cases of wounds cited in comparisons, however, to avoid being misled by slight variations of wounds near nerve centers or by peculiarities of individual resistance capacity.

For the purpose of review, however, the human body may be safely regarded as a compound target, composed of substances of different degrees of hardness, density, tensile strength, etc., bones, tendons, muscles and organs.

The destructive work (F) on the target, is then given by the equation.

$$F = \frac{1}{2} MV^2 - \frac{1}{2} mv^2 \text{ where}$$

M—mass of bullet at entrance.

V—velocity at entrance.

m—mass at exit.

v—velocity at exit.

Two facts are at once apparent: (a) The stopping power can never be in excess of the muzzle energy of the projectile and (b) the decreasing of the velocity can by no possibility increase the stopping power of bullets of equal mass, the velocity of which is such that they remain lodged in the target, since the minus term of the equation is zero.

Since approximately half of the wounds made by the .38 pistol retain the bullet in the body, the irrationality of the proposition of still further reducing the velocity to increase the stopping power is evident. A decrease would simply insure that all bullets remained in the body whether they struck hard or soft tissues, while the failure to penetrate dense bony structures would increase, since it is impossible to adjust energy and penetration in a compound target like the human body, to insure equal penetration at any point. The ensuing surgical complications to the bolero, attendant upon embedded bullets might be a source of consolation to the relatives of the unfortunate soldier equipped with low velocity .38 pistols, but it is not a sentiment calculated to instill confidence in the soul of a recruit in a bolo rush.

Since in fifty per cent. of the wounds with .38 pistols, the embedded bullet indicates that all the energy retained therein at the given range had been delivered, and this is still inad-

equate, it is interesting to notice the quantity of the muzzle energy of different military weapons, bearing in mind that retained energy varies with the square of the velocity, and that in light pistol balls the velocity drops with increase in range in the most surprising manner.

WEAPON	Weight of Bullet	Velocity at 50 Feet	Ft. Pounds at 50 Feet	Muzzle Velocity	Ft. Pounds at Muzzle
303 British	215	1960	1833		
30 Krag	220*	1960	1880		
30 U. S. Springfield	220	2250	2488		
45-405 Springfield	405	1286	1652		
45-500 U. S.	500	1179	1542		
49-90 Winchester	300	1480	1457		
45 Colt's Automatic	200			900	361
45 Colt's	255			801	365
38 U. S. Colt's	{ 150 } { 156 }			{ 723* } { 800 }	{ 175 } { 181 }
Colt's Special Military	167				
22 Winchester Single Shot	45	1481	218		
25-20 Winchester	86	1300	323		
32-20 Winchester, H. V.	115	1575	633		
32 Winchester	115	1177	352		
38 S. & W.	146			620	125

*Velocity from report of Chief of Ordnance, 1891.

One thing is very striking in the foregoing table. The change from the 500 to 405 Springfield bullet, then to the Krag, and then to the .30 Springfield, has been uniformly in the direction of increasing the muzzle energy and the potential destructiveness of the rifle, amounting to a total of over 50 per cent., besides doubling the danger zones. The change in the pistol has resulted in a decrease of 190 foot pounds, or about 55 per cent., without any compensating gain in trajectory or elsewhere.

The utter inadequacy of the .38 service pistol is brought out glaringly by comparison of its muzzle energy with the small sporting calibers. Even the most sanguine anti-imperialist should pause at the prospect of an argument with an energetic juramentado conducted with a .22 single shot or a .32 Winchester, and yet the .22 approximately equals and the .32 Winchester is over twice as strong as the issue .38 revolver cartridge. The gist of the shortcomings of the .38 and of the small caliber automatic pistols is right in the foregoing table—they are simply short of steam when they start

out. The .45 at least has the goods if the delivery can be made.

While the highest percentage, 100 per cent., of the energy of impact is expended on the target in cases where the sectional area of the bullet is so adjusted to the depth and resistance of the target, that the bullet remains imbedded in the target, yet the *amount* of destructive work may be still further increased within certain limits by an increase of the energy of impact causing complete penetration though the *percentage* of effective energy is diminished. The misconception prevalent on this point, to the effect that a bullet which breaks through the target does less destructive work than one which almost breaks out, but does lodge, is due to the popular confusion of *amount* and *percentage*. Thus an increase of 41 per cent. in the velocity of a bullet having barely energy for complete perforation, will increase the energy in the projectile at impact 100 per cent., but may add only 10 per cent. to the foot pounds of destructive work done on the tissues, the remaining 90 per cent. of the increase going towards the making of a long hole in the atmosphere on the rear side of the target. Yet the percentage of efficiency of the imbedded or barely perforating bullet is 100 per cent., and of the other only 62½ per cent.

The destructive energy of a given bullet upon a given target after the energy of impact is sufficient to give clear perforation may be increased in two ways:

First, by increasing the diameter of the bullet's path and consequently the quantity of matter to be displaced in its passage, and secondly, by increasing the energy of impact by raising the mass or velocity while keeping the same diameter, with the object of doing more work upon the original quantity of displaced matter, by displacing it at a higher average rate. Greater diameter of bullet's path may be secured either by increasing the calibre or by making the bullet of soft material which will expand on contact with a target. For any given thickness and density of target, and for any given energy of impact, a bullet of correct diameter can be found which will give the maximum efficiency.

The problem of an adequate pistol can be settled by determining the average shock in the foot pounds required to knock out a man, and the selection of a caliber or a mushroom bullet, or a combination of the two, which will deliver the energy without wasting any on the atmosphere behind the target. This is undoubtedly the correct way of securing the desired knock out blow, for the attempt to secure the same results by juggling with velocities and bullet masses, introduces the question of (1) critical velocities of contusion, rupture and explosion, which are variables, and functions of the diameter of projectile; (2) shape of projectile head; (3) target tissue, as well as (4) the mere velocity.

Destructive energy applied by bullets in cases already giving complete perforation is increased rather more rapidly than the square of the diameter, the bullet points being similar. The diameter of the .38 is .357 inch, and of the .45 is .454. Thus, supposing the .38, with an energy of impact at 20 yards of 150 foot pounds, to strike a target with a resistance of 127 foot pounds, to bullets of that diameter, which it perforates without deformation. It would then expend some 25 foot pounds in the wind. But the .45 at about the 20-yard point on its trajectory would have an energy of impact of about 300 foot pounds and would, with the same target, expend 206 foot pounds force upon it, as it would encounter resistance in proportion to the square of its diameter. It is thus evident that perforations and consequent loss of energy behind the target are less likely to occur in the case of the .45 than in the .38, in the ratio of 5 to 8. For identical velocities the .45 has 60 per cent. greater stopping power on identical targets than the .38. This does not take into consideration the deformation of the bullet. The .45 lends itself more readily to the mushroom action, in consequence of its large diameter, and its remaining energy at ranges over 10 yards is about 250 per cent. of that of the .38, so that there is a large reserve for advantageous mushroom action.

It may be said appropos of the doubts expressed of the stopping power of the long Colt New Service .45 cartridges, that the .45 pure lead bullets of the hollow-pointed man-stopping Webley model, may be guaranteed to deliver to the

target all the energy that the average man can stand the recoil of in his pistol hand. No great advantage in mushrooming the present .38 cartridge could be obtained, as the energy available is too small.

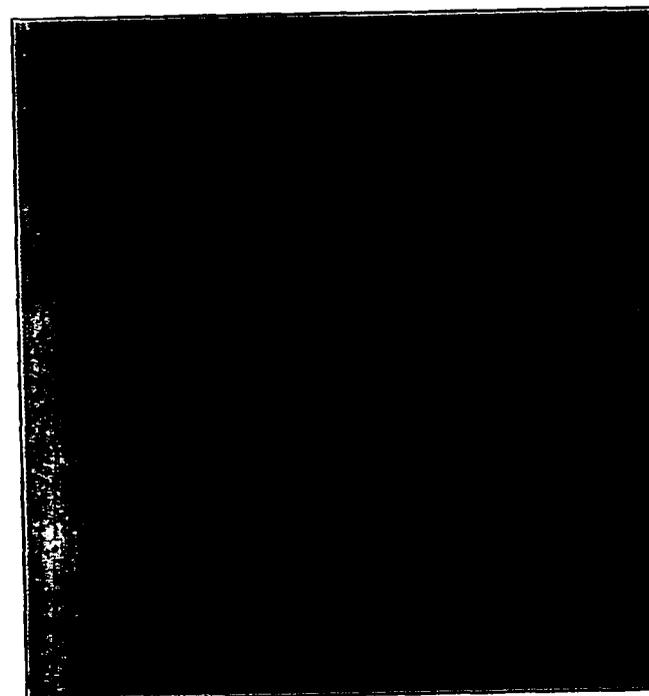
This is also the reason for the failure of the Mauser, Luger and other small caliber automatic pistols. The light eighty-six grain bullet loses its velocity very rapidly and simply lacks energy to inflict a stopping blow even when the bullet does expand, which it does not always do on soft tissue, owing to the slight resistance offered a bullet of such small cross-section.

The second method of increasing the destructive energy delivered to the target by a bullet having already sufficient energy of impact to give clear perforation, is to still further increase the velocity.

The increase of destructive work is directly proportional to the square of the velocity with identical underformed bullets, as long as the bullet does not make its exit from the target. After a velocity sufficient for clear perforation is reached the destructive work still continues to increase, but at a much lower and variable rate, with well defined points of change of rate of increase at certain velocities, called the critical velocities of contusion, rupture and explosion, bounding zones of fair uniformity. As previously stated, these critical velocities are not constant, but depend on the diameter of projectile, shape of points, character of its material, and on the substance of the target, and a change in any of these four factors will alter the critical points. The mass or energy of the bullet only affects the duration of the zone. In animal tissue these effects are strongly marked and require careful consideration. Consider the effects of a gradual increase of velocity with identical bullets and targets.

The critical velocity of contusion is manifested in spent balls, and lies so low that it is not accompanied by perforation, so that the efficiency of one hundred per cent. is continued beyond it until perforation is had. Should perforation occur in the zone of rupture, the destructive energy continues to increase, but at a much slower though uniform rate,

until the critical point of rupture is reached, beyond which the rate of increase is so small that the shock energy may appear to stand still until the critical velocity of explosion is reached, when the ratio jumps to a higher point than in the zone of rupture.



EXPLOSIVE EFFECTS.

Range fifty yards, velocity extreme. Bullet entered three inches above elbow. Wound of exit two inches by four inches, and of highly explosive character, showing free comminution of bone, sharp radiation of stellate lines of fracture and the propulsion of bone fragments.

The efficiency of one hundred per cent. will continue until perforation, which may take place in any zone, and a single target of sufficient depth (a horse lengthwise or a row of men) may show all zones and critical velocities.

The existence of these critical velocities of rupture and of explosion may be well illustrated in the following cuts

mostly taken from "Makins Boer War." The first shows the effect upon the bone of velocity higher than that of explosion. The range is about fifty yards and velocity is extreme, and the bone has been broken up for many inches,

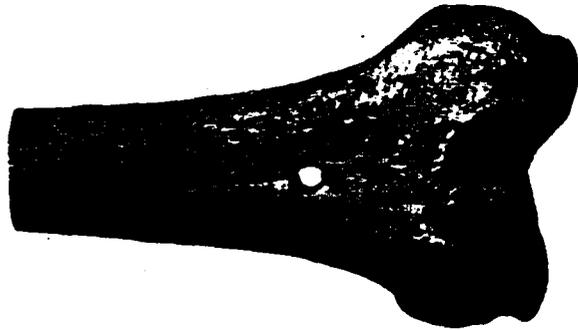


FIGURE 1.

Gunshot injury of the lower third, right femur, by the .30 caliber German silver-jacketed projectile, with the velocity common at 1,200 yards. The projectile perforated the anterior face of the bone about its middle, immediately above the upper margin of the articular surface, making a clean-out perforation.

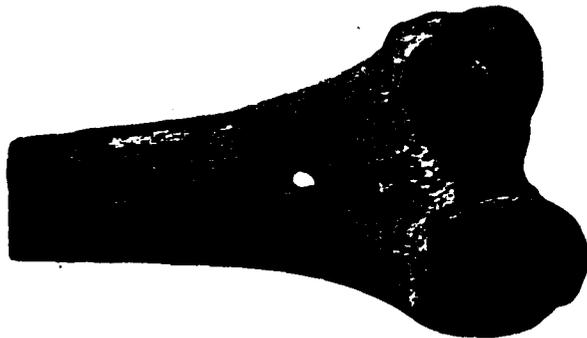


FIGURE 2.

A posterior view of Figure 1.

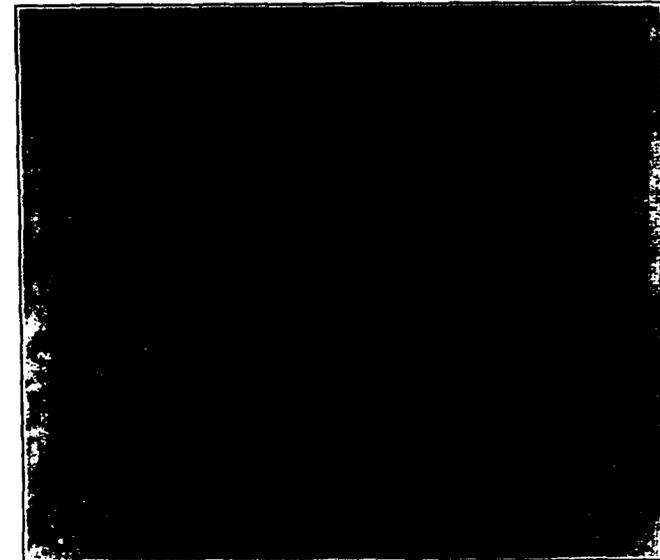
CLEAR PERFORATION EFFECTS.

and the tissue destroyed where it could not possibly have come in immediate contact with the bullet.

The second shows a clean perforation without explosive action and but little rupture at range of over 1000 yards, and a velocity 900 for that caliber.

The third shows a ruptured low velocity wound at probably less than 500 feet per second at extreme ranges. The critical velocity of rupture is very low with small caliber bullets and such cases are usually ricochets or key-holed bullets giving a larger area of impact.

German experiments on human cadavers and horse carcasses with the Mannlicher rifle having similar character to



RUPTURED EFFECTS.

Long range, low velocity wound of 8 mm. bullet which [entered base foremost and lodged in calf. Two well marked transverse fissures extend from point struck, showing ruptured effect in displacing large fragments, as distinguished from explosive action.

our own Krag, indicate that the explosive zone extends from the rifle to about 220 or 400 yards, according to tissue, and that from that point to about 3200 yards clean perforation with slight shock may be expected, while beyond 3200 yards the velocity falls below the critical point of rupture for that caliber, and ruptured and torn wounds result. The cause of these effects is not well understood, but the best explanation is as follows:

At the very lowest velocities the cohesion of the particles of tissue at the point of impact is so great with regard to the rate of application of the bullet's force, that most of the energy is distributed to a large adjacent area without breaking the tissues, resulting in a large bruised and contused zone without penetration, frequently of a most serious nature. As the velocity is increased the critical point of contusion is reached at which the rate of application of force is higher than the tissue cohesion, and penetration results. This is below 100 feet per second, with the .30 caliber point on, but may



RUPTURED EFFECTS.

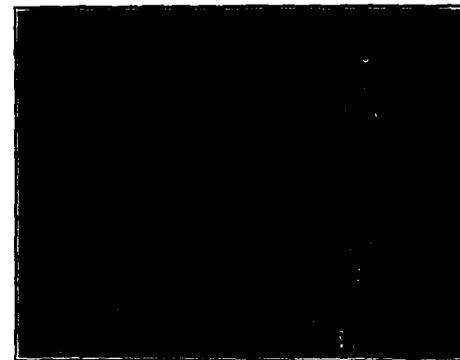
Long range, very low velocity. Bullet perforated bone along dotted lines, breaking loose a large fragment at exit. Ruptured effect producing large fragments without explosive propulsion of detached pieces.

be much higher with larger caliber, and ricochets' or key-holed bullets.

Suppose the velocity to be increased a couple of hundred feet more until the penetration is sufficient barely for perforation.

At these low velocities, the cohesions of the particles of tissue in the path of the bullet is so great with regard to velocity of the bullet, that a tearing and racking strain is given to neighboring tissue by such particles, before they are broken apart and displaced, and thus give a heavy shock.

As the velocity is increased, this shock will increase at a comparatively high rate until a second critical point is reached. At that point, the critical velocity of rupture, the cohesion of the tissue is not sufficient to stand the strain between the suddenly acquired velocity of the particles in the bullet path and the inertia of the adjacent tissue particles, and a clean shearing or punch action results, without as great a displacement of tissue as at lower velocities. When the velocity of explosion is reached, the particles displaced by the bullet, and possibly those affected by the rotary action, acquire

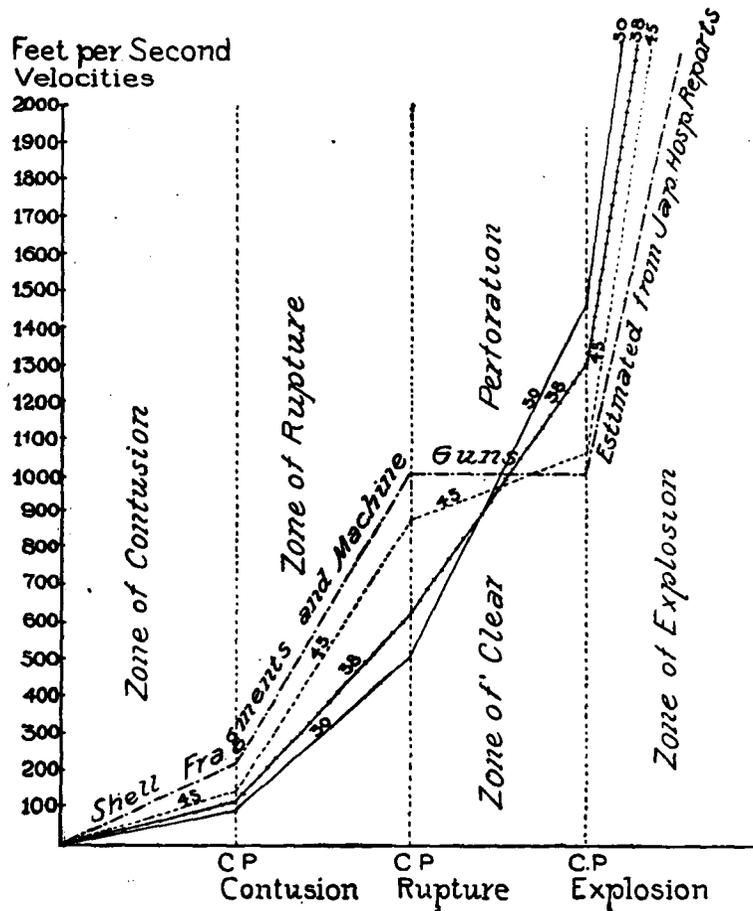


EXPLOSIVE EFFECTS.

"Explosive" wounds of legs. Large irregular entry (1x3/4 in.) outer surface left leg. First exit (2 inches) roughly circular, inner surface left leg. Second entry wound produced by bone and tissue fragments driven out of left leg, very large and irregular (5x3 1/2 inches). Measurements eight days after injury. Right leg subsequently amputated, though not struck by bullet.

themselves destructive velocities, just as a ball struck by a bat, and fly out in all directions, destroying the adjacent tissues. A hydraulic action resulting from the incompressibility of liquids is also mentioned by some authorities as a possible explanation of explosive action in animal tissue. The critical velocity of explosion tends to become lower and that of rupture to become higher for any particular tissue as the caliber is increased, reducing the zone of clean perforation to the vanishing point for largest calibers. Thus, as illustrated in the above diagram, the explosive velocity for the .30 caliber

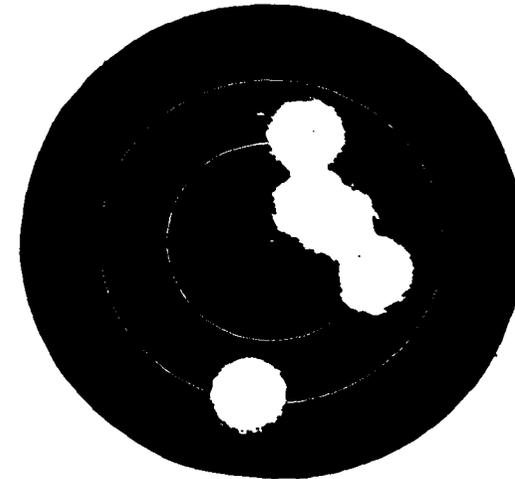
appears to be about 1450 feet; but explosive action with the Springfield 45-405 and Winchester 45-90 have been noted as well below 1200 feet, and the ordinary 45 Colt's at 800



Curves showing approximate relation of velocities and caliber of undeformed projectiles to the zones of contusion, rupture, clear perforation and explosion in targets of animal tissue.

feet still gives ruptured effects, while the .30 caliber gives ruptured effects only below 500 feet, unless there is increased surface by key-holing, etc. If several panes of glass instead

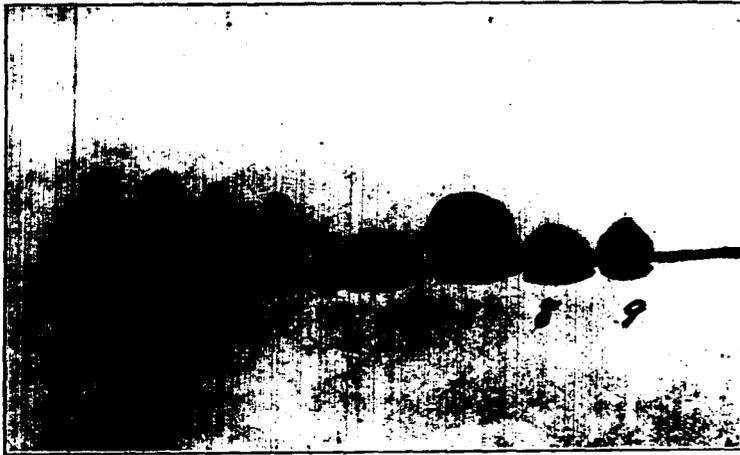
of a single pane be used in the experiment cited in the previous issue in support of low velocity .38 bullets, the effect of the service .30 and gallery .30 bullets will be found to give no exception to this law. The explosive effect of the service .30 on such a target at close ranges is simply annihilating. Moreover, deductions concerning stopping power based on effects on a glass target are objectionable because of the great difference between the critical velocities of animal tissue and such a brittle material. The zones for the .38 would appear to lie between those of the .30 and .45.



Score of forty-nine (twenty yards), by Lieutenant R. H. Sayre, New York. Colt New Service .45 revolver, Eley ammunition, man-stopper bullet. (From *Shooting and Fishing*.)

We have seen that it is useless to hope for results in shocking power of the .38 by decreasing the velocity, since that would result in further loss of its already meager striking energy and simply aggravate its principle source of weakness. This loss may be offset by increasing the mass of the bullet, but the capacity of the cartridge chamber and the increased rate of rotation for long projectiles and consequent stripping effect on soft bullets, place a positive limit on the lead which may be added to a pistol ball of given diameter. The Ideal Tables place 167 grains as the highest

weight practicable for an uncased pistol bullet of .357 caliber. Supposing, however, that an addition of twenty-five grains to the 150-grain bullet, was found possible, without loss of accuracy, a reduction of not exceeding forty feet in velocity could be made in the muzzle velocity without also reducing the



- (1) Forty-five caliber (.454) cartridge, 235 grains lead, smokeless, 800 feet per second for Colt New Service Revolver.
- (2) Thirty-eight caliber (.357) special military cartridge, 158 grains lead and tin alloy, smokeless, 800 feet per second velocity.
- (3) Thirty-eight caliber (.357) issue cartridge, 150 grains lead and tin alloy, smokeless, 723 feet per second.
- (4) Thirty-eight caliber (.357) Smith & Wesson, 146 grains lead and tin alloy, smokeless, 630 feet per second.
- (5) Issue bullet, undeformed after lodging in hog carcass. Energy delivered in target 170 foot pounds.
- (6) Forty-five caliber, pure lead, "man stopping" bullet, lodged in same carcass. Energy delivered in target 360 foot pounds.
- (7) Same as 6. Traversed carcass lengthwise and lodged against pelvic bones, which were shattered. Energy delivered in target, 360 foot pounds.
- (8) Same as 6. Passed through hog skull, neck and throat and lodged under skin of abdomen. Energy delivered in target, 360 foot pounds.
- (9) Same as 6. Lodged in fourth elm plank, each $1\frac{1}{4}$ inch. Metal of point mushroomed until in rear of base.

muzzle energy. Further, any alterations in velocity of the .357 bullet must take into consideration the critical velocities of that caliber. Its critical point of rupture is about 600 feet, so that any increase of velocity will have the wide and profitless zone of clear perforation to pass before any explosive

action is reached, or else the critical velocity of rupture must be raised by increasing the diameter of the bullet by mushrooming. It might be possible, theoretically, to increase the shocking effect by increasing the velocity, but the loss of gas around the cylinder places a tremendous handicap on velocity in a revolver. The cartridge already fills the chamber and but little increase could be made; but some advance might be gained in that direction by using a pure lead, half-jacketed bullet with as much smokeless powder as the gun will stand.

Costly metal-jacketed ammunition would, however, soon eat up any saving made in not re-arming with proper weapons.

There are two valid arguments against the reduction of velocity of the .38 bullet. The first is that reduction of velocity, coupled with increase of mass, to maintain a *constant energy* of impact does not reduce penetration nor perforation wastage, unless the reduction is of sufficient degree to pass from a zone of lower to a zone of higher ratio of shock absorption. The velocity of impact, at target ranges of the .38, is already within the zone of rupture, and reducing velocity reduces mushrooming.

The second argument is, that the experiment of lower velocity has been made in the .38 Smith & Wesson and .38 Smith & Wesson short, having a velocity of 623 feet. The lists of resentful convalescents in the police wards of the municipal hospitals are eloquent of the futility of the change.

The plain truth is that the .38, conceived in a spasm of humanitarianism, designed by a Hague peace conference as an initial step in disarmament, required to be carried in a holster, which is a source of satisfaction to only the juramentado and the anti-imperialist, has proven a bloody trial to all troops equipped with it, and the sooner this cross-bred firearm and missionary tract is sent to the scrap heap the better for all concerned, except the juramentado aforesaid.

It is to be feared that the cowboy with his file is not a very safe guide toward the proper velocity for the .45. The short barreled Colt's .45 did not begin to gain popularity until the town marshals began to make the holster gun an

object of legal attention. Certainly no increase in stopping power is to be expected from cutting down the barrel to reduce the velocity, as clean-cut perforations are not made even at the muzzle velocity, as its whole trajectory is below the critical velocity of rupture for the caliber.

A decrease of velocity with a compensating increase of mass to keep up the energy, therefore, has nothing to gain. An increase of velocity would carry the bullet into the zone of clear perforation and low proportional gain of shock and a decrease in velocity without compensating the mass, would simply reduce the energy and consequently the potential efficiency, and while the .45 is powerful, it has no power to waste. In its last analysis, the argument for the reduction of velocity of the .45 would appear to be based on no more secure foundation than the fact that its bullets usually go clear through a man at close ranges, and the popular misconception of amount and percentage of shock in imbedded and perforating bullets, ignoring the principle of critical velocities.

The 45-40-255 cartridge with the seven and one-half inch barrel was the standard cowboy weapon and peacemaker. The record of instantaneous stops of American bad men and knife-wielding Greasers, can hardly be equalled by any other weapon, while the army records give ample evidence of the efficiency of the stopping power of the large caliber.

Any increase in shock of the .45 must, therefore, be sought in increased bullet diameter, and the most pertinent suggestion would be that the man-stopping, soft pure lead bullet be adopted in order to prevent waste of power beyond the target.

The bullet like a lead pancake with about 400 foot pounds behind it, is the best prescription yet devised for emergency treatment at close quarters, and *speed in the administration of the first dose* is worth more than all the rest of the box. This means that the open holster, slack belt, and thigh thong are essential ingredients of the prescription, and that the high rate of fire does not offset the difficulty of getting an automatic to make up its mind to fire at all.

SPECIAL CLASS AT RILEY.

AN invitation from the school authorities at Riley to attend the graduating exercises of the special class on April 29th was accepted with much pleasure on our part; especially as the photographs in the last issue of the JOURNAL had met with such cool reception on the part of many officers. "Do you mean to tell us," was the burden of the objection, "that these photographs correctly represent the seats and the proper positions as now taught at our great practical school. And can no better representations of horses, for cavalry purposes or otherwise, be found than those represented in the photographs as ridden by Mr. Gardiner, Mr. Dillman, Mr. Dallam, Mr. Dickey, and Mr. Talbot.

Without going into the question of the difficulty of getting good horse pictures, the difficulty of which every one understands that has tried the task, we will proceed to tell of the work accomplished by these young gentlemen as shown by their proficiency in the practical graduating tests.

The morning of the 28th of April was cool and clear. After a walk through the squadrons of the Second, Ninth and Thirteenth regiments, at Saturday morning inspection where we noticed the double rein universally used with the "Lesson in Picture" hand, we reached the riding hall

Here we found eight four-mule army wagons ready for the road. We found that the mules had been caught up from the herd, harnessed and hitched to the wagons by the young lieutenants constituting the graduating class. These young men occupied the seats as drivers, and as the wagon-master gave the word, swung the teams, one after the other, into the riding hall. Here was given an exhibition of driving that would have done credit to an artillery battery on special drill at Madison Square. Coming into park at a gallop, breaking to the front and turning between stakes down the hall seemed to be play for these youngsters, who handled

their reins and whips with the ease of an old timer of '49. We were informed that these young men were required to know how to fix any part of their material that should accidentally become broken, whether it was a simple trace of the harness, or a pole of a wagon. They had been taught loading of the wagons, and with that we remembered the lieutenant in China that was required by the colonel to load his wagons himself the second day out from Tientsin on account of the general bad condition of the loads in his troop the day before. Here was instruction that counted. Possibly this instruction alone might not have rendered competent returns to the government for a special course, but this was only one of the many little things that showed thoroughness of detail to every particular, no matter how apparently small or insignificant.

When the young lieutenants had driven the wagons from the hall, some twenty pack mules came crowding through the door. These were hurriedly caught up by the class and the packs taken off and the mules turned loose in the hall. At the given word these mules were caught, blinded, and the packs put onto their backs. When all were packed, a number of officers were called from the audience to inspect the packs, and then the mules were galloped up and down the hall to show the secure manner in which the packs had been fastened. Of course the expertness of the packer does not rest in his ability to throw the diamond hitch, but rather in his knowledge of how to rib up the apa-rejo, but we rather imagined that a young officer with the knowledge of packing that these possessed would never be caught on a march without good mules and in good condition, no matter what the exigencies of a campaign.

When the packing work was over, eight horses were brought into the hall and held by as many soldiers. At a given word, after the tools for shoeing had been placed near each horse, the class started in a contest of shoeing. The hoof had to be prepared, the shoe fitted, and nailed on. There was no work at the forge of turning out the shoe, but many days are spent by the class in their regular course, in this instruction. No manner of help was given the class,

except that some one held the horses' heads. The time of shoeing was short; the time was kept, but we did not ask for it, as it really was immaterial, the work was so rapidly and yet so thoroughly done. We were particularly interested in this work, as so much has been made of this course whenever we have heard Riley spoken of. And we are not so prejudiced in favor of the school that we could not see faults and quickly express them. But we must say, that our scrutiny found no faults in this particular. True, one of the young men had driven a nail into one of his fingers, but this was due to hurry in the competition and not to inaccuracy. When a lieutenant was not satisfied with a nail as driven, he would draw it and drive again. And we noticed no wrong placing of the nails at the start and not a horse was pricked, and we venture so say these shoes are still on if the horses have not since been shod.

This work completed the morning's exercises, and after lunch we again assembled at the hall to witness the riding. This consisted of high school work with horses that had been under the instruction of the class since last November. No one else has handled these horses. Not even the instructor in horsemanship has ever mounted one of these colts. They have been ridden only by the officer of the class to whom they were originally assigned. The work was remarkable in its proficiency. True, the use of the aids may have been exaggerated, but what is one to expect from untrained colts after only some three months' work. These colts, it should be remembered, had never been mounted previous to November last, and not all of the time since then has been devoted to training. So that they represented young horses in what might be called the first stages of high school training. And we must say the results were, as stated above, remarkable. Even this week we had the pleasure of witnessing some horse work in one of our great circuses, and with one exception, we found these circus horses not so well trained nor so well handled as were the colts by the young men of the special class at Riley. We afterwards went into the circus stables to look over the horses and found this particular horse, that was so well trained, to be some years of age, with

a most pronounced thoroughpin, and a general air about him of the old stager. But here, at Riley, was work with new material, both horse and man, and the results most certainly bear out the adjective, "remarkable." If one will closely watch the work of circus riders with their trained horses, they will find the aids used to the fullest limit; and, while the young men at Riley used theirs in what might have seemed an exaggerated manner, it was no more than was necessary at that stage of training. These young men in a year would have the colts doing everything but talk, and that without other visible indications than are used by the remarkable trainer of Jim Key.

After the high school work, some old troop horses were brought in and sent over the jumps, some two or three of the horses going over five feet six. And it may be said right here to the officers that have been remarking on the looks of the photographs in last issue of the JOURNAL, that officers need have no fear that these young gentlemen can not ride. Two buckers were brought into the hall, blinded and saddled, and two of the graduates, picked by lot, were told off to ride them, which they did. An exhibition was also given of riding a mount that had never been ridden before.

These exercises completed the work, and we must say that we left the hall with a feeling that the Riley School was making good.

Some five majors of cavalry witnessed the exercises, and without fail their complaint was that they had not had such opportunities when they were second lieutenants. General Carter was present at the exercises and his careful statements are not to be taken amiss. He was well pleased with the work, and was desirous that more young men should be given the chance to attend the school. We understand that thirty-six young lieutenants are to be present for the course this coming year, twenty-four from the cavalry and twelve from the artillery.

One objection to the present idea of detailing the youngest second lieutenants is that from the older of the first lieutenants. These officers think that the school should be

thrown open more to them, because they are soon to be troop commanders and will remain in that position for many years to come. Whereas the second lieutenants, just out of West Point, as were the young men that have just completed the course, will be many years older before they are troop commanders and in as good a position to use their acquired knowledge as the men who are now about to be promoted to captaincies. This we admit is a good argument. But we must remember that all officers in the army can not be given the advantage of the service schools. But possibly we can spare enough of the young men to give them all as they enter a tour at some one of the schools, so that we will have a growing army of competent young men to take our places as we drop out. So possibly the scheme of sending the youngest lieutenants is as good as any other.

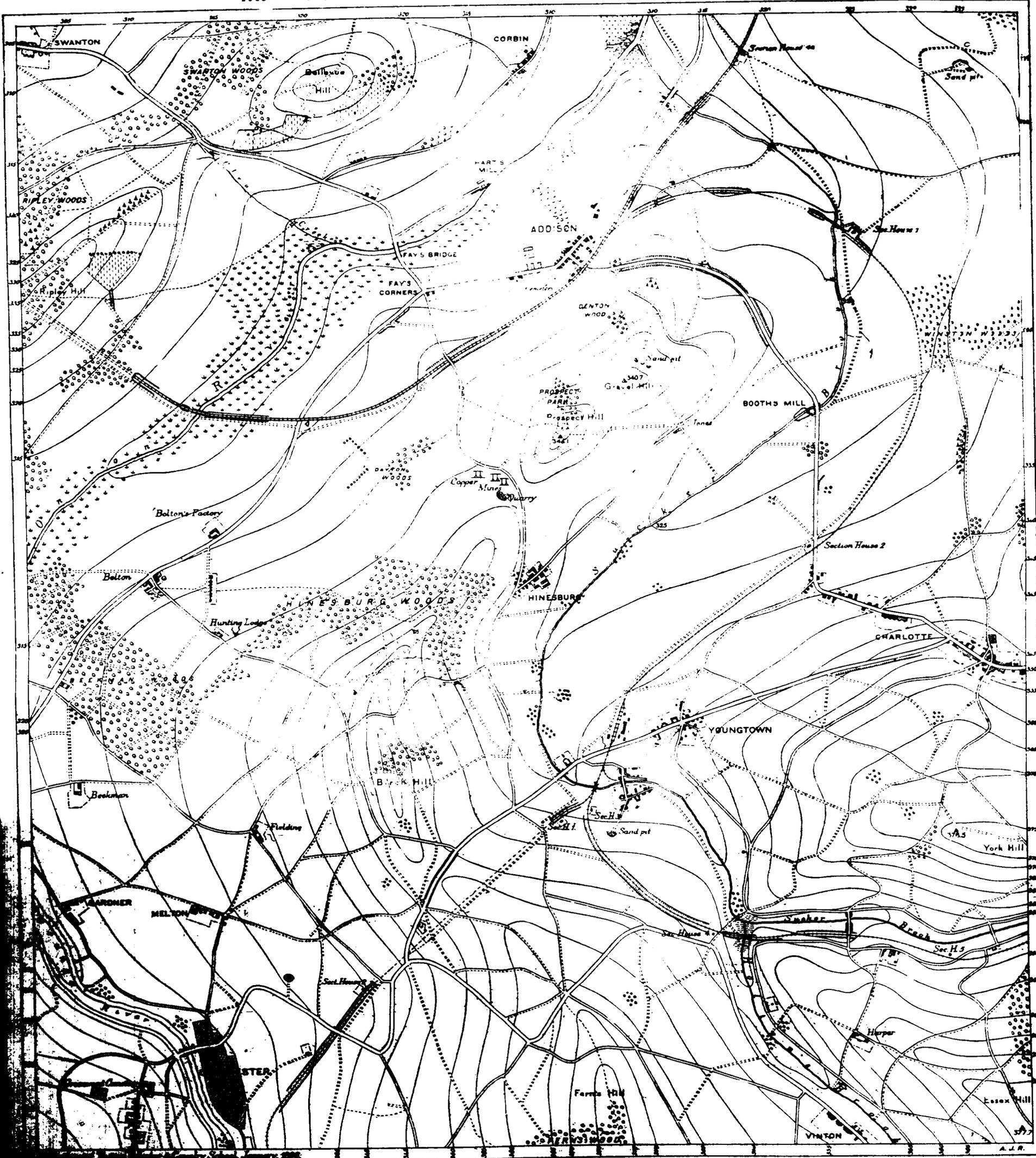
The young men of this first class struck us as particularly sensible. We were glad of this, for they have quite a position to hold as they go to their regiments. Were they rattlebrained, egotistical young fools, the present system at Riley would last about as long as their actions would last under some martinet. But we believe they have been well trained in discipline as well as in their duties, and we expect to see them go to their posts understanding that the world does not depend upon them entirely to reform the army. We have never seen the troop commander yet that was not always ready to grant his lieutenants all reasonable opportunity to work with the horses, and these young men now have a chance before them, to work honestly and faithfully under the direction of troops commanders who are invariably young themselves and ready to learn and improve, gaining knowledge from any source that can demonstrate its accuracy and correctness.

The success of any school must rest largely upon the conduct of the graduates after they have left the institution. These young men that have just finished the special course at Riley have had training in much that is necessary for a second lieutenant to know. How they will utilize this knowledge remains to be seen. It is to be hoped their Riley course will but stimulate them to further work.

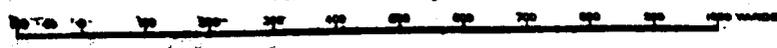
Regarding the school at Riley, the JOURNAL has had occasion to remark that it has endeavored to bring the service to a realization that we have now a great riding school. Possibly, as Captain Cameron said in his remark upon the school in the January JOURNAL of this year, Riley has not the reputation of Saumur, but Saumur has existed for one hundred and fifteen years, Riley for three. But from the present standing and the work accomplished at the latter place, it will not take a hundred years to make Riley as good as Saumur. In fact, from present indications, in a very few years Riley will be one of the leading riding schools in the world. And this is the fact we have sought to emphasize in our late issues of the JOURNAL. We have a great riding school and we want all our officers to know it. When the work at Riley is known to the mounted services, we feel a great interest in its work and its future will arise and all for the betterment of the army.

In closing we might say that the school, important as it is, is not all there is at Fort Riley. The work done by the squadrons and the batteries is of great profit to the cavalry and artillery. Here we find the cavalry board and we believe some of the artillery board are here doing their work upon the improvement of the artillery. We are glad to see that the post personnel at Fort Riley can not be excelled in the army—could not be excelled if the service were culled over for special appointments as to commanders and their subordinates.

MAP FOR INSTRUCTION IN PATROLLING. No. 1.



Scale 1:50,000
Vertical interval - 50 ft.



PRIZE PROBLEM No. 2.*

General Situation:

A blue brigade in hostile country has been defeated west of the Orange-Onion River and is retreating eastward via Colchester.

Special Situation—Blue:

A flank guard (Captain A) consisting of two troops of cavalry and one rifle caliber machine gun, is retiring via Swanton-Fay's Corners closely pursued by a hostile squadron. At Swanton where the Blue detachment arrives at 10 A. M., firing is heard to the south, and the following message is received from the rear guard commander:

"The rear guard will be east of the river at Colchester by 10:45 A. M. and will fall back through Vinton. Hold the enemy west of Onion River until 11 A. M., and then retire through Charlotte on Smithville (five miles southeast of Charlotte). I shall destroy the bridge at Colchester."

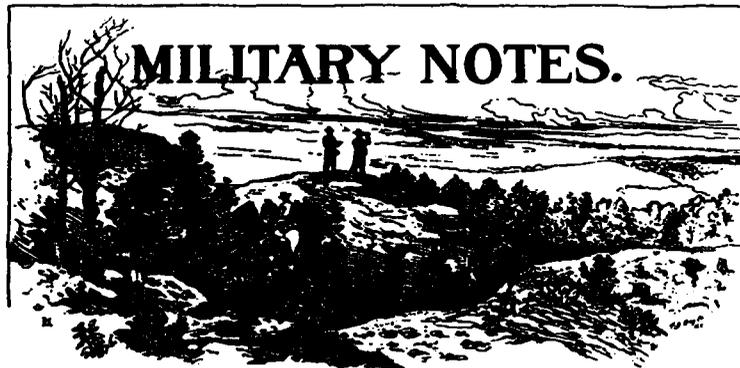
Required:

1. Captain A's estimate of the situation.†
2. A sketch (tracing) showing the disposition Captain A would make of his command in order to carry out the rear guard commander's orders.

Note: Weather, fair; Onion and Orange River (same stream) fordable for cavalry between Hart's Mill and mouth of Sucker Brook; passable elsewhere only at bridges.

* Answers must be submitted to the Secretary, Cavalry Association, before January 1, 1907. For other directions, see April JOURNAL, 1906.

† For the meaning of the term "estimate of the situation" (as used at the Infantry and Cavalry School and Staff College) see last issue of the CAVALRY JOURNAL. It is simply your view or opinion of the military situation existing at a certain time, with reasons therefor. In other words, it is the course of reasoning, logically expressed, by means of which you arrive at certain conclusions and take definite action. In this case you will give a detailed statement of what Captain A proposes to do (with reasons therefor) in order to carry out the order he received.



"A LESSON IN PICTURE" CONTINUED.

BY CAPTAIN GUY V. HENRY, TWELFTH CAVALRY.

SOME method must sooner or later be adopted for holding the reins of the double bridle, and a continuation of "A Lesson in Picture" may not be out of place.

Figure 1 represents the English method; Figure 2, Fillis; Figure 3, French Cavalry (Anderson); Figure 4, Le Bon.

In what follows remember that the soldier has the use of *but one hand* in any discussion as to the best method of holding the reins. I will not go into any lengthy argument on the subject, but wish to point out a few facts and make some quotations. At any rate all methods should be given a fair trial and then the best selected. The statement that it is easier to teach the soldier one way than the other amounts to nothing, as he can be taught any ordinary method with equal ease.

The English method is adopted by certain civilian riders in England and America where the rider has the use of two

hands to lengthen or shorten the reins of the bit or bridoon at will. It has also been adopted at Fort Riley and I understand West Point, principally, I believe, because the instructors at these places are more familiar with this method. To use it with one hand requires all four reins to be of equal length, thus riding on both bits and allowing no alternate

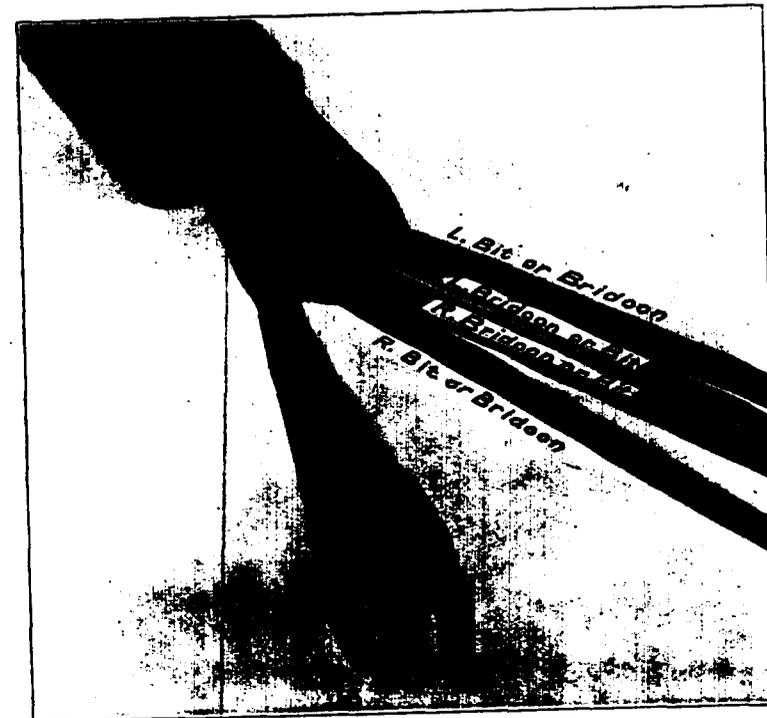


FIGURE 1.
English Method. The Two Variations.

action of bit and bridoon, or it requires that one set of reins, as the bridoon for instance, be taken shorter than those of the bit; thus the latter cannot be used when necessary. Change it the other way, and you ride on the bit, in either case losing the chance of the play from curb to snaffle which is so essential to keeping a light mouth on the horse.

In this method one set of reins cannot easily be dropped if necessary.

In confusion they are easily mixed up and hard to pick out.

It is not used by the German, Swiss, French or British armies.



FIGURE 2.
Fills Method.

It is used by the Russian, all four reins being of equal length.

Practically all pictures of English riders show them using two hands and always so when doing any school movements.

Le Bon, in "L'Equitation Actuelle et ses Principes," describes Figure 4 and says:

"The French hold of the reins requires only the use of one hand. The English hold of the reins necessitates two hands; each hand holds one rein of the bit and one of the bridoon, separated by the little finger. The French hold is applicable only to the well trained horse. It is the only one which permits easy separation, and above all to alternately use the action of the reins of the bit and of the bridoon if they be held in one hand, or, if the bridoon reins be

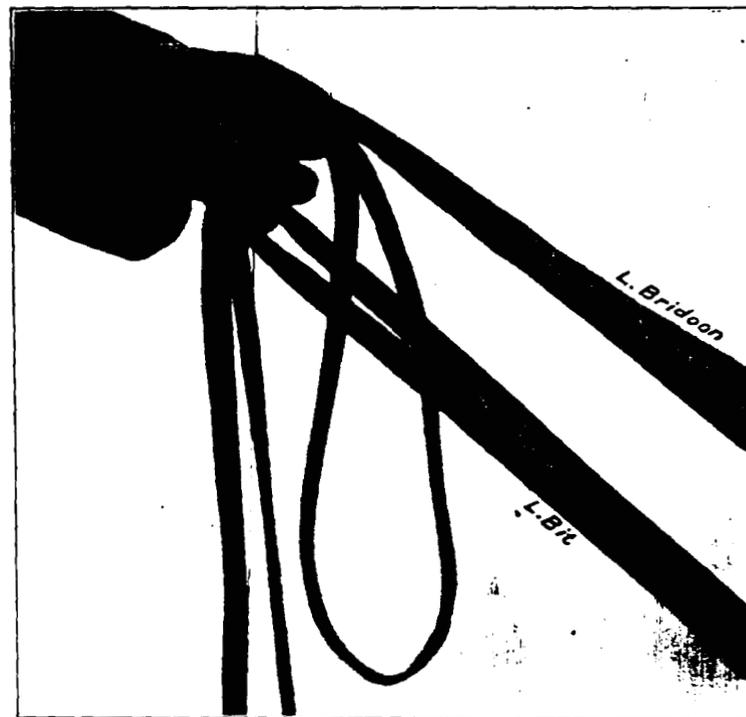


FIGURE 3.
French Cavalry (Anderson) Method.

held separately in one hand, this hold permits alternate effects to be very strongly produced. The English hold is excellent for the badly trained or sour horse, and for training; it also permits the rapid uniting of all the reins in one hand; but it permits only with difficulty, the separate employment of the reins of the bit and bridoon, and not at all of their

alternate and successive employment. It is recommended to beginners, or to the rider who mounts an unknown horse."

(Remember, the English hold above refers to two hands.)

Captain A. Gourmel, instructor from 1894 to 1899 for officers and noncommissioned officers, Fifth Hussars, states that the English method (Figure 1) is suitable for road rid-



FIGURE 4.

Le Bon Method.

ing at the walk, trot and gallop, but he does not recommend its use by his students.

All the above tends to show that the English method is not generally used by armies or continental riders.

The methods of Figures 2, 3 and 4, or any of their combinations, allow the alternate effect of the two bits, so essential to a light mouth.

They allow either set of reins to be easily dropped, or in confusion to be easily found, as each set is at all times separate and distinct.

Fillis, in "Breaking and Riding," says,

"There are three orthodox ways for holding the reins, namely, the English, German, and French. I do not hesitate to say the French way is the best.

"As the snaffle is higher in the mouth than the curb, its principle action is to raise the head of the horse, and that of the curb to lower it. In other words the snaffle is an elevator, the curb a depressor, therefore the reins should occupy the same relative position in the hand as the snaffle and curb do in the mouth, viz., the snaffle reins should be above the curb reins.

"Contrary to this very simple principle, the English place both reins at the same height in the hand and hold one rein between each finger. The Germans act in a still more contrary way to the principle in question, by holding the snaffle reins below the curb reins, supposing the hand is in a vertical position. It appears that the Germans have even less common sense than the English.

"Reason tells us that the reins should be held in the French manner, hand vertical. (Figure 2.) With the reins held in this manner and without displacing the hand, we are able, by the mere play of the wrist, to obtain the movements which are indispensable for acting on the mouth, supposing of course, that the animal is broken."

H. M. Hayes, the translator of "Breaking and Riding," and himself the author of many horse books, says of Fillis:

"I therefore trust that all English-speaking horsemen, and especially cavalymen and polo players, will profit by the valuable instruction which he (Fillis) now puts before them."

"Armée et Marine," April 5, 1905, says, referring to Saumur:

"We can only boast of the most wonderful riding master that Europe has produced in a long time, Fillis."

Figure 3 represents the hold recommended by Anderson in his valuable works, "Curb, Snaffle and Spur," "Modern Horsemanship," and "Riding and Driving," also that re-

quired of French Cavalry by Par. 261, French Cavalry Drill Regulations of 1882. Captain Gourmel indicates (1901) that this is still required by labeling a similar illustration, "Tenne des rênes à l'ordonnance," and adds, "As one carries the little finger toward or away from the body one rides on the bit or the bridoon." This quotation shows the alternate action of the two bits, so much to be desired.

Thus we see that Anderson, Fillis, LeBon, Gourmel, French Cavalry Drill Regulations, and many others not mentioned, all recommend the methods of Figures 2, 3 or 4, (the majority that of Figure 2) because of the alternate action that can be had and the absolute lack of confusion between the two sets of reins. Personally I prefer that of Figure 3, used by the French cavalry and recommended by Anderson, because I have used it for a number of years, consider the hold more secure and also less tiring to the hand in case of a pulling horse. I have ridden it in polo and in school work with most satisfactory results, and have always found that with a properly adjusted curb chain the alternate and successive action of the bit and bridoon can be had with ease.

"A Lesson In Picture," (CAVALRY JOURNAL for January, 1906) gives the method in Figure 1 the "Best for Military Work" and that of Figure 4 the "Best for School Riding."

How can these two be reconciled? What is cavalry drill and cavalry work in general but "school riding" pure and simple (not high school)? What are halting at increased gaits, backing, passaging, turning on the forehand, but school movements pure and simple? The latter the basis of all school movements.

If the above be true why not then adopt a school method of holding the reins, preferably that of Figure 2 or 3, thus retaining with one hand the alternate and successive action of the bit and bridoon and thereby obtaining the maximum good from the adoption of the double bridle?

"HORSES, SADDLES AND BRIDLES."

June 8, 1906.

The Editor The U. S. Cavalry Journal, Fort Leavenworth, Kansas:

SIR:—I have recently completed a revision of "Horses, Saddles and Bridles." The first edition of this book was reviewed in the CAVALRY JOURNAL some ten years ago, and the second edition a few years later. As it would require someone to carefully compare the present edition, page by page, with the second edition to fully appreciate the numerous changes, I have deemed it best to make a personal explanation through the JOURNAL.

The original volume was prepared by me while on duty as instructor in the Department of Cavalry, at the request of the school staff of the Infantry and Cavalry School, to avoid groping in so many foreign text books for the particular information needed in the course which had been introduced at that time.

The old time regular cavalry contained many fine horsemen, and the regiments generally were superbly mounted. Selected officers going abroad during the preceding half century to study the arm had brought back valuable information from time to time, but as a general proposition it may be stated that the Quartermaster's Department supplied the horses, the Ordnance Department the saddles and bridles, and tradition and drill books were depended upon to do the rest. Veterinary knowledge was at a very low ebb in the service, and there seemed little or no hope of improvement until the two schools at Forts Leavenworth and Riley were established. The word "Hippology"* was finally coined as the result of efforts to crystallize a lot of information into a course of study.

It was realized by the author that the first edition of "Horses, Saddles and Bridles" was not a perfect substitute for some of the valuable books which it replaced. The sec-

*See definition of "hippology" in the Century Dictionary.

ond edition was intended to be an improvement upon the first, but before that edition was exhausted it was made apparent that numerous changes should be made to prepare the book for use in the wider field into which it had been introduced. Some obscure paragraphs required elucidation, and several portions of the original work which seemed to merit it have been much amplified. On the other hand some portions which have led to undue discussion beyond their real importance have been modified or altogether eliminated. A rearrangement of the chapters has been deemed advisable, and a glossary of terms used in the examination of horses for conformation and soundness, has been added at the end of the book. It is believed that this glossary will prove most useful, especially to those students who have had no previous experience with horses. The very important chapter on "The Cavalry Horse," has been extended to include the points of the artillery horse.

So much difficulty is encountered in the purchase of horses by contract, owing to differences of opinion as to soundness, that the report of the committee of the American Veterinary Medical Association, which was appointed to investigate the practicability of establishing a standard of soundness, is quoted in full in its appropriate place. The author fully agrees with the committee that degrees of absolute soundness and serviceable soundness should be recognized for general purposes, but to adopt this principle in the purchase of public animals requires a high degree of training on the part of inspectors.

The chapter on the "Frame Work of the Horse," mechanically considered, has been made to follow the chapter on "Conformation." The next chapter in order, "Gaits of the Horse," has been somewhat modified to make clear points which appeared to be obscure or were misunderstood by students. The alterations in the chapters make those on "Bits," "Bitting and Training," "Saddles," "Seats," "Modern Cavalry and its Equipment," and "Endurance of Horses" follow in consecutive order. Those relating to the subjects of "Age of the Horse," "The Horse's Foot," "Stable Management," "Veterinary Supplies and Prescrip-

tions," "Diseases and Injuries," "Forage," and "Transportation of Horses by Rail and Sea," have been grouped in the latter part of the book.

The chapters on "Bits and Bitting" and "Training" have been completely rearranged and carefully rewritten. Owing to the book being used by other than cavalry and field artillery officers, the aids and bending lessons have been explained in this portion of the work. The chapter on "Saddles" has been considerably abbreviated and simplified. The chapter on "Seats" has been made to include the method of holding the double rein adopted at the Cavalry and Field Artillery School. Various authors on equitation have trifling differences in method or peculiarities in holding the reins. The reasons assigned for the adoption of this method at the Cavalry and Field Artillery School, in the opinion of the author, are sufficient to justify its general adoption throughout the service.

The frequent changes in uniform and equipment make it quite difficult to reprint books fast enough to keep up with all of the minor modifications if that were deemed necessary or advisable. To simplify the chapter on "Modern Cavalry and its Equipment," the tables of articles and weights carried have been eliminated in the rearrangement of the chapter; only the essential elements have been retained to show the various methods of the cavalry of the more powerful military nations. The author had an opportunity to visit Japan just before completing the revision of the book, and was successful in obtaining illustrations and reaching some conclusions on the Japanese cavalry.

The chapters on "Endurance of Horses" and the "Age of Horses," have been modified but slightly. That portion of the work relating to "Stable Management" and "Diseases and Injuries" has been considerably changed, and in the opinion of the author, much improved. "Diseases and Injuries" have been brought together under appropriate headings, as adopted in the instruction at the Cavalry and Field Artillery School, and many additions resulting from the author's studies in the Philippine Islands will be found useful to officers having charge of animals in tropical countries.

The chapters on "Forage" and "Transportation of Horses by Rail and Sea" have been but slightly modified. The author was somewhat tempted to eliminate the chapter on "Transportation of Animals," owing to the appearance of a similar chapter in the new Field Service Regulations; but as his book is used by so many persons not possessed of copies of Field Service Regulations, it was finally deemed best to retain the chapter.

The author contemplates at the earliest practicable moment the preparation of a list of questions and answers applicable to the third edition of "Horses, Saddles and Bridles" for the use of examining boards and students. While the list will not be a bar to examining boards asking any questions thought necessary to develop the knowledge of an officer undergoing examination, it is believed that such a list will greatly facilitate the acquisition of an accurate knowledge of the contents of the book.

The author is under many obligations to various officers for advice in regard to the revision of the work. Many times it has been suggested to him that if the book were rearranged and paragraphed it would be much easier to acquire a knowledge of it. In the opinion of the author there are few subjects which commend themselves to such an arrangement in the instruction of mature men; in fact such an arrangement is only useful when preparing for an examination by cramming. The practical results to be obtained by cramming questions and answers without going into the history of a subject, are rarely satisfactory, and the author has felt constrained to steadfastly adhere to the presentation of the subject matter as it appears in the present volume.

The justification for this view lies in the fact that the large majority of cavalry officers of the present generation, trained under the modern system, are much better informed in the theories of hippology than their forebears of the old army, and this knowledge has enabled them to sustain in active service the best traditions of the arm with a minimum of preventable loss.

Even a casual examination of the book will justify the conclusion that no apology is needed for the publisher's efforts on the text and illustrations, and that the volume, typographically, will bear comparison with any professional works published in recent years.

Very respectfully,
WILLIAM H. CARTER.

Publishers, Friedenwall Co., Baltimore, Md. Also for sale, Scribner's Sons, New York; A. C. McClurg & Co., Chicago, Ills. And arrangements will be perfected whereby the book can be purchased from the Secretary of the Infantry and Cavalry School and Staff College, at Fort Leavenworth, Kansas.

SADDLE PEG.

TROOP "F," SECOND CAVALRY,
FORT RILEY, KANSAS, April 13, 1906.

The Adjutant, Cavalry Subpost, Fort Riley, Kansas:

SIR:—I have the honor to report that the iron saddle pegs now in use in the new cavalry stables at this post are practically useless for the purpose intended, for the following reasons:

1st. They are too short. Therefore the saddles frequently fall off.

2d. The upper surface of the cross section is too small; hence a saddle must be very carefully balanced. If not so balanced, it turns to one side or the other and falls off.

3d. A saddle fully packed will not remain on the saddle peg at all, on account of the defects numbered 1st and 2d.

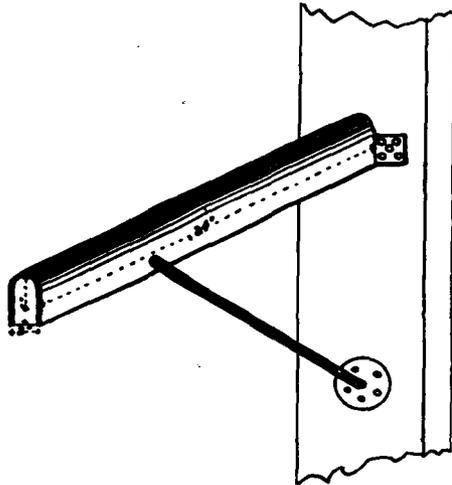
In my opinion the saddle peg should be made of hollow iron twenty-four inches long, two inches thick, and three to four inches deep, with the upper surface well rounded and perfectly smooth, so as not to injure the saddle.

The sides and bottom at one end of the peg should flare out giving a better bearing surface against the wall.

These flanges should contain screw holes for fastening the peg to the wall.

An iron brace should run from a point, about one-third of the length of the peg from the front end, diagonally down to the wall.

The whole length, twenty-four inches, is required when a saddle is packed. The width, two inches, with a well rounded top surface permits the peg to enter the slit in the seat of the saddle without injury to the saddle, which fact, together with the four inches depth, keeps the saddle in place and does not permit its turning from side to side on the peg. Neither a hook under nor a knob at the end of the



Saddle - Peg

present peg is required. Both are disadvantageous; the former hides dirty equipments; the latter injures the under surface of the saddle.

Four stout hooks each about four inches long should be placed at a convenient distance above each peg for loose parts of the horse equipments of small size, such as nose bag, watering bridle, etc.

A peg of the same dimensions made of planed oak with iron brace and fastened to the wall by angle irons and screws or bolts would also serve the same purposes.

A piece of two by four inch scantling planed to a round, smooth surface on top edge and sides, of the dimensions given above, one end fastened against the wall with round edge up and brace of wood underneath, makes a fair sample of such a peg.

Request that this report be forwarded to the proper authorities of the War Department.

Very respectfully,

C. E. HAWKINS,

Captain, Second Cavalry.

RIFLE ON HORSEBACK.

The Journal:

I HAVE no great amount of confidence in the following, but I have not yet seen any unassailable solution of the Rhodes problem. ("Cavalry Equipment," the JOURNAL, April, 1906.)

I have known of a troop of cavalry carrying the carbine balanced on the pommel through an Indian campaign of several months; and I have seen frontiersmen carry a long tom in some such way.

The following is a mere suggestion:

Rifle balanced on pommel, held by a steel grip or frog, butt to the left and depressed until muzzle is elevated to an angle of about 45 degrees; axis of barrel perpendicular to axis of horse.

Lariat fastened to the near pommel ring. Canteen fastened to the off pommel ring. Saber suspended from near cantle ring by means of a loop (as is done in the French cavalry).

Nosebag suspended from the off cantle ring. Tin cup in nosebag or on canteen strap. An extra bandolier of ammunition may be carried in the nosebag.

Overcoat, or slicker, or cape, or poncho, or blanket, carried on cantle with shelter half.

Shelter pole and pins may be carried in nosebag or packed with canteen roll.

Weights in saddle bag distributed so as to balance the pack saddle.

Half ration of grain may be carried in nosebag.

Haversack to be carried by trooper when cut loose from transportation. Also useful for dismounted service and travel by rail. Ordinarily on marches the haversack (and blanket bag) with spare clothing, etc., will be carried on wagons or pack animals.

J. G. GALBRAITH,
Major of Cavalry.

GENERAL KUROPATKIN'S FAREWELL ORDER TO THE FIRST MANCHURIAN ARMY.

(Translated from the *Revue de Cercle Militaire*, March 31, 1906, from the French, by Captain Raymond Sheldon, Eighteenth United States Infantry, at Fort Leavenworth, Kansas, 14 April, 1906.)

GENERAL KUROPATKIN has issued to the First Manchurian Army the following farewell order dated the 5-18 of February last:*

"By order of the Emperor I will abandon Manchuria when the breaking up of the First Manchurian Army shall be concluded.

"For two years commander of the troops in the First Manchurian Army, and having observed their manner of performing duty during that time from a point close by, I am impressed with a great esteem and a deep affection for them.

"From the beginning of the war, you have been the first to bear the shock of numerically superior hostile forces; you died, but you did not abandon the positions with whose de-

*The 5th, old calendar; the 18th, new calendar.

fense you had been intrusted until you had received the order to retire.

"During the continuance of the war, several regiments very sorely tried by hostile fire, have seen their officers' effective strength three times renewed and that of their men twice; but far from losing courage, these regiments were hardened, had acquired war experience, and were absolutely prepared to return to the combat.

"Our enemy purchased the successes he gained only at the price of heavy sacrifices, as he suffered such immense losses that it was long ere he could resume operations.

"It has not been our fate to win the final victory. At the moment when we had appreciably reinforced our effective strength, and when we had become strong under all the (unfavorable) reports, the army learned with sorrow, and yet with complete submission, of the conclusion of peace.

"In parting from you, I express my regret at not having seen you victorious during this period in which we have had to struggle against a brave and eminently patriotic nation.

"We can regard our valiant enemy with a sentiment of esteem. I am convinced that the Japanese, themselves so, render the respect that is due to the stubbornness and endurance of the troops of the First Manchurian Army.

"They have been obliged to acknowledge that, had the war continued, they would have had to change places with us and begin to fall back.

"I thank with a full heart, for their services replete with self-denial, all the corps commanders, the chiefs-of-staff, all the generals, the superior and subaltern officers, the doctors, the nurses and the military officials.

"To the soldiers, I extend from the bottom of my soul a Russian 'Thank you!'"

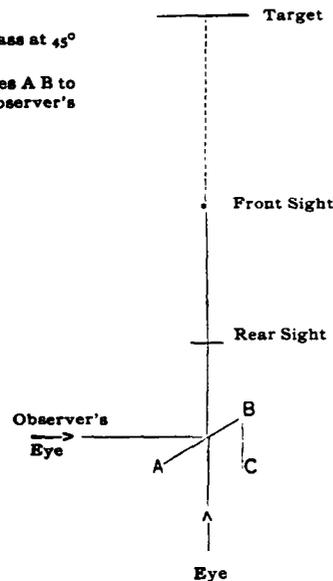
THE PIEPER AIMING DEVICE.

THE Pieper aiming device which is issued by the Ordnance Department is very useful in detecting the nature of the error in aiming and firing. It will show whether the person finches or pulls off the target at the moment of firing.

In principle, it consists of a vertical piece of slightly smoked glass placed behind the rear sight and at an angle of

PRINCIPLE OF PIEPER'S AIMING DEVICE.

- A B is vertical piece of smoked glass at 45° with line of sight.
 B C is darkened metal which causes A B to reflect sights and target to observer's eye.



45° to the line of sight, and also at 45° with a darkened piece of metal, set approximately parallel to the line of sight. The glass affects in no way the view of the person aiming, but the darkened metal makes it reflect to the observer the images of the sight and target just as they appear to the person aiming.

This device can be adjusted and reversed instantly, as any position for it will be correct by which the observer's eye can see the images of the sight and target.

A. J. DAVIS,
Second Lieutenant, Ninth Cavalry.

THE BAYONET FOR CAVALRY.

The Secretary U. S. Cavalry Association, Ft. Leavenworth, Kan.

SIR:—I desire to call your attention to the question of the bayonet for the cavalry. G. O. No. 70, War Department C. S. paragraph II, which directs certain paragraphs of the Infantry Drill Regulations, relating to the handling of the new rifle, to apply for cavalry armed with that weapon, omits those paragraphs which relate to the use of the bayonet. Are we not to retain the present bayonet, and if not, why not? I suggest (timidly) that the present rod bayonet be retained for the cavalry and that all troopers be trained in its use.

The real use of the rifle is in dismounted work, and as armed at present the cavalry, dismounted, should be able to meet infantry on its own ground. Good dismounted troops will always be able to find use for the bayonet, just as good cavalry will find use for the saber. The present rod bayonet is light, easy to carry, not in the way. Perhaps the new bayonet to be adopted for the infantry would be better, but I believe that will be carried on the person. The present method of carrying is for us much the better. If we are without the bayonet in any actual work dismounted I feel sure we shall regret it. I have spoken to older officers on this subject, and I believe many agree with me.

Very respectfully,
 F. W. FONDA,
First Lieutenant Tenth Cavalry.

NOTE:—The Russo-Japanese War would seem to indicate danger in arming cavalry for too great an amount of dismounted work. The subject is important, and cavalry officers are requested to send articles upon this matter to the JOURNAL.

TITLE TO SOLDIERS' CLOTHING.

U. S. STAFF COLLEGE,

FORT LEAVENWORTH, KANSAS, May 20, 1906.

The Editor Cavalry Journal, Fort Leavenworth, Kansas:

REFERRING to my article on the subject of stolen or embezzled government military property appearing in the last issue of the JOURNAL, I have the honor to invite your attention to the following decision of the Federal District Court for the northern district of Illinois. A copy of this decision was sent me by General W. H. Carter, commanding the Department of the Lakes, and seems to settle the question of the title to clothing issued to soldiers. It remains in the United States.

Very respectfully,

D. H. BOUGHTON,

Major Eleventh Cavalry.

* * *

IN THE DISTRICT COURT OF THE UNITED STATES OF
AMERICA, FOR THE NORTHERN DISTRICT OF
ILLINOIS, EASTERN DIVISION.

UNITED STATES OF AMERICA, }

vs.

EDWARD HART, }

Bethea, J.

No. 3676.

This is an indictment for violation of the provisions of Section 5438, Revised Statutes of the United States. The part of the section under which the indictment is drawn is as follows:

"* * * every person who knowingly purchases or receives in pledge for any obligation or indebtedness from any soldier, officer, sailor, or other person called into or employed in the military or naval service, any arms, equipments, am-

munition, clothes, military stores, or other public property, such soldier, sailor, officer, or other person not having the lawful right to pledge or sell the same, every person so offending in any of the matters set forth in this section shall be imprisoned at hard labor for not less than one nor more than five years, or fined not less than one thousand nor more than five thousand dollars."

It appears that Edward Hart, the defendant, on a number of different occasions at his place of business in Highwood, Illinois, purchased and received in pledge from soldiers employed in the military service of the United States at Fort Sheridan, certain articles of clothing consisting of fur caps, fur gauntlets, capes and coats, which articles had been previously issued to them as soldiers by the United States.

On motion to take from the jury the question arose as to whether certain articles of clothing, namely, caps, gloves, shoes and coats, which had been issued to soldiers in the service of the United States and by them sold and pledged to the defendant, are public property under Section 5438 of the Revised Statutes.

Clothing is issued to soldiers by the United States for use by them in the capacity of soldiers. The government determines the character, quality and quantity of clothing to be issued to the soldiers, and when the clothing is issued, although it is charged against the soldiers on their clothing account, they receive but a qualified interest therein.

The Seventeenth Article of War (Act of July 27, 1892) provides that any soldier who sells or through neglect loses or spoils his horse, arms, clothing, or accoutrements shall be punished as a court-martial may adjudge.

Section 3748 of the Revised Statutes provides that clothes, arms, military outfits, and accoutrements furnished by the United States to any soldier shall not be sold, bartered, exchanged, pledged, loaned, or given away; and that no person not a soldier, or duly authorized officer of the United States who has possession of any such clothes, arms, military outfits, or accoutrements, so furnished, shall have any right, title or interest therein; but the same may be seized and taken wherever found.

These sections of the Revised Statutes indicate that the title to clothing issued to soldiers remains in the United States, therefore I hold that in this case the articles of clothing which were issued to the soldiers at Fort Sheridan while they were employed in the military service of the United States were public property under Section 5438. Motion to take from the jury overruled.

Jury instructed to return verdict of guilty.

SUBSTITUTIONS IN PUNISHMENT.

FIRST LIEUTENANT E. A. KREGER, TWENTY-EIGHTH INFANTRY.

A SUMMARY court has properly inflicted a punishment of three months' forfeiture and confinement for the same period. Can substitutions be made in accordance with Article Seven of the Punishment Order, page 59, Manual for Courts Martial?

Substitutions can not be made. The act establishing the summary court, approved June 18, 1898, as amended by Section 4, (A. W. 83), of the act to prevent the failure of military justice, approved March 2, 1901, places a limit upon the punishing power of the summary court, both as to confinement and forfeiture of pay. In the Eighty-third Article of War it is provided that "* * * * summary courts * * * * shall have power to award punishment not to exceed confinement at hard labor for three months or forfeiture of three months' pay, or both, and in addition thereto, in the case of noncommissioned officers, reduction to the ranks, and in the case of first class privates, reduction to second class privates. * * * *"

The sentence quoted above inflicts the maximum confinement and also the maximum forfeiture that may be imposed by the summary court. To convert any part of the forfeiture into confinement and add it to that already ad-

judged would make the confinement for a greater period than the summary court can legally impose. Conversely, to convert any part of the confinement into additional forfeiture, would make the forfeiture thus adjudged in excess of the legal limit fixed by the law. In other words, the executive order relating to substitutions can not bring about any extension of the limit of punishing power fixed by statute.

ARMY DISCIPLINE.

THE Secretary of State for War appended the following memorandum containing "Notes on Clauses" to the Army (Annual) Bill, which has been issued as a parliamentary paper:

Clause 4. The object of this clause is to prevent soldiers convicted of purely military offenses being subjected to the stigma attaching to imprisonment. This object is effected by the creation of a new punishment to be termed detention. Soldiers sentenced to detention will be termed soldiers undergoing detention; and the places in which they will be confined will be termed detention barracks. The change is little more than a change in nomenclature, as at present soldiers sentenced to imprisonment and not sentenced to be discharged with ignominy, whilst undergoing imprisonment in military prisons wear uniform, and not prison clothing, and the hard labor they undergo consists of drill and other military exercises.

Clause 5. In the late South African War the high pay in colonial forces tempted a certain number of soldiers to desert the regular forces and enlist in the colonial forces. The object of this clause is to extend to such cases the provisions of the Army Act relating to fraudulent enlistment.

Clause 7. This clause enables a sentence of loss of seniority to be inflicted on a noncommissioned officer by a sentence of a court-martial. At present a sentence of reduction

can only take the form of a sentence of reduction to a lower grade.

Clause 9. Sub section (1)—The object of this sub-section is to do away with flogging altogether in military prisons and detention barracks. Sub-section (2)—The object of this sub section is to enable soldiers in military prisons and detention barracks to earn by good conduct in prison, a remission of part of their sentence.

Clause 10. This clause subjects reservists to military law when they are employed in military service under the orders of an officer of the regular forces.—*Broad Arrow.*

TARGET PRACTICE IN VERMONT.

“I COME from the hills where the Green Mountain boys used to play hide and seek with the red coats of King George,” said John W. Lee, of Burlington, Vt., at the Plankinton. “Nowadays Burlington is noted chiefly as the headquarters of a big patent medicine concern, but we still keep up the old traditions—that is, in the country districts. Our boys are just as good shots now as in the days when they carried Ticonderoga, and this is due to the fact that we still keep up rifle practice. We have some splendid shots among our boys, shots that would surprise the Westerner or the Wild West show fellow who breaks glass balls with rifle cartridges filled with small bird shot. At the age of twelve our boys are expected to bring down honey bees on the wing, and when sixteen years old it is a poor shot who cannot hit the bull’s-eye without looking at it. They are pretty near as good shots as the fellow who went out gunning for duck and came across a flock that darkened the skies. ‘They came so fast and there were so many of them,’ he said, ‘that all I had to do was to load and shoot, load and shoot, and load and shoot. Finally I just shot.’ It is when the boys are twenty years old that the real test comes, however. Every season

we have a grand contest for all the boys who become twenty years old that year. They go out to a small hill and take up a position at the foot. The judges start a barrel rolling from the top, and each contestant takes turns in shooting at the barrel. The contestant who fails to put five bullets through the bung hole while the barrel is coming down hill is accounted a poor shot and loses his membership in the local country club. We have not lost a member in twenty years.”—*Milwaukee Sentinel.*



SAN FRANCISCO.

San Francisco, beloved of the army, is to-day but a memory. But what a memory in the hearts of our army. No other city occupied so near and dear a place in the love of the American soldier. Underneath her friendly gaze assembled the armies that were to cross the mightiest of oceans to bring happiness to a benighted people. And after the martial struggles were over this bright, gay city stood upon her green hills to welcome the tired soldier with his first view of home.

San Francisco had not the opulence of New York or Philadelphia, possibly not the culture of Boston, not the repose of Baltimore and Washington, nor the ease of New Orleans, but she did possess a soul known and loved by our soldiers. A disaster to no other city could have struck terror to the hearts of the soldiery such as came to us on the awful 18th of April. The army is not in a condition to respond financially so full as it would wish in the call that went out, but we feel that the work performed by the regular army during those terrible first days is a fitting memorial of our regard for the stricken city. San Francisco has our deepest sympathy in her grief, and our greatest admiration in her courage. We shall watch her growth to new power and beauty with loving eyes, and while shedding tears over the gay city of the past will feel pride in the wondrous city of the future.

TIME REQUIRED TO MAKE A CAVALRYMAN.

We confess to a little surprise when our esteemed contemporary and club companion, the *Infantry Journal*, remarks that it is sorry that our Secretary of War has fallen in with the popular fallacy, that it takes longer to make a cavalry soldier than an infantry soldier. Somehow we have always held that idea, and not until reading the remarks referred to above, did we know that this idea was nowadays considered a fallacy.

We have always been under the impression that the following about correctly expresses the relative training of the two branches:

INFANTRY.

1. Rifle.

CAVALRY.

1. Rifle.
2. Pistol.
3. Saber.
4. Horse.

We would delicately suggest that there is a little strabismus somewhere, and as long as we believe we can see four on one side of the line to one on the other we must think that the faulty eyesight is not ours.

BOOKS ON THE RUSSO-JAPANESE WAR.

Books, books, books. As stated in former issues we have been unable to keep pace with the increasing number by personal reading. We give in our book reviews notices of three recent books, and we are sorry that we cannot give the notice from some member of the Cavalry Association, for a magazine review may be accurate from a military standpoint and it may not. However, we have considerable confidence in the publications quoted from and it would seem from the reviews that none of these books is entitled to be in the JOURNAL'S list of necessary volumes.

We also give on page 188 a review by Captain Fox Conner, Artillery Corps, of Smith's "Siege and Fall of Port Arthur." Captain Conner has a large number of books on the Russo-Japan War, and is excellently qualified to give valuable comments on all books dealing with this subject.

Due to lack of time we have been unable to read Sir Ian Hamilton's book, "A Staff Officer's Scrap Book," and we must once more put this off until the next issue. It has so many friends, this book, and there are also so many that think the book but an indifferent one, that we must have personal knowledge of it before recommending purchase or otherwise. We trust we shall be able to give the book a thorough review in the next issue.

The JOURNAL has been asked what was the limit of price upon our recommended purchases. We can quickly answer, the lowest possible limit. We have been asked if it would not be well to have two lists recommended, a list as at present and another for officers that lay aside about five dollars per month for the purchase of books. Possibly this would be a good idea, but we could not always feel sure that all of the five dollars per month expenditure was to go for books upon the Japanese War. There are other books appearing from time to time that officers must purchase, and so there would really be no known limit to a five dollar per month allowance. Our idea has been to recommend those books to our officers that were worth a self-sacrifice somewhere to secure them. We fully understand the pecuniary conditions of the service and know that even a small expenditure for books is to be carefully considered. Hence it was that in the last issue of the JOURNAL we cut out Cowen's book. We were sorry to do it, but we consider the books recommended superior to a military student, and we wish to keep down the limit in price. No book will be recommended for purchase by the JOURNAL OF THE CAVALRY ASSOCIATION (whether upon the Russo-Japanese War or other subject) that is not considered worth purchasing by our officers who have nothing but their salaries to subsist upon.

We find during the last three months one book that we recommend, and we will now carry this in our list. It is "The Battle of Mukden." This is an authorized translation from the *Militär-Wochenblatt*, by Karl von Donat. Hugh Rees, Limited, London. Price six shillings, net.

This is a small book of only seventy-two pages, less than fifty of which are devoted to the great battle. This account is by what are supposed to be the most competent military critics in the world, the German General Staff. It is a terse statement of facts, with no reflection or comment. It is the best account that has yet appeared of the battle of twelve days' duration where 620,000 men were engaged. In a small pocket at the end of the book are eight excellent colored maps, illustrating the movements from day to day. We believe this book gives us the proper way to study a battle, and until the Japs or Russians are ready to give more details than they have heretofore we hardly see how this description can be bettered.

Some twenty pages, after the description, are given to comments by Lieutenant General von Caemmerer. In our January issue of this year we gave a short review of one of this General's works, "The Development of Strategical Science."

That the book was good, goes without saying. That it was anything wonderful, we are not so ready to concede. And we are not particularly impressed with the comments by Lieutenant General von Caemmerer upon the battle of Mukden. We were inclined to smile at his insinuations that the Russian commander should have listened to the advice or comments of the Germans just previous to the battle of Mukden. We are under the impression that Kuropatkin was too busy at that time to listen to the theories of theorists thousands of miles from the scene of conflict. And we are not at all sure that had the Russian commander followed implicitly the advice *then* offered, he would have met with any more success than he did. It is always easy to say what might have been done after events have passed into history and hindsight gets to work. And it is not always possible, or it seems not at any rate, for one offering advice

to remember exactly what his advice was, when once the event has occurred and his former ideas are colored by later events.

Von Caemmerer's comments are good, but nothing more than any serious student of military history and strategy could give. However, we are glad they are given in the book, as they indicate to the careful reader the trend of German partisanship during the struggle.

* * *

One book that deals with the after effects of the struggle has come most prominently to our notice. Parts of this work appeared last fall in *Scribner's Magazine*, and we carefully read what was printed at that time. We refer to "The New Far East," by Thomas F. Millard.

A personal acquaintance with the author, though slight, makes the work especially interesting to us. From this acquaintanceship, gained at Peking and Yangtsun in China during the Boxer trouble, we were favorably impressed with Mr. Millard's personality, but not so favorably impressed with his accuracy and judgment. We remarked at that time that for a correspondent who had attained such prominence, he seemed very willing to take what came to him while sitting in commanding officers' tents in place of getting out and rustling for it. If this characteristic still remains in Mr. Millard, any book that he could write would not be received by us with great belief in its accuracy.

That he is a most charming writer we must all allow. That his English is good and most exceedingly readable we are most ready to allow. But not until time has proved true at least some of the statements of his recent book, can we say that he could write a book that could be relied upon to be absolutely careful and accurate.

The first chapter of "The New Far East" we must say has given us some new ideas. We had some dim idea of what the English press was doing, but possibly we had too great a confidence in our own Associated Press. We are exceedingly thankful to Mr. Millard for making us more care-

ful than heretofore about what we read in the important dailies and other influential publications. We believe he is right in saying that the sentiment and beliefs of the American people during the last five or six years have been shaped most cleverly in the way that England and Japan wished. And while Russia sought to combat this foxy propaganda, yet, as the author states, it was too late, and the effort was not influential enough to overcome the wonderful start the English and Japanese interests had already attained.

Mr. Millard's idea is that public sentiment in America has been shaped by a carefully prepared plan on the part of England and Japan. That this was quite easily done, not only on account of a subsidized press, but what was practically a government press, in those countries. He states that a Japanese press bureau was established in London, with branches in Europe, and indirect connections in America, for the purpose of keeping the Japanese point of view conspicuously to the fore. He also explains the predominance of England in giving us the world's news; how this was formerly done by the fact that she controlled almost all the world's shipping, and later, when cables were laid, how she controlled them. That this is now somewhat overcome by other cables and principally, as far as the Eastern question is concerned, by our own Pacific cable. There is a great deal of truth in this point of view and is so *prima facie* true that we wonder people have not been struck by the thought before. We have been far too ready in the past to accept our world news from England, not having been intensely interested in them. Mr. Millard says that he has tried to eliminate all colorable matter from his consideration of the question, and as he has spent some years in the theater of interests in the East, he should be able to do so. By eliminating all this prejudiced matter as we know it from the Japanese and English point of view, the author gets what he calls a true starting point from which to go on with the discussion of the Far East.

He also eliminates with disdain the assumption that there is something mysterious, unfathomable to the Western intellect in the national character and motives of Japan. He

states in doing so, that he lays no claim to superior perception, but only to common sense. In this we heartily concur. For nations are nations, and their selfish natures vary not with geographic situation.

But when he comes to the causes of the war, we feel that he has made a most serious mistake, in fact, almost a blunder. He states with emphasis that we have heard much of the rights of Japan on one side and the rights of Russia on the other. He goes on to say: "As a matter of fact neither belligerent had any rights involved. Both had *interests*, but no *rights*. The chief bones of contention were Korea and Manchuria, and neither Japan nor Russia had any more rights in these countries than the United States, France, or Germany. Manchuria is a part of China, and Korea is, or was when the war began, an independent kingdom. Any rights foreign nations have are under treaties which may be modified or rescinded at any time. This distinction should be kept clear, for it is vital to any intelligent discussion of the issues of the war and their settlement."

This statement may be true as to Russia, but in our opinion it absolutely falls flat when applied to Japan. There is one law that is superior to all other law, and that is the law or right of self-preservation. No right can be so great as this, and when the necessity of its application arises all other laws, rights, or things fall. Neither is the idea of Blackstone correct, that one in danger must retreat to a stone wall before he turns and takes the life of his adversary, or at least uses the amount of force requisite to meet the conditions. Japan believed that her national existence was in peril as Russia advanced to the Pacific. That she was correct in her belief we have always most sincerely believed. And so we believe her justified in going into Korea and Manchuria to preserve her national existence. Korea and China had proved themselves most woefully incompetent to protect themselves, and the Colossus was rapidly advancing to a position where it was but a question of when the lanyard would be pulled and Japan wiped off the map. I need not wait until my adversary has his gun pointed full at my breast, and there remains nothing for him to do but press the trigger, before I exert

myself. It behooves me to draw quickly and shoot when there remains no doubt but for that action my life will be taken. And to say that Japan must wait until Korea is thoroughly Russian and Russian guns are pointing across the Straits of Korea and only the lanyards remain to be pulled, is absolute nonsense. Talk about the right of Japan in being in Korea or Manchuria or anywhere on the face of the earth as long as her life was at stake is futile. There is no difference in the right of self-preservation whether applied to individual or nations, and latitude and longitude cannot destroy this right. Japan has passed beyond the state when she can support her own population from her own territory. She is now a large manufacturing nation and the life of many millions depend upon her commerce. A blow at this commerce is a blow at the life of Japan. To protect that commerce Japan is justified in any measure where a man would be justified in defending his own life.

After Japan has repulsed the attack on her life, what her actions then are as to Korea and Manchuria is a far different question, and here we differ not so widely with the author. It is doubtful if the most weird dreamer ever expected such altruistic methods from Japan as that she would reap none of the fruits of her bloody war. We certainly did not expect it nor had anyone else any reason to expect it. But what we did expect and what we still believe, is that other nations will stand a better chance of a door ajar, if not an open one, with Japan on the inside than with Russia in that position. We believe it is true that many people are beginning to wonder if Japanese success was best for the world, but we believe it was. Of course this is only a personal belief, but it is one founded on nearly as much study of the Eastern question as is the author's belief.

We give Mr. Millard the credit of trying to secure the proper "starting point" from which to view the situation. And correctly he starts out in his endeavor to reach a solution of Japan's aims and the effect of her policy, by examining, not so much what she says as what she has done and is actually doing.

In speaking of the true position of Japan, in his second

chapter he deals with popular opinion in Japan, writing of the sentimental impulses of the people, and states as follows: "The masses of the Japanese people have no better knowledge of public and foreign affairs than do the masses of people in Russia, or than did the peasantry of Europe in the time when it spilled its blood upon battlefields in obedience to the whims of kings." Did Mr. Millard ever stop to consider the condition of the private soldier under Washington? A glance at a copy of almost any old muster roll of the Revolution will convince anyone that the soldiers of that period of our history could be classed in the category given above by the author for the Japanese.

Then he speaks of another matter which is certainly Americanism if anything ever was: "Rightly or wrongly, the average Japanese has not the slightest doubt just now of his nation's ability to whip any country in the world." If that is not the personification of American belief we will grant everything this author wishes us to believe. In fact if we believed all Mr. Millard's promises, we might think that really there is no difference between Americans and Japanese. And when it comes to grasping nations you can take your choice, and this applies not only to these two nations, but all others as well.

Regarding the chapters on China, we are about willing to admit most of the author's ideas as correct. But during the time that China is developing into a modern power, we can see no objection to Japan proclaiming a Monroe Doctrine for Asia, if she wishes to do so. Americans can consistently offer little objection to it. Not that we will not object, but it will be a selfish objection. As for the open door, of course that is for the good of Americans, else our great Secretary of State would not have done so much to secure it. But with a protective tariff at home, with worse than that as to the Chinese people, we cannot but admit that as a matter of equity we have little reason to expect the open door until we are ready to admit its policy everywhere. The truth of the matter is, any nation nowadays is always playing the dog in the manger policy, and America is no more above that than any other. So the author's contention that we are to be fear-

ful of what Japan will do in the future falls flat, for we must expect the same action on the part of any other nation that secures the dominancy of the East. And personal belief leads us to expect less of Russia than of any other.

We believe we can sum this whole matter up as follows:

Could Japan have known absolutely that Korea would always be independent and that Manchuria would always remain an integral part of China, she would not have gone to war. But Manchuria was already a Russian province, and it was only a question of time until Korea would be also, unless Russia was checked. It seems in Korea Japan had to do what she has already done, and the same for Manchuria. What she will do in the future remains to be seen. Anyone's opinion, with all due respect to Mr. Millard, is a mere guess. We see no reason to think that anyone will fare any the worse with Japan in control of Asia than he would were Russia in control. And, as stated above, our individual opinion is that most of the world will fare better.

We should like to review Mr. Millard's book more fully, but have not the space. Should anyone be interested in the political questions that are to follow the solution of the war game, he will do well to read this book and consider many of the statements therein. It is well to have opposite views thrust at us to make us sure in our beliefs, or else to shake them if sense seems to trend that way. We will not recommend this book for purchase as one of the JOURNAL'S list because it is not a military work and does not deal with matters military. But to one interested in Far Eastern questions it is well worth the price, \$1.50. From the press of Chas. Scribner's Sons, New York.

The following is the JOURNAL's list of recommended books on the Russo-Japanese War:

On the Causes:

"The Russo-Japanese Conflict." (Asakawa).

On the War:

"From the Yalu to Port Arthur." (Wood).

"The War in the Far East." (The military correspondent of the *Times*).

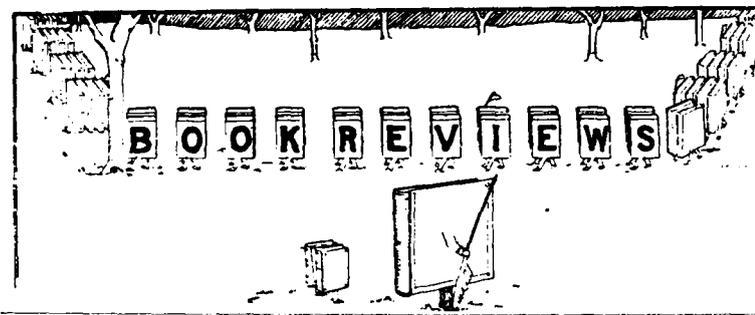
"The Battle of Mukden." (The German General Staff).

"Articles in The Outlook." (Kennan).

For comparison:

"The China-Japan War." (Vladimir).

The *Outlook* articles have not yet been published in book form. All the above have been reviewed in the JOURNAL. Asakawa's book can be purchased from Houghton, Mifflin & Co., for \$2.00; Wood's and Vladimir's from The Hudson Press, Kansas City, Mo., for \$1.50 each; "The War in the Far East" from E. P. Dutton & Co., New York, for \$5.00; "The Battle of Mukden," from Hugh Rees, Ltd., London, England, for \$1.50.



Notes on the
Evolution of
Infantry
Tactics.

A new book by the gifted military writer, Colonel F. N. Maude, of the British service. Colonel Maude is very much in earnest and writes with an intensity of purpose that generally convinces and always holds the interest of the reader. He sees in the present tendencies a gradual unfitting of the nation for a vigorous war. The influence of the press is being felt, and the press, unfortunately, even that part which could ordinarily be expected to support the army, has been too often the victim of immature and inexperienced war correspondents who have a horror of death and the carnage of battle. Modern weapons are too deadly and human life too dear. This sentiment operating upon the people reacts upon the War Department and finds expression in tactical changes opposed to the best military requirements. Wide dispersion in the attacking line is called for in order to lessen the number of casualties. Too much attention is given to the question of cover, thus teaching the soldier to be timid instead of bold.

This is the old struggle between the close order (properly understood) and the open order advocates. But that some such influence as that referred to above has been at work can be inferred when we find the British War Office issuing

an order* that in future the British cavalry is to be taught to rely on "the rifle, not the sword." With such orders in force it would indeed be wise to turn the swords into pruning hooks.

Colonel Maude's contention is that an undue extension of the attacking line lessens the intensity of fire, delays the advance, and ultimately leads to greater loss than would be sustained by a denser line having a greater intensity of fire. This contention is sound, to say nothing of the loss of control when the men are greatly scattered, for, other things being equal, a fire superiority must be the deciding factor.

But other things are not always equal, and Colonel Maude is strong in his conviction that even more depends upon the man than upon the gun he carries or the tactics he follows. For this reason he would have the English people taught that war means carnage and death, and that battles can only be won by men who have been taught "to stand up to losses," not by those actuated by a motive to save life. That this can be done in the future as it has been in the past the Colonel has no doubt, and discipline will accomplish the desired result. By discipline is meant that quality instilled into troops which insures prompt and unhesitating obedience, a military characteristic that can only be secured by careful instruction and drill, especially close order drill, where obedience is instantaneous. The tendency now is to more or less discard close order drill and devote all the soldier's time to the more practical exercises in extended order.

Perhaps Colonel Maude sees a real danger. The pendulum may swing too far, close order, "or barrack yard" drill being neglected at a loss of discipline and control of troops.

While the book is written for the British military service, many of the conditions discussed are so similar to those confronting ourselves that one could readily believe he was reading about our own army and our own people. The tendency of the latter to belittle the military service in time of peace, and the attitude of the press, are duplicated on the other side of the Atlantic. The style is what the title would

* March 1, 1903.

indicate, a series of running comments on the evolution of infantry tactics, the comments being the outgrowth of extensive study and experience. To appreciate the book one must read it at his leisure. It is full of instructive lessons, dealing not only with tactics but with other questions affecting the efficiency of the army.

One of these, referring to the method of instructing officers and soldiers in the important duties of "security and information," seems to me of sufficient importance to call for special attention.

That our present method is not the best, I am now, from my own experience, thoroughly convinced. It is quite easy to explain the object of security and information. It is quite another thing to instruct officers and men how this object can be best attained. In our service we have been taught for years by means of diagrams or pictures how advance guards, rear guards and outposts are formed. Only models, to be sure, but, unfortunately, the model is about the only feature that remains in the student's mind, and when he is called upon to exercise his own judgment he immediately tries to reproduce the model, irrespective of the nature of the ground over which he may be operating. Nine times out of ten it can not be done, and the tenth time that particular formation may be unnecessary. Diagrams are all right where applicable, but the shadow should not be taken for the substance.

The effect of this method of instruction is very clearly exemplified in the case of officers detailed for duty at the Infantry and Cavalry School. Here they receive very little theoretical instruction in that subject, the ground having already been covered in the garrison school. Their practical work on the ground begins with advance guard exercises, and in these they will insist on flankers marching at the prescribed (model) distances, whether they be necessary or not, and expect them to keep pace with the column marching on the highway, though plowed fields, woods, fences and ravines delay their progress. Security on the march can be maintained only by a judicious use of patrols, the latter being

sent out only when necessary, returning to the column by the most convenient route when their work is accomplished, and joining their proper units at the first opportunity thereafter. There is nothing new in this. It is what is actually done in practice. Why, then, teach the student something that he must sooner or later unlearn?

Security and information should be taught the same as applied tactics where principles are evolved from a study of "situations," first on the map and afterwards on the ground with and without troops.

I now quote a paragraph from Colonel Maude's "Notes:"

"Principal amongst these was the regulation by exact prescription of a multitude of details of outpost and advance guard duties, distances between skirmishers and supports and the like, matters which can not be laid down with accuracy, because they must vary with the circumstances of each particular case, and in a well-trained army grow out of its daily practice on service; but when instruction has to be provided for hundreds of officers and thousands of men who have never seen these things and have not insensibly grown into them, as they should do, such expedients are inevitable, though they have to be paid for afterwards. The mistake lay in mixing up drill with instruction in the same book, and the evil was especially great in an army so trained to pedantic accuracy in its drill movements as the Prussians, for if the outpost instructions showed on a diagram, say fifty paces between sentries, and sentries 150 yards from their pickets, or if they laid down with diagrams, the supports 150 paces behind the skirmishers, the saving clause, according to circumstances of the ground, etc., was overlooked and these distances actually measured out for the men, however ridiculous the result."

Verily there is nothing new under the sun.

The book concludes with a plate showing rate of fire of weapons individually, number of bullets per yard delivered by normal fighting line per minute, and losses per hour at various typical infantry battles, from 1700 to 1900.

It will be surprising to many to know that while the loss per hour at Marston Moor was twelve and one-half per cent., that at Modder River was only one-half per cent. This

would seem to indicate that the modern battle will be prolonged instead of shortened, as was claimed by military writers before the late Japanese War.

D. H. BOUGHTON,
Major, Eleventh Cavalry.

**Gustaf Adolf:
The Father of
Modern War.***

Colonel Noel has made quite a presentable book out of a pamphlet. While the work is printed so that there are some 110 pages in the book, yet it is done by means of large type and wide margins. Of course the typographical features mean much to any book, and in this case they are especially fine. But the book is really nothing more than a pamphlet.

It contains some of the leading principles of modern strategy, and shows how the Great King was the first to grasp them. Three or four maps plainly show the simplicity of Gustavus's movements in some of his more important battles. The second chapter, on old and new tactics, is interesting and instructive. But as a whole this is simply a lecture put into book form, and is hardly worth purchase unless one is a special student of tactics and strategy, or one wishes works on those subjects in his library.

**Army Hand-book
of Physical
Training.**

"The Army Hand-book of Physical Training" (Gale & Polden, Aldershot, England, price one shilling), is a handy compilation of leg exercises, physical drill with and without arms, exercises with dummy rifles, bayonet fighting, parallel bars, vaulting horse, rope climbing, bridge ladder, and dumb-bell exercises, all in accordance with the British training manuals and infantry training. It is designed to give a course covering sixty days of four hours each, embracing the exercises enumerated, and the culling of exercises from the service manuals seems to have been well

*"GUSTAF ADOLF: THE FATHER OF MODERN WAR." By Lieutenant Colonel Honorable E. Noel, late Rifle Brigade. John Bale, Sons & Danielsson, Oxford Street, London.

and judiciously performed. There is nothing new in the pamphlet except the one point of orderly and progressive arrangement of the exercises. Its worth to a company commander lies in relieving him of the necessity of abstracting our own numerous exercise manuals and in giving him a book which is easily within the understanding of his non-commissioned officers.

PAUL W. BECK,

First Lieutenant Fifth Infantry.

**The
Service Score
Book.**

"The Service Score Book" (The Service Company, Watertown, N. Y.; rifle thirty-five cents, rifle and revolver forty cents) is one of the many excellent score books on

the market and seems to present no particularly new features. Its chief advantage over most such books is in the number of blank targets provided, there being sixty-four provided for 200 and 300 yard scores; sixty-four for 500 and 600; sixty-four for 800 and 1000 yard scores; sixty-four for rapid fire and sixty-four for skirmish. On this account it is probably better suited to obtaining the zeros of windage and elevation of the rifle than are the other books. Its disadvantage is that it is too large to fit the pocket conveniently.

PAUL W. BECK,

First Lieutenant, Fifth Infantry.

**Company
Commander's
Manual.***

In the revised edition of "The Company Commander's Manual," Lieutenant Waldron has furnished the army with a very acceptable addition to the list of hand-

books. This little volume is a compilation of those paragraphs of the army regulations and the various manuals of the staff departments which affect company administration, together with model forms of all of the papers to be prepared in the company orderly room.

In his work Lieutenant Waldron has been most thorough, and few points will ever arise in the paper work of the com-

*From the Franklin Hudson Press, Kansas City, Mo.

pany which cannot be cleared up in his book. It will prove of assistance to every company commander, eliminating tiresome reference for the experienced, and furnishing a compact guide for the inexperienced. Its chief value will be found in the chapterization and orderly arrangement of the paragraphs of the chapters. The model forms will save much time in the preparation of papers.

It is a book which should find place in every orderly room.

M. B. STEWART.

**The N—th Foot
in War.***

Captain Stewart has given us a most readable little book in his clever description of the Cuban War. Though not quite up to the standard of Stephen Crane in literary merit and gore, it is a sight more interesting and humorous. It convinces us that there was a homogeneity in our old army greater than we had supposed. It is probably true that the description of the N—th foot will apply to any regiment in the army in '98. In reading it we picked out person after person most familiar to us, from the crying woman on the porch as we marched away from the old post to the crazy fool second lieutenant that was happy because war had come. The little sketch took us through the confusion of the early camps and the situation at Tampa. And from what we have heard of the times at Santiago, it is as reliable in all its descriptions, running along from the embarkation, through Siboney, the first fight, the siege and surrender, to home again. The truths of this book, expressed in the quaint, humorous style of the author, are well worth hearing again. And we are glad the book is dedicated to one who, though reaping little reward, even in glory, was yet the deserving factor of our Spanish struggle.

Dedicated to—

The Regular, who
Gets no glory in the War:
Don't give a damn.
Grins and shuts his mouth,
Like a clam;
Justs wants to live and die
For Uncle Sam.

*"THE N—TH FOOT IN WAR." By Captain M. B. Stewart, Eighth Infantry. By the Hudson Publishing Company, Kansas City, Mo.

**Five Years
a Dragoon.***

We again wish to direct the attention of our readers to the history of our frontier in the earlier days, by the Honorable Percival G. Lowe. The readers of the JOURNAL, it is true, are familiar with this work, the greater part of it having appeared during the last two years in the pages of the JOURNAL. But the work is now in book form, and forms most interesting reading. A cavalryman is the better soldier for knowing the history of his service, and here he finds a record of a time that has left few men to tell of it. When we consider the struggles of fifty years ago, the opening up of this vast country, and the part of the army in that work, we are overcome with a feeling that if we are to be worthy successors to that sturdy race of men of half a century ago, we must bestir ourselves lest sloth and indolence overtake us, at least when compared with men of the past, told of in this history.

Mr. Lowe has done the army and the country a great service in recording the history of those times. As he states, the stories told in his volume, the scenes and incidents referred to, will never be repeated. They have become ancient history with the struggles of the Greeks in Asia and the columns of Cæsar in Gaul. Our great plains have been transformed into cultivated fields, producing food for millions. The wild herds and the savages have passed away. But the remembrance of those days and struggles will ever remain for the American people a reminder of the past, and a hope and incentive for success in the future.

**With the
Cossacks.†**

This is the story of an adventurous Irishman who rode with the Cossacks throughout the Russo-Japanese War, and, in spite of the increasingly large number of books which have appeared dealing piecemeal with the events of the Manchurian campaign, it would have been a matter of regret had Mr. McCullagh failed to record also his experiences. The author

*"FIVE YEARS A DRAGOON." By Percival G. Lowe. By the Hudson Publishing Company, Kansas City, Mo. Price, \$1.50.

†"WITH THE COSSACKS." By Francis McCullagh. London. Eveleigh Nash, 1906. Price, 7s. 6d. net.

was engaged on a newspaper in Tokyo when he decided to go to Port Arthur, obtaining there employment on the staff of the *Nova Krai*, a newspaper which came out three times a week, which was generally reported to be the organ of the Viceroy of the East, and which at the time Mr. McCullagh joined it, was contemplating the production of an English edition. The author gives a vivid account of life in Port Arthur at the time when peace and war were trembling in the balance. But it was in the service of the *New York Herald* that he was fortunate enough to be an eye witness of the naval action immediately following the outbreak of the war, occupying as he did a commanding but hazardous position in very close proximity to the Russian fleet, when quarantined on the *Columbia* in the outer roadstead of Port Arthur. Later on the author was attached to the body of Cossacks commanded by General Mischenko, and the relation of his exciting adventures with this brigade occupies the greater part of his interesting volume. Mr. McCullagh saw much of the fighting at Liao Yang; he was in the worst of the retreat after Mukden, and relates with very considerable descriptive ability the horrors of the debacle.

The author possesses the advantage of knowing thoroughly both the Russians and the Japanese, and appreciates to the full all that in the one nation has led to defeat and in the other has made for victory. Soldiers will probably find the reason for the outcome of the great struggle in the following sentence toward the end of the book: "The Russians seem to have been everlastingly preparing against attack; the Japanese to have been ever getting ready for an advance."
—From the *United Service Magazine*, England.

**The Real
Triumph!
of Japan.***

Major Seaman expatiates further in this volume upon the same theme exploited by him in his former account of his experiences with the Japanese army—the success of the Japanese officials in preventing and curing disease. The reasons for this remarkable record are the

*"THE REAL TRIUMPH OF JAPAN." By Major Louis L. Seaman, M. D., LL. D. From the Appleton Press. Price, \$1.50.

simple, non-irritating food of the Japanese soldier, the obedience to orders of the surgeons invariably observed, and the thorough preparation and constant vigilance of those in charge of the health of the army. Major Seaman considers this a greater victory than that won on the field of battle, and makes an earnest plea for similar measures in the American army. The points are all well made, and the book is deserving of more careful consideration than "From Tokyo through Manchuria with the Japanese," as it enlarges upon the reasons for the statements made in that readable volume.—*From The Critic, published at New Rochelle, by G. B. Putnam's Sons.*

**The Siege
and Fall of Port
Arthur.***

military matters.

In a preface to the book Lieutenant General Sir W. G. Nicholson (an eye witness) says: "This friendly invitation (to drink tea at his quarters at all hours, day and night), combined no doubt with the discretion and tact in his dealing with the Japanese officers, rendered Mr. Smith a *persona grata* with the investing army, and led to his being given all the facilities he desired for observing the incidents of the siege."

A very clear account is given of the preliminary operations of the Second Army and of the formation and preliminary work of the Third Army.

The author joined the Japanese before Port Arthur on April 18, 1904, with the first of the correspondents and attaches allowed to go, and remained until the end. Reading that part of the book relating to events occurring after April 18th, leaves no doubt that the author was a bona fide eye witness of what he describes. The description of the desperate assaults and the underground fighting which marked the struggle for the North Keekwan Fort is particularly good.

*"THE SIEGE AND FALL OF PORT ARTHUR." By W. Richmond Smith, correspondent of the Associated Press and Reuter's Telegram Company.

Several writers have mentioned the fear entertained by the Japanese that the men of the Osaka regiments might not acquit themselves in accordance with the high Japanese ideals, but, so far as we know, the author is the only one who has stated that he observed an instance of such defection. The Japanese method of meeting the case is interesting: "They were constituted hewers of wood and drawers of water, and as completely isolated from the rest of the army as if they were infected with some contagious disease. Late and early every day they were put through field movements and compelled to march and charge over the roughest ground and up the steepest hill slopes. A Shinto shrine was erected upon the side of a hill in rear of their camp to the departed spirit of the major who had lost his life when they had won their disgrace, and every day, by sections or by companies, the regiment was marched up to the shrine to pay homage, and listen to long dissertations upon the splendid qualities of bravery possessed by their departed comrade. Never were troops put through a more drastic or humiliating punishment. For six or eight weeks this continued, until the regiment petitioned to be sent to one of the armies operating in the northern part of the peninsula, and given another opportunity in the fighting line."

The book is full of interesting and instructive details. While a lack of sufficiently detailed maps makes it difficult to follow all the operations, it will probably be some time before a more interesting account of the siege appears.

FOX CONNER.

**From the
Yalu to
Port Arthur.***

The author, who represented *The Standard*, claims to be the only correspondent who was with General Kuroki from the Yalu to the Shaho, and that he and his interpreter were the only observers, European, American or Japanese, present at these engagements, and at the last assault upon and surrender of Port Arthur.

*"FROM THE YALU TO PORT ARTHUR." A personal record. By William Maxwell. London: Hutchinson & Co.

There is a short summary of the events that led to the war, while a new light is thrown upon some phases of the diplomatic struggle. An excellent account is given of the crossing of the Yalu by the Japanese, who displayed a genius and tenacity little less than marvelous. Before the battle began ten bridges had been constructed, their united length being over a mile and a quarter, half of them being formed from the regular pontoons of the army, while the other half was built from material found in the neighborhood.

The writer indicates that the long silence of the Japanese artillery under severe provocation helped to deceive the Russians, and thus allowed the crossing of the Yalu to be achieved with comparative rapidity and ease. In this case at least the Japanese would appear to have taken lessons from the Boers. Something like six thousand Russians, and probably more, defended the Yalu. The author is of the opinion that in the hands of half as many Boers such a position might have been defended for several days. The Russians were unskillful in selecting points of defense and in constructing earthworks, and thus left their gun positions exposed.

Referring to the effects of the Japanese common shell, the author says that the appearance of many of the slain was proof that the explosive used had terrific power. To shell fire a great proportion of the Russian losses was due, trenches and sangars affording little or no protection.

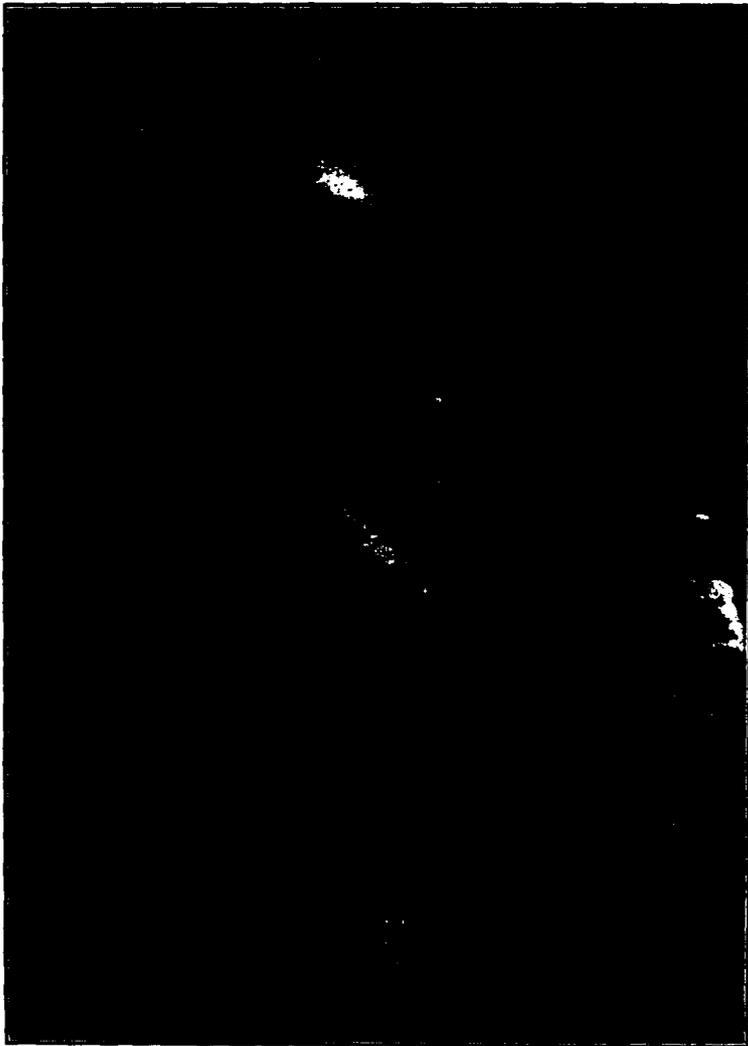
The occupation of Moutienling by the Japanese, we are told, proved that the Russians, although they had the choice of positions, whether for attack or for defense, were unskillful in maneuvering and showed a lack of determination, enterprise and initiative, the absence of which made abortive all courage and skill exhibited by the infantry and artillery.

One of the most critical days of the war for the Japanese was the 9th of October. The Japanese losses near Ponchiho had been great; important positions were forsaken, and the ammunition ran short. There was little food, and communication with the main army was difficult. The Russians adopted various ingenious devices to guard against surprise,

one of them being stretched wires and chains charged with electricity of high potentiality.

On the road to Fenhwancheng there were to be seen charred ruins of substantial homesteads. The Russians in their retreat had set fire to every building. The writer says that he saw more ruined houses in two days than he saw in a trek of six months in the Transvaal, and he wondered if the people on the continent of Europe would be as deeply agitated over these acts of war against a harmless and peaceful peasantry, as they were over the firing of farms used as "trenches" over which flew the white flag.

In an appendix will be found studies of the Russian and Japanese armies, which were issued as confidential papers before the war. We specially commend them to the attention of our military readers. There are thirty-three illustrations and three maps. Finally, the book contains much that is new and of interest, although many accounts have already appeared on the same subject.—*Broad Arrow.*



MAJOR GENERAL ADOLPHUS W. GREELY.
UNITED STATES ARMY.



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THE FEDERAL CAVALRY WITH ITS MEMBERS IN THE
WEST, 1861-1865

BY COLONEL JOHN S. HARRIS, U. S. ARMY

IN the Civil War the Federal cavalry, with many objectives - its tactical strategy of operations in the West, North Virginia and Kentucky, the operations in the West, and the operations in the Mississippi Valley, were the principal subject of study. The reasons why the Federal cavalry operations in the West were successful in the West.

The operations of operations of the Federal cavalry in the West were successful in the West. The operations of operations of the Federal cavalry in the West were successful in the West.

The Federal cavalry of the West was the army charged with the occupation of the Mississippi Valley. Their tactical campaigns were successful in the West. The operations of operations of the Federal cavalry in the West were successful in the West.

A brief outline of the operations of the Federal cavalry in the West will first be given, in order that the operations of the cavalry may be followed and the cooperation of the operations with the general trend of events understood. The operations of the Federal cavalry in the West were successful in the West.

THE FEDERAL CAVALRY IN THE WEST



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THE FEDERAL CAVALRY WITH THE ARMIES IN THE
WEST, 1861-1865.*

BY CAPTAIN EDWIN R. STUART, CORPS OF ENGINEERS.

IN the Civil War, the Federal armies had two principal objectives,— first, the destruction of the Confederate Army of Northern Virginia (and incidentally the capture of Richmond), and second, the occupation of the Mississippi Valley, with the ultimate object of destroying the resources which enabled the Confederate government to keep its armies in the field.

The theaters of operations of the Federal armies seeking to attain these objects were divided until 1864 by the Allegheny Mountains, but even at the close of the war the theaters were still separate.

The "Federal Armies of the West" were the armies charged with the occupation of the Mississippi Valley, but their final campaigns were conducted east of the Alleghenies. To be complete, an account must include the latter operations.

A brief outline of the operations of the Federal armies in the West will first be given, in order that the operations of the cavalry may be followed, and the connection of these operations with the general trend of events understood, without continual reference to the general situation and operations of the different armies.

See *in/ra*, Editor's Table, Prize Essay.



At the beginning of the war, there existed territorial departments organized for administrative purposes of the regular army. It was natural that for a brief time the operations along the Mississippi, and in Kentucky, Missouri, and Arkansas, should be conducted from the headquarters of the Military Department of the West at St. Louis.

Soon the operations reached such magnitude as to necessitate a division of this area, and there were successively organized the Armies of the Tennessee, the Ohio, the Cumberland, and the Mississippi, these armies embracing the troops operating in the territorial departments of the same name. These territorial departments were named from the rivers which formed either the base or line of operations of the troops in the departments at the time of their organization.

While these armies kept their distinctive names, their units were interchanged at times, and they were combined in different ways under single commanders at other times. To attempt to follow the armies of the Tennessee, Ohio, etc., as such, can but lead to confusion. For instance, the designation of the Army of the Ohio was on October 30, 1862, changed to the Army of the Cumberland, and a new Department and Army of the Ohio were created. It is, therefore, preferable to consider the "Federal Armies of the West" as the separate aggregations of troops, each operating under a single commander, with separate lines of operations and objectives.

The operations then naturally divide themselves into:

1. The opening operations in Missouri and Arkansas.
2. The operations of the army based upon Paducah and St. Louis, operating via the Tennessee River to Corinth, and thence in Mississippi and Alabama to Chattanooga.
3. The operations of the army having as its line of operations the Louisville & Nashville Railroad, through central Kentucky and Tennessee to Chattanooga.
4. The operations of the armies resulting from the combination of those under 2 and 3 above, from Chattanooga to the end of the war.

OPERATIONS IN MISSOURI AND ARKANSAS.

At the beginning of the war, there was at St. Louis a garrison of about three hundred regular troops under the command of Captain Lyon. On May 10th, this force and a regiment of volunteers surrounded and captured a Confederate force at Camp Jackson, near St. Louis. Various Confederate forces were assembled at different points in the State, and these in turn received attention from the Federal forces under General Lyon, who received his promotion as a result of the capture of Camp Jackson.

The first operations were conducted against a Confederate force at Boonville. About the middle of June, General Lyon landed at Boonville and routed this unorganized force. A Federal force under General Sigel encountered the remnants of the force from Boonville at Carthage and attacked, but was unsuccessful. After this, the Confederate forces, largely reinforced from Arkansas and Missouri, were assembled under the joint command of Generals Price and McCulloch. General

Lyon remained at Springfield. The Confederates marched upon him in two columns. Moving forward to Dug Springs, General Lyon defeated the portion of the force under General McCulloch. The entire Confederate force then went into camp at Wilson's Creek, and General McCulloch assumed command.

On August 10th the Federal force moved forward in two columns, one under General Sigel, and the other under General Lyon, and attacked the Confederate force. After a sanguinary and indecisive battle, both forces retreated. The Federal force was about 5,000, the Confederate about 11,000. The Confederate forces retired to the Arkansas border.

On July 9th General Fremont was assigned to the command of the Western District.

The Confederate force was placed under the command of General Price, and was gradually organized. This force proceeded northward in western Missouri, and on September 20th captured at Lexington about 2,800 Federal troops. General Price then retired to southwestern Missouri.

General Fremont proceeded to organize a force to operate against General Price. This force of five divisions concentrated at Springfield in the latter part of October. General Fremont was succeeded by General Hunter, and he in turn by General Halleck.

At the time General Halleck assumed command, the principal Federal forces were in the vicinity of Springfield, under the command of General Pope, and at Rolla under the command of General Curtis. During December General Pope effected the capture or dispersal of several small bodies of troops moving to join General Price, the greatest success being the capture of 1,300 men near Warrensburg.

In January, 1862, General Curtis moved south to engage General Price, but the latter retreated into Arkansas. General Curtis followed, and finally went into camp in the vicinity of Pea Ridge, Arkansas. His force was about 12,000 men.

General Price was joined by General McCulloch, and General Van Dorn was assigned to command the combined force, numbering 14,000 effectives.

On March 6th General Van Dorn attacked the Federal position at Pea Ridge, but was defeated. He was then ordered to Corinth, and most of the Federal troops were sent to General Grant. General Curtis marched to the Mississippi, arriving in July.

The only other operation worthy of note was the rout of a Confederate marauding force at Fredericktown in October, 1861.

FORT DONELSON TO CHATTANOOGA.

General Grant assumed command of the District of Southeast Missouri on September 1, 1861. Several movements were suggested by him, but in the main he was occupied in organizing and disciplining the forces gathering under him.

On November 6th he moved with an expedition of about 3,000 men down the Mississippi with the object of breaking up a force being or-

ganized in southeastern Missouri, landing at Belmont, opposite Columbus. A small force was driven out of its camps, but reinforcements for the Confederates from Columbus made a hasty reëmbarkation necessary.

By the 1st of February, 1862, General Grant's force had been increased to about 17,000 men. It started on that date on its operations against Forts Henry and Donelson, which were captured on February 6th and 16th respectively.

General Grant's army then moved to Pittsburg Landing, arriving March 11th and 12th. It had been increased to about 83,000 men. The Confederate forces under General A. S. Johnston, after abandoning the positions on the first line of defense, concentrated at Corinth, with the object of striking and overwhelming this Federal force at Shiloh. The attempt to do so resulted in the battle of Shiloh April 6-7, 1862, in which the Confederates were defeated through the timely arrival of General Buell from Nashville.

This latter army was temporarily diverted from its objective, Chattanooga, and the two armies were united under General Halleck, to give a sufficient force to operate against the Confederate army at Corinth, to which point it retreated after the battle of Shiloh. General Beauregard succeeded to command, General Johnston having been killed at Shiloh.

The advance up the Tennessee had necessitated the evacuation of the Confederate positions along the Mississippi. The evacuation was expedited by the operations against New Madrid and Island No. 10 by a force under the command of General Pope. This force also joined the army under General Halleck after the battle of Shiloh, bringing it to a total of 100,000 effectives.

The Confederate army was reinforced by General Van Dorn, bringing its strength to 53,000 effectives, though the paper strength was much greater.

General Halleck advanced slowly and cautiously against the Confederate position at Corinth, which was strengthened by fortifications. There was no severe fighting, and on May 30, 1862, the Confederates evacuated Corinth, carrying off all valuable stores.

Parallel operations along the Mississippi River resulted in the opening of the river as far as Vicksburg.

After the evacuation of Corinth, General Beauregard retreated as far as Tupelo, where, on account of ill-health, he turned over the command to General Bragg on June 27th. General Bragg immediately ordered one division to Chattanooga, and followed in the latter part of July with the rest of the army, exclusive of General Van Dorn's force. The latter was reinforced by General Price from Arkansas to maintain front against the Federal force in the vicinity of Corinth.

Early in June General Halleck ordered General Buell to proceed against Chattanooga via the Memphis and Charleston Railroad, repairing it as he went. General Buell wasted the entire month of June on this impossible task, and it was near the end of July when he was permitted to resume the natural line of advance against Chattanooga, the Louisville & Nashville Railroad.

On July 16th General Halleck was ordered to Washington, and General Grant was left in command at Corinth.

Prior to his departure, General Halleck had sent one division to Arkansas. Later, three divisions were sent to General Buell, in consequence of General Bragg's advance into Kentucky.

General Grant's force was thus reduced to about 42,000 men, which, on account of the necessity of guarding the railroad, was too small to undertake any aggressive movement. He therefore remained on the defensive confronted by the commands of General Price and Van Dorn, each about 16,000 men. The latter forces were distributed in northern Mississippi. General Bragg had transferred his entire army via Mobile to Chattanooga and was moving north into Kentucky.

General Bragg, believing General Buell to have been reinforced from General Grant's army—which was actually the case—ordered General Price to make such demonstrations as would hold the Federal army at Corinth. Having received General Van Dorn's consent to a combined movement of their forces, General Price was moving to effect a junction with General Van Dorn when he was attacked at Iuka on September 19th by a portion of General Grant's army under General Rosecrans. After an indecisive action General Price retreated.

The entire Confederate force was then concentrated at Ripley, and General Van Dorn assumed command. He immediately planned an attack on Corinth with the intention of turning General Grant's flank and forcing him to abandon western Tennessee. The attack was made on October 3d. After considerable success, the attack was suspended toward night. When renewed the following morning, the Confederates were repulsed and retreated to Holly Springs. The pursuit was rather feebly made, and was finally discontinued on account of lack of preparation for an extended movement. The Federal troops returned to their former positions at Corinth and Bolivar. General Pemberton succeeded General Van Dorn in command of the Confederate forces.

About November 1st General Grant began an aggressive movement against Vicksburg via Holly Springs and Grenada. On account of the difficulty of supplying his army over a single track railroad, the advance came to a standstill. The destruction of the depot of supplies at Holly Springs by General Von Dorn on December 20th forced the withdrawal of General Grant's army, and the abandonment of that line of advance against Vicksburg.

Meanwhile the Federal fleet had run by the defenses of New Orleans on April 24, 1862, and had received the surrender of the city the following day. General Butler arrived on May 1st and took possession of the city with a land force. The fleet, assisted by detachments of troops from General Butler's command then began operations for the destruction of batteries built by the Confederates for the defense of the river. Baton Rouge was captured on May 8th and Natchez on May 12th.

The evacuation of Fort Pillow June 4th, consequent upon the fall of Corinth, and the capture of Memphis on June 6th, left Vicksburg the sole obstacle to the complete control of the Mississippi River by

the Federals. During the summer of 1862 the fleet and a small land force operated from New Orleans against Vicksburg, attempting among other things to cut a canal across the peninsula opposite Vicksburg, but in the aggregate nothing was accomplished.

Admiral Farragut appreciated the inability of the fleet to capture Vicksburg without the assistance of a large land force. (The Mississippi, Greene, Scribner's Series, p. 23.) During July the fleet was withdrawn from in front of Vicksburg on account of low water, part of it going north to Memphis, and the rest south to New Orleans. Taking advantage of the withdrawal of the fleet, the Confederates seized and fortified Port Hudson.

A river expedition was defeated at Chickasaw Bluffs on December 20th. Several other plans were tried and failed, but finally a march down the river on the Arkansas side protected by the fleet, succeeded in gaining a foothold on the eastern bank of the Mississippi near Port Gibson. General Grant then marched his army to Jackson, defeated General Johnston who was coming to General Pemberton's aid, shut General Pemberton up in Vicksburg, and received his surrender on July 4, 1863.

On October 16th General Grant was assigned to the command of the Military Division of the Mississippi. He immediately bestirred himself to relieve Chattanooga, at that time besieged by General Bragg after the battle of Chickamauga. He ordered a portion of his force from Vicksburg to Chattanooga, assumed command there in person, and by the battles of Lookout Mountain and Missionary Ridge, November 23d to 25th, defeated General Bragg and raised the siege of Chattanooga.

General Johnston succeeded General Bragg in command, and retired to Dalton, Georgia. General Grant, in the spring of 1864, was placed in command of all the armies, and General Sherman took command of the army assembled at Chattanooga.

OPERATIONS VIA NASHVILLE TO CHATTANOOGA.

The Confederate line of defense taken up at the beginning of the war extended from Columbus on the Mississippi through Bowling Green to Cumberland Gap. Bowling Green was occupied by the principal Confederate force under General A. S. Johnston, who was in command of the Confederate Department of the West. General Johnston sent General Zollicoffer with 7,000 men to the vicinity of Cumberland Gap. Opposed to these forces were General Nelson in eastern Kentucky before General Zollicoffer, and General Sherman at Camp Nolin, Kentucky, the total force being about 20,000 men. The Confederate force under General Zollicoffer attacked Camp Wildcat on October 21st, and was repulsed. Nothing but minor movements occurred in Kentucky in 1861.

In November the Department of the Ohio was reorganized and made to include that part of Kentucky east of the Cumberland River. General Buell was placed in command, succeeding General Sherman, who was transferred to the Department of the Missouri. General

Buell ordered General Thomas, who was then in command in eastern Kentucky, to advance and attack the Confederate force under General Zollicoffer. This movement resulted in the battle of Mill Springs, January 19, 1862, in which the Confederate force was badly defeated and driven out of Kentucky.

The capture of Forts Henry and Donelson by General Grant resulted in the evacuation of Bowling Green, and the subsequent advance up the Tennessee caused the evacuation of Nashville.

General Buell spent the fall and winter of 1861-2 in organizing and disciplining his army. He moved forward as General Johnston retreated, occupied Bowling Green on February 15th, and continued to Nashville, which was entered on February 25th. General Thomas joined General Buell, and the Federal forces in eastern Kentucky were placed under General Morgan, who seized Cumberland Gap. He had there 3,600 effective troops on April 19, 1862.

General Buell's army was concentrated at Nashville early in March, and on March 11th General Halleck was placed in command of the Department of the Mississippi, then created. He immediately ordered General Buell to march from Nashville to Pittsburg Landing to join the force under General Grant. This march was completed in time to participate in the second day's battle at Shiloh. Previous to leaving Nashville, one division was sent forward to Murfreesboro to occupy it and prepare the way for an advance against Chattanooga which General Buell contemplated. Another division was sent to occupy Columbia.

As before stated, General Buell's army remained under the command of General Halleck until after the fall of Corinth. Late in July it was ordered to resume operations against Chattanooga along the Louisville & Nashville Railroad, having failed to open the Memphis & Charleston Railroad.

Meanwhile, after the evacuation of Corinth, General Bragg moved the entire force under his command to Chattanooga.

During July and August the Federal movements were paralyzed by the repeated raids of Generals Forrest and Morgan on the railroad in General Buell's rear. Holding General Buell in check by these raids, General Bragg prepared for an invasion of Kentucky which would force General Buell to withdraw from middle Tennessee. General Kirby Smith, who had previously been sent to Cumberland Gap, was reinforced by General Bragg, with whom he offered to cooperate. He there possessed himself of the line of supply of the Federal force under General Morgan, but was unable to capture that force. General Kirby Smith then moved on, defeated a hastily gathered force at Richmond, Kentucky, and moved on to Lexington. General Morgan's force abandoned Cumberland Gap and retreated north to the Ohio River.

General Bragg concentrated his entire army at Sparta by September 5th, at which time General Buell's army was concentrated at Murfreesboro. General Bragg then started north via Bowling Green to strike the Louisville & Nashville Railroad at Munfordsville. He captured that place on September 17th, and then marched out and took up a position at Prewitt's Knob to await General Buell.

On September 7th General Buell started on his way north from Murfreesboro. He arrived at Bowling Green on September 14th. During the time of General Buell's absence from Kentucky, its defense had been entrusted to General Nelson.

Moving out from Bowling Green, General Buell came upon the army of General Bragg, and the two armies confronted each other for three days, but without fighting. General Bragg then moved aside to Bardstown to effect a junction with General Kirby Smith, and allowed General Buell to move north to Louisville, a thing he had been very anxious to do all the time. He reached Louisville on September 25th, immediately incorporated into his army the new troops that had reached Louisville, and moved south to meet General Bragg. The latter had left General Polk in command of the army, and had gone to Lexington to inaugurate a governor of Kentucky.

General Polk concentrated the army, exclusive of General Kirby Smith's command, in the vicinity of Perryville. General Bragg returned and there attacked what he believed to be a portion of General Buell's army, but what was really his entire force. The battle was a peculiar one, and was indecisive. After the battle General Bragg retired to Harrodsburg and effected a junction with General Kirby Smith. After waiting there a few days, and not daring to hazard a battle with General Buell, General Bragg started his retrograde movement via Camp Dick Robinson to eastern Tennessee. General Buell pursued as far as London, Kentucky, and then returned to Glasgow and Bowling Green. He was succeeded in command by General Rosecrans, who immediately moved the army to Nashville, arriving about November 17th. The time until December 28th was spent at Nashville repairing the railroad and accumulating supplies, notwithstanding strong pressure from Washington urging a premature forward movement.

On December 26th the advance against General Bragg, who had concentrated his force at Murfreesboro, was begun. General Rosecrans had about 47,000 men; General Bragg had about 38,000. These forces came face to face at Stone's River, where a fierce battle was fought on December 31, 1862, and January 2, 1863. General Bragg won a tactical success in the first day's battle, but was unable to follow it up. In the second day's battle he was unsuccessful, and retired to Tullahoma and went into winter quarters. General Rosecrans occupied Murfreesboro.

From January 1st to June 23d these armies lay in these positions, recruiting and refitting. On the latter date General Rosecrans advanced, and by masterly maneuvering forced General Bragg into Chattanooga without severe fighting by July 10th. General Bragg immediately commenced to fortify his position.

General Burnside, who had in the meantime taken command in eastern Kentucky, moved into eastern Tennessee, and on August 28th occupied Knoxville.

Immediately following General Bragg's retreat to Chattanooga, General Rosecrans set about repairing the railroad as far as Stevenson and preparing for a turning movement south of Chattanooga. This movement commenced on August 16th, and caused the evacuation of Chattanooga. General Bragg fell back into northern Georgia, where

he was reinforced by about 15,000 men from Mississippi, and by General Longstreet's corps from Virginia.

At Chickamauga, September 19th and 20th, General Bragg fell upon the columns of the Federal army as they emerged from the mountains, and inflicted upon them a bloody defeat. General Rosecrans retired to Chattanooga, where he was invested by General Bragg. General Longstreet moved up to Knoxville and laid siege to that place, which was occupied by General Burnside.

On October 16th General Grant was placed in command of the Military Division of the Mississippi, and General Rosecrans was superseded by General Thomas. General Grant immediately telegraphed General Thomas to hold Chattanooga, and proceeded there himself to take charge of the operations. General Sherman, with the Fifteenth Army Corps, was ordered from Mississippi, and arrived about November 15th. By the battles of Lookout Mountain and Missionary Ridge the siege of Chattanooga was raised, as before related.

On November 25th a force of 20,000 men was sent to Knoxville, the siege of which was raised on December 4th, and General Longstreet retired to Virginia to join General Lee.

CHATTANOOGA TO THE END.

This stage of the campaigns of the armies in the West opens with General Sherman in command at Chattanooga with about 100,000 men, confronted by General Johnston at Dalton with about 60,000.

General Sherman's advance commenced on May 4, 1864. He turned the position at Dalton, and General Johnston retired successively to Resaca, Adairsville, Allatoona, and finally, on May 25th, occupied a line extending from Dallas to New Hope Church, which was held until June 18th. Considerable fighting occurred during this period. On June 18th General Johnston retired to Kenesaw Mountain, where an assault on his lines was repulsed with great loss.

Being flanked out of this position, he retired to Nicajack Creek, and thence to a strong position on the Chattahoochee River. This position was also turned, and on July 9th General Johnston abandoned it and retired into Atlanta, where he was superseded by General Hood on July 18th.

Following General Johnston's plan, General Hood attacked at Peachtree Creek on July 20th, but was repulsed and retired into the fortifications of Atlanta.

General Sherman spent the latter part of July and all of August in cutting off General Hood's communications. On September 1st this was accomplished, and General Hood evacuated Atlanta. He then marched northward, striking the railroad at Allatoona, and then moved by Dallas to Tuscumbia and Florence, Alabama, reaching the latter place October 30th.

General Sherman restored his line of supply, and leaving General Thomas to look after General Hood, started on his march to the sea.

General Hood spent a month at Florence refitting, and then started north. He encountered a portion of General Thomas's force at Frank-

lin on November 30th, attacked, and was defeated with heavy loss. During the night the Federal force retreated, and General Hood continued north in pursuit to Nashville, which he observed until December 15th. On this date General Thomas moved out and attacked him, routed the Confederate force, and almost totally destroyed it.

On November 12th General Sherman severed communication with Chattanooga and the North, destroyed the railroad from Etowah to Atlanta, burned the foundries and machine shops at Rome and Atlanta, and on November 15th started for Savannah. The strength of his army was about 82,000 men. He moved via Milledgeville (November 24th) and arrived before the defenses of Savannah on December 9th and 10th, having thoroughly destroyed the railroads and military resources along his route.

By December 12th General Sherman had deployed his army before the defenses of Savannah, which were occupied by General Hardee with about 18,000 men. General Hardee evacuated Savannah December 20th, and proceeded to Charleston, South Carolina.

General Sherman began his march northward via Columbia, South Carolina, about the first of February, 1865. The Confederates were able to gather a force of about 33,000 men at Augusta by February 5th. No opposition was offered to General Sherman's advance. He reached Columbia early in February, and resumed the march northward February 20th. General Johnston was assigned to command of the Confederate forces opposed to him on February 23d.

Continuing the march, General Sherman defeated the Confederates at Averasboro March 16th, and at Bentonville March 19th to 21st. He then concentrated his forces at Goldsborough, North Carolina, and began preparations for a further movement to the north. He reached Raleigh on April 13th, and General Johnston surrendered the next day.

This closed the campaigns of the "Federal Armies in the West." It remains to be seen what part the cavalry played in these operations.

* * *

OPERATIONS OF THE CAVALRY IN THE WEST.

The subjects of organization, armament, equipment and supply are to be included in this discussion. The questions of regimental organization, armament and equipment are independent of the operations themselves, and may most conveniently be discussed first. The place of the cavalry in the organization of the armies was one, however, vitally affecting the operations, and is best considered in that connection. The question of supply followed, in the main, regular lines. The discussion of the exceptions to the rule may be most conveniently left until after the operations have been described.

REGIMENTAL ORGANIZATION.

Two regiments of cavalry were added to the regular army by an Act of Congress of March 3, 1865. Each consisted of ten companies, with one colonel, one lieutenant colonel and three majors. Each com-

pany consisted of one captain, one first lieutenant, one second lieutenant, four sergeants, four corporals, two buglers, one farrier and blacksmith, and fifty privates.

In 1861 the President issued a call for volunteers, among which was to be one regiment of volunteer cavalry. The authority for its organization is found in G. O. 15, W. D., dated May 4, 1861. (W. R. 122, pp. 151-4.) The regiment was to consist of four, five, or six squadrons of two companies each. The field and staff of the regiment were about the same as at present. Each company consisted of one captain, one first lieutenant, one second lieutenant, one first sergeant, one company quartermaster sergeant, four sergeants, eight corporals, two buglers, two farriers and blacksmiths, one saddler, one wagoner, and a minimum of fifty-six and a maximum of seventy-two privates. The non-commissioned officers, musicians, artificers and privates were to furnish their own horses and horse equipments, receiving therefor fifty cents per diem for use and risk, such allowance to cease in case the horse died or became unserviceable until a new one was supplied. Any volunteer cavalryman not furnishing his own horse was to serve on foot. The per diem allowance for use and risk of horse was changed on May 25th to forty cents. (W. R. 122, p. 234.)

The formation of an additional regiment of regular cavalry was directed by the President, and its organization was fixed by G. O. 16, W. D., dated May 4, 1861. This regiment was subsequently authorized by an Act of Congress approved July 29, 1861, and its organization was then fixed at not more than three battalions, of not more than two squadrons each. Each squadron was to consist of two companies. The commissioned and noncommissioned strength of the companies was as above, and the number of privates was to be such as the President might direct, not exceeding seventy-two. (W. R. 122, pp. 154-7, 372.)

The strength of volunteer regiments of cavalry was again specified in G. O. 126, W. D., of September 6, 1862 (W. R. 123, p. 518), remaining practically as before except that the number of companies was fixed at twelve, and the number of privates was increased to seventy-eight. G. O. 110, W. D., April 29, 1863 (W. R. 124, p. 175), modified the above by fixing the number of privates in a company at a minimum of sixty and a maximum of seventy-eight.

The average strength of the 174 cavalry regiments in the service on August 6, 1863, was 627 men. (W. R. 124, p. 991.)

ARMAMENT.

The armament of the cavalry was not uniform. At the beginning of the war, the Ordnance Department made no carbines or revolvers, and the government was dependent on private manufacturers of patented arms for its supply. In June, 1861, the contract price of carbines was \$30.00 and of Colt's revolvers \$25.00. (W. R. 122, p. 260.)

The Secretary of War, in a letter of November 13, 1862 (W. R. 123, p. 779), says that when the Army of the Potomac was organized, sabers and pistols were the recognized arms of the cavalry, carbines having

been rejected as useless, and that only lately had carbines been introduced in that army. The government was supplying them as rapidly as possible, but all of the cavalry could not be supplied immediately.

From this date, the effort was made to provide each trooper with a saber, a revolver and a carbine. Regiments frequently took the field without a complete equipment, but deficiencies were remedied as fast as possible. The sabers seem to have been supplied in sufficient quantity in almost all instances. General Sherman, however, in October, 1861, in a letter to General Crittenden, approves making lances for the mounted men in the absence of arms. (W. R. 4, p. 324.)

The carbines were of various patterns. At the beginning the carbine was either a muzzle loader, a breech loader (Hall carbine) using the prepared powder and ball charge, or a revolving carbine (Sharpe) loaded also with powder and ball. The latter seem to have been preferred. Several other patterns were issued, but by 1863 all these weapons had begun to give way to the Spencer carbine, a repeater using metallic cartridges. This carbine was in the hands of nearly all of the cavalry regiments at the close of the war.

The revolvers were also of different patterns. At the beginning of the war, the single loader powder and ball (horse) pistol, and the Colt's revolver were both in use. The standard may be taken as the Colt .45 six-shooter, using the prepared powder and ball charge.

The sabers were sufficiently uniform in pattern that no special comment has been found concerning them.

EQUIPMENT.

The saddle provided by the government was of the McClellan pattern, provided with crupper, breast strap and a buckle girth. It was covered with rawhide, a decided disadvantage. (CAVALRY JOURNAL, March 1863, p. 6.)

The pack was made up of the cloak and the forage bag, carried by straps on the pommel of the saddle, and the valise and wallet containing necessary articles of clothing on the cantle, also secured by straps. The carbine was carried in a boot attached to the saddle. The forage rope was carried on the cantle on the left, and the watering bridle on the right. Any forage carried was secured on the rear of the saddle. (Cavalry Tactics, 1841, pp. 24, 28-9.) The bridle was a double bit, snaffle and curb, worn over the halter. (Cavalry Tactics, 1841, pp. 28-30.)

* * *

CAVALRY OPERATIONS.

MISSOURI AND ARKANSAS, 1861-1862.

The initial operations in Missouri, the capture of Camp Jackson and the expedition to Boonville, were the work of the infantry. There was no cavalry stationed at St. Louis at the opening of the war. Captain Lyon even complained on April 30th that he had no horses for messenger service. (W. R. 1, p. 675.)

General Sigel, in the fight at Carthage, mentioned the moral effect of the Confederate cavalry in his rear, but seems to have had no adequate force to oppose it. (W. R. 3, p. 18.) The Confederate cavalry forces numbered about 1,800, but the Confederate cavalry in Missouri was generally poorly armed and organized.

The Federal force concentrated at Springfield after the fight at Carthage had with it four companies of cavalry. In the action at Dug Springs, one company under Captain Stanley made a successful mounted charge. (W. R. 3, p. 47.)

General Lyon on August 9th complained of the advantage of the Confederates in cavalry. (W. R. 3, p. 57.) He had with his own column at the battle of Wilson's Creek, August 10th, but two companies of cavalry and 250 mounted men. These seem to have performed no special service.

With the column under General Sigel in the same battle were two companies of cavalry, which were used as an advance guard in the forward march, on the flanks during the battle, and as a rear guard during a portion of the retreat. The infantry seems, however, to have been unable to march fast enough in the retreat, and the cavalry passed on. (W. R. 3, pp. 89-90.) It performed some service in picking up stragglers in the early part of the retreat. (W. R. 3, p. 91.)

After the battle of Wilson's Creek, the army at Springfield under General Sigel had with it 300 cavalry and 500 mounted men. (The distinction between "mounted men" and cavalry is not clear, but it is believed that "mounted men" refers to infantry for whom mounts were provided by capture.) It required, in his opinion, a reinforcement of 5,000 infantry and one or two regiments of cavalry for further operations. (W. R. 3, p. 85.)

The need of additional cavalry began early to be severely felt, and was urged upon the Secretary of War by a telegram as early as July, 1863. (W. R. 3, pp. 393-4.)

After the battle of Wilson's Creek, the cavalry was principally used in scouting and in small expeditions against Confederate marauders, pending a general movement against the Confederate forces.

The First Illinois Cavalry formed a part of the garrison of Lexington, Missouri, which was captured by the Confederates September 30th. (Brackett, History of the U. S. Cavalry, p. 221.)

At Fredericktown, Missouri, October 21, 1861, a force of about 360 cavalry formed part of the Federal command. Half of these executed a mounted charge, which was checked, but being supported by infantry, the Confederates retreated and the cavalry was used in the pursuit.

Of the force under General Pope around Springfield, the cavalry seems to have been inadequate in numbers (W. R. 3, p. 396; W. R. 8, p. 421) and unreliable. (W. R. 8, p. 407.) What he had was used in scouting and on picket duty. (W. R. 8, pp. 412, 421.)

One instance worthy of mention was an expedition to Milford, Missouri, in which seven companies of cavalry took part. They fought both mounted and dismounted, and contributed materially to the capture of the Confederate force of about 1,300 men.

From the force under his command at Rolla, General Curtis ordered on December 28th, an expedition against Springfield, consisting of twenty-five companies of cavalry, numbering 1,500 men. (W. R. 8, p. 473.) They carried rations for sixteen days. No report of this expedition has been found. Its object was to gain contact with the Confederates.

On January 14, 1862, General Halleck brought to the attention of General McClellan the fact that cavalry was the only force capable of suppressing the insurrection and bridge burning then going on (W. R. 8, p. 501), which interfered seriously with the military operations and spread discontent among the Union sympathizers.

Of the force which General Curtis took to Arkansas, about 2,500 were cavalry. (W. R. 8, pp. 553-4.) He requested reinforcements of 7,000 infantry and 3,000 cavalry. (W. R. 8, p. 562.) His report of organization on January 31, 1862 (W. R. 8, p. 539), shows his force to have been organized into four brigades of infantry and one brigade of cavalry, with some unattached cavalry in addition. It is apparent from other correspondence that a division organization existed early in February, but it is not known when the change occurred. General Pope's army was similarly organized about the same time.

On February 9, 1862, General Curtis published an order (W. R. 8, p. 550) assigning a regiment of cavalry to each of the four divisions of his command, leaving one regiment and two battalions unattached. Two of the divisions were placed under the command of General Sigel. The return of casualties in the battle of Pea Ridge, March 6-8, 1862, (W. R. 8, p. 204), shows, however, that most of the cavalry assigned to the divisions was attached to the brigades.

For the Pea Ridge campaign, we thus arrive at an organization which is to all intents and purposes brigade cavalry, and are prepared to find it performing no brilliant service. Nor does a perusal of the reports of this battle show that the use of cavalry was well understood.

During the forward movement from Rolla to Bentonville, the cavalry was used in scouting, and was pretty well broken down by this work. (W. R. 8, p. 197.) One battalion acted as body guard to General Curtis.

In the retrograde movement of General Sigel to effect a junction with General Curtis immediately before the battle, two companies of his cavalry were used as a rear guard until the middle of the afternoon, and then in reconnoissance until dark. (W. R. 8, pp. 229-232.) They joined in the pursuit of the retreating Confederates on March 8th.

The cavalry of General Curtis's own command, about fifteen companies, notwithstanding the faulty organization, was concentrated for use during the battle. It was used in connection with a brigade of infantry in a reconnoissance in force on March 7th, though when contact was gained with the Confederate cavalry the artillery opened the attack and the cavalry was disposed in support. While in this position two companies were sent to reconnoiter, and stumbled into the Confederate infantry. At this juncture both these two companies and the cavalry supporting the battery were charged by the Confederate cavalry. They offered no effective resistance, and were swept back until they gained the protection of the infantry. The guns they supported

were captured. During the latter part of the day, the cavalry remained in support of the artillery in the main line of battle. Five companies were detached to escort a battery to another part of the line, and remained there supporting it the remainder of the day. One regiment was sent to guard the right flank of the line on the morning of March 8th.

Upon the general retreat of the Confederate forces, the entire Federal cavalry force was sent in pursuit, but failed to accomplish anything beyond capturing a few stragglers. The pursuit was kept up as far as Bentonville, when it was abandoned because the "horses had had nothing to eat for three days." (W. R. 8, p. 235.)

The main idea of the use of the cavalry in the battle of Pea Ridge seems to have been to support the artillery, and it failed in this in the only test it had. The pursuit was a failure due to lack of care of the horses in the time immediately preceding and during the battle.

This cavalry remained with General Curtis's army and accompanied it on the march to the Mississippi River. No respectable resistance was encountered on this march, the Confederate troops having been withdrawn for the crucial battle at Shiloh.

VIA CORINTH TO CHATTANOOGA.

The necessity of seizing suitable points from which to organize the invasion of Tennessee, and for opening the Mississippi River, led to the organization of the District of Southeast Missouri on September 1, 1861. General Fremont assigned General Grant to the command of this district, with headquarters at Cairo, Illinois. General Grant immediately occupied Paducah, Kentucky, where General C. F. Smith was placed in command. Previous to this time General Grant had been operating in the vicinity of Ironton, Missouri. From there on August 9th he reported that cavalry was much needed. (W. R. 3, p. 432.)

In a letter to General Smith, September 10th, he stated that he could spare no cavalry, having but three companies, only one of which was fully armed. (W. R. 3, pp. 484-5.) He immediately urged upon General Fremont the necessity of supplying him with cavalry and cavalry equipments. (W. R. 3, p. 486.) What little cavalry he had was sent on a reconnoissance to Elliott's Mills, Kentucky, on September 15th. (W. R. 3, p. 495.)

General Grant's report of September 17th shows that his command, including the detachments at Bird's Point and Mound City, numbered 8,500 men, which included five companies of cavalry and 300 mounted men. (W. R. 3, p. 497.) He was ordered to send to General Asboth in Missouri a portion of this small force of cavalry, to which he objected. (W. R. 3, p. 511.)

On October 4th, General Grant's cavalry was increased by six companies of the Second Illinois Cavalry, which were unarmed (W. R. 3, p. 517), and remained so as late as October 27th. (W. R. 3, p. 554.) He anticipated that after receiving their arms, they would form a powerful auxiliary to his force, being much needed for reconnoissance.

On October 14th, General Grant organized his command into two brigades. (W. R. 3, p. 533.) He assigned five companies of cavalry to one brigade, and four to the other. On October 31st his cavalry numbered about 1,000 out of a total of about 11,000 men (W. R. 3, p. 558), which was increased by November 14th to twenty-one companies (W. R. 3, p. 570), about 1,250 men.

The cavalry of General Smith's command at Paducah was very poorly armed. He reported on November 6th that he had but four companies, and the carbines they had were old, and his requisitions for sabers and pistols had not been filled. (W. R. 4, p. 339.)

Prior to the advance against Fort Henry, General Grant had organized his force into three divisions (W. R. 7, p. 125), but the cavalry had remained attached to the brigades of General McClelland's division. (W. R. 7, p. 126.) In the attack on Fort Henry the cavalry seems to have been engaged, if at all, on picket duty. If not on picket duty, it was ordered kept in rear. (W. R. 7, p. 127.) It was also used in reconnaissance, and in the pursuit of the Confederates on their retreat to Fort Donelson. (W. R. 7, p. 129.)

In the capture of Fort Donelson the cavalry did little or nothing. In one case, a cavalry force was placed to guard the flank of a brigade. (W. R. 7, p. 174.) The cavalry was also used to some extent in reconnaissance (W. R. 7, p. 183), and when it was thought that the Confederates were going to escape, the cavalry was posted in position favorable for pursuit. (W. R. 7, p. 176.) The importance of its role may be best judged by its casualties, five wounded and two missing. (W. R. 7, p. 167.) This is partially accounted for by the stage of the water and the state of the roads. On February 8th, General Grant even said that he could not use a regiment of cavalry which General Halleck offered to send him. (W. R. 7, p. 596.)

In the parallel operations of General Pope along the Mississippi River, the cavalry had a better place in the organization. The cavalry was organized into a cavalry division under General Granger, one regiment and seven companies remaining unattached. The division contained three regiments. Owing to the character of the country and the operations, General Pope's cavalry did not do anything worthy of note. One battalion of cavalry took possession of Columbus when it was evacuated, March 3, 1862. (W. R. 7, pp. 682-3.)

After the capture of Fort Donelson, General Grant moved his army up the Tennessee River to Pittsburg Landing, where it arrived March 11th. On March 9th he reported his strength as 35,000, including about 3,000 cavalry. (W. R. 11, p. 21.)

On April 3d he reorganized his army, discontinuing brigade cavalry and artillery, and assigning the cavalry to the six divisions of the army, with an average of two battalions, or about 500 cavalry to the division. (W. R. 11, p. 87.)

Meanwhile, on March 8th, one battalion of cavalry was sent on an expedition west of Pittsburg Landing, and succeeded in destroying a bridge and trestle on the Mobile & Ohio Railroad. (W. R. 10, p. 10.) On March 17th General Sherman used his cavalry, supported by infantry, on a reconnaissance. It found the roads occupied in force by

the Confederates. (W. R. 10, pp. 24-5.) On the 20th, General Sherman reported that eight companies of cavalry were posted in advance of his position. (W. R. 11, p. 53.) In the following few days, they were used in connection with the infantry on reconnaissance. (W. R. 10, pp. 24-5.)

On March 27th, General Grant ordered four companies of cavalry on duty as a guard to the telegraph line. (W. R. 11, p. 70.) On March 31st, a small force of cavalry, twenty-eight, poorly armed, was sent toward Purdy. They were attacked and routed by the Confederates. (W. R. 10, pp. 78-9.) General Sherman ordered a reconnaissance of cavalry and infantry toward Corinth April 2d (W. R. 11, p. 87), and on the 3d sent 400 cavalry toward Monterey. (W. R. 10, p. 86.)

From the above it is seen that the cavalry accomplished little during the interval between the arrival at Pittsburg Landing and the battle of Shiloh, April 6th and 7th. When we consider the dispersion of the cavalry, giving but a small number to each division, this is not to be wondered at.

On April 4th and 5th, the cavalry was apparently being re-distributed in accordance with General Grant's reorganization order of April 2d (W. R. 11, pp. 92-3), which is a partial excuse for the surprise of the Federal army in the battle of Shiloh.

In this battle the cavalry seems to have done nothing. In General Sherman's division, it was posted in rear of the infantry. (W. R. 10, p. 249.) In General Hurlbut's division the cavalry was at first formed in line of battle, but was not engaged. (W. R. 10, p. 206.)

The only actual fighting done by the cavalry in the battle of Shiloh was done by two companies of regular cavalry, which were deployed as skirmishers on the right flank of the army to keep open the road for General Wallace. They held their ground against superior numbers until the arrival of General Wallace, when they were formed in rear of his flank. (W. R. 10, p. 189.)

The failure to use the cavalry seems to have been due to the fact that the ground was not suited to *mounted* action. (W. R. 10, pp. 206, 254.) No thought of dismounted action seems to have been entertained. The total casualties of the cavalry in the battle of Shiloh were four killed and twenty-five wounded. (W. R. 10, pp. 106-8.)

Immediately after the battle, a cavalry reconnaissance in the direction of Corinth was ordered (W. R. 11, p. 97), and cavalry pickets were ordered posted on all roads. (W. R. 11, p. 100.) The cavalry reconnaissance above ordered was supported by two brigades of infantry, and this was all that was undertaken in the way of pursuit of the Confederate army. When it came in contact with the Confederate rear guard, two companies of infantry were deployed as skirmishers and a regiment of cavalry was formed for action. At this juncture they were charged by the Confederate cavalry under General Forrest, and retreated hastily and in some disorder. They rallied on the troops in rear, and the cavalry charged the Confederates and drove them from the field. The Federal cavalry then advanced about a mile, but the check caused by the Confederate attack, approaching darkness, and the exhaustion of the infantry, caused a discontinuance of the movement. (W. R. 10, p. 639.)

On April 23d General Halleck ordered General Grant to send out his cavalry to reconnoiter. At this date General Pope arrived, and the army under General Halleck was organized into three corps, and a chief of cavalry was appointed on his staff. (W. R. 11, pp. 188-9.) These corps were placed under the command of Generals Pope, Grant and Buell. General Pope had previously organized his corps (army) into divisions, and had formed a cavalry division of two brigades of two regiments each, the division being commanded by General Granger. This cavalry division was ordered to habitually dispose itself in camp with a brigade on each flank of the infantry. (W. R. 11, pp. 121-2.) Twenty men were detailed at each division headquarters for duty as orderlies.

General Pope's report of April 30, 1862 (W. R. 11, p. 146), shows his corps to have been about 17,000 strong, including about 2,500 cavalry. The corps of General Grant, with a present for duty of about 35,000, had the cavalry pretty uniformly distributed through the corps attached to the divisions. His cavalry numbered about 2,400. (W. R. 11, p. 151.) In General Buell's corps, the organization was the same as in General Grant's, and of his total force of 42,000, about 3,200 were cavalry. (W. R. 11, p. 148.)

The corps of General Pope is seen to be relatively stronger in cavalry than the other two. Moreover, it had a cavalry division, while the cavalry of the other two corps was distributed among the infantry divisions. The results achieved in the campaign against Corinth show that the concentration of the cavalry in a cavalry division was superior in point of organization under the conditions then existing.

On April 13th, a reconnoissance by forty-five cavalry was sent out on the Corinth and Purdy road. (W. R. 10, p. 647.) On April 14th, General Sherman reported an expedition of one hundred cavalry toward Iuka, Miss. It fought dismounted and drove a guard from the Memphis & Charleston Railroad bridge over Bear Creek, and destroyed the bridge. (W. R. 10, pp. 644-5.) General McClernand reported his cavalry on a reconnoissance toward Purdy April 27th. (W. R. 10, p. 652.) On April 28th General Pope reported that five companies of cavalry met 150 Confederate cavalry and chased them after a skirmish. (W. R. 10, p. 653.) The same day General Grant's entire cavalry force was ordered on a reconnoissance toward Purdy. (W. R. 11, p. 185.)

On April 29th a reconnoissance by four regiments of infantry and two regiments of cavalry was sent out to Monterey. One battalion of the cavalry charged a battery, but failed. (W. R. 10, p. 721.) On this date the general advance against Corinth commenced.

On May 3d General Wallace ordered his cavalry on an expedition to seize the Hatchie Bridge. This cavalry was then united with the remainder of the cavalry of the reserve, and a strong cavalry reconnoissance in the direction of Purdy ordered.

After the advance against Corinth was begun, General Buell's cavalry remained five miles in rear of the infantry as late as May 7th. This was by reason of the difficulty of supplying forage, and much of it was carried forward on the saddle horses. (W. R. 10, p. 673.) His

cavalry remained concentrated during the advance on Corinth (W. R. 10, p. 709), but reports indicate that no important results were achieved.

On May 30th General Buell reported that all of his cavalry was concentrated and ordered in pursuit of the Confederates after the evacuation of Corinth, but that the roads were obstructed and prevented effective pursuit. (W. R. 10, p. 676.) General Nelson reported that his cavalry encountered the Confederates three and one-half miles from Corinth, but did not attack. (W. R. 10, p. 683.)

All of the important service rendered by the cavalry in the advance against Corinth and in the pursuit after the evacuation was the work of General Granger's cavalry division of General Pope's corps (army). This cavalry division landed at Hamburg on April 23d, and immediately began scouting over the area south to the Memphis & Charleston Railroad. (See General Granger's report, W. R. 10, pp. 726-734.) It is a brief report of the operations of his command from April 23 to June 10, 1862.) It encountered the same difficulties of supply as General Buell's cavalry, but was not deterred thereby from active operations. These operations were briefly as follows:

April 24th. Four battalions on reconnoissance to Greer's Ford.

April 27th. Four companies on reconnoissance toward Hamburg.

April 29th. One brigade on reconnoissance in force to Monterey. Attacked and drove Confederates to cover of artillery and then withdrew.

May 3d. One regiment destroyed track of Memphis & Charleston Railroad between Glendale and Burnsville. One battalion on reconnoissance toward Memphis & Charleston Railroad.

May 4th. Four companies on reconnoissance to Farmington. Attacked and defeated 300 Confederates.

May 8th. Three battalions on reconnoissance to Farmington. Struck Confederates and had to retreat. Three battalions on reconnoissance to the junction of the Purdy, Farmington and Corinth roads. Skirmished with small Confederate force.

May 9th. One regiment ordered to Farmington. There found infantry hard pressed. Charged three batteries to gain time for the infantry. Were repulsed with loss, but the charge enabled the infantry to withdraw.

May 10th to 15th. Various forces on reconnoissances in the direction of the Memphis & Charleston Railroad.

May 16th. Entire cavalry division on general reconnoissance, preparatory to the advance of the infantry.

May 17th. Entire command scouting. Infantry occupied Farmington.

May 19th. One battalion on reconnoissance south of Farmington.

May 22d. One company on outpost attacked. Held its ground until relieved.

May 22d to 24th. Reconnoissance by portions of two regiments to Iuka.

May 28th. One brigade on expedition to Boonville. Captured Boonville and a lot of supplies and ordnance, and destroyed railroad track.

May 30th. One brigade in pursuit of the Confederates. Tried to force crossing at Tuscumbia Creek, but failed.

June 1st. Confederates evacuated position at Tuscumbia Creek, and cavalry moved forward.

June 2d. Scouting in all directions waiting for infantry to come up. Reconnoissance in force to Baldwin.

June 3d. Seven companies on reconnoissance to Ripley. Charged one hundred Confederates at Blackland and defeated them.

June 4th. One brigade to Blackland, where it had a skirmish.

June 6th. One regiment on reconnoissance to Boonville. Fought dismounted with Confederate cavalry. Encountered infantry and had to retire.

June 9th. One brigade to Baldwin. Found Confederates had evacuated. Two battalions ordered to Guntown. Fought with Confederate force till artillery opened fire and then withdrew.

During the retreat of the Confederates from Corinth, General Granger's cavalry captured 600 prisoners, 7,000 small arms and a large quantity of military stores. The operations of General Granger's cavalry are briefly alluded to in General Pope's reports. (W. R. 11, pp. 179, 181, 184.)

But little mention is made of the operations of the cavalry attached to the other corps of the army under General Halleck. On May 14th General Halleck ordered all of General Grant's cavalry on a reconnoissance toward Purdy in connection with General Wallace's cavalry. (W. R. 11, p. 189.) General Wallace complained that his cavalry was worn out by the constant strain of picket duty. (W. R. 11, pp. 192-3.)

On May 22d General Pope reported sending one and one-half regiments of cavalry on an expedition against the Confederates at Yellow Creek (W. R. 11, p. 208), and in the same report it is evident that cavalry vedettes were used in front of his line.

General Sherman (of General Grant's corps) sent his cavalry on an expedition to Chewalla on June 2d. They found that the Confederates had destroyed the bridge there, and the cavalry captured some engines, cars and other property. (W. R. 11, p. 240.)

In following up the retreating Confederate army, General Pope ordered General Rosecrans to keep his flanks well covered by the cavalry (W. R. 11, pp. 246-7), as the whereabouts of the Confederates were not accurately known. General Halleck did not contemplate pursuing the Confederates any farther than Baldwin. (W. R. 11, p. 249.) This was based upon difficulties of supply, the same obstacle that General Grant encountered on his advance against Vicksburg. The Confederates had pretty thoroughly destroyed the Mobile & Ohio Railroad on their retreat.

On June 7th General Pope sent his cavalry on a reconnoissance around the flank of the Confederate position. On the 8th the cavalry reported that the Confederates had evacuated Baldwin (W. R. 11, p. 274), and General Halleck ordered General Pope to discontinue the pursuit. (W. R. 11, p. 280.)

The army under General Halleck then engaged in restoring the railroads. The division of forces before noted, and General Halleck's

departure for Washington to assume command of all the armies, left General Grant in command at Corinth to prosecute the campaign against Vicksburg. During the period following the evacuation of Corinth, the Federal cavalry did effective work. An expedition was sent to Holly Springs, Miss., on June 19th, and the cavalry was sent on a scout twenty miles farther south. Fighting dismounted, they attacked the guard of the bridge over the Tallahatchie River. (W. R. 24, p. 8.) A later expedition of 315 cavalry, under Colonel Grierson, was sent to Hernando, Miss. They had a skirmish at Coldwater Bridge. They charged the Confederates, captured Coldwater and destroyed the supplies there. (W. R. 24, p. 9.)

Generals Forrest and Morgan, as well as Confederate guerilla forces, were active in the vicinity of Corinth at this time, and General Grant urged the need of additional cavalry to oppose them. (W. R. 24, p. 14; W. R. 25, p. 182.) On June 11th he ordered the organization of a cavalry brigade (W. R. 25, p. 4), but revoked the order on June 20th, and re-assigned the cavalry to the divisions. (W. R. 25, p. 20.)

On July 1st twenty-two companies (728) of Federal cavalry were attacked by eight regiments of Confederate cavalry at Boonville. The fight lasted all day, and the Confederates were finally defeated. Most of the fighting seems to have been dismounted, but the Federal cavalry executed saber charges on the flanks and rear of the Confederate force. (W. R. 24, p. 17.) General Rosecrans cited this action as showing the importance of keeping the cavalry massed and to the front. (W. R. 25, p. 73.)

At Holly Springs, July 1st, the cavalry, while acting as the advance guard for a brigade, fought dismounted and drove back a superior force of Confederates. (W. R. 24, p. 21.) On July 29th seventy-five Federal cavalry attacked and routed some Confederate cavalry near Denmark, Tenn., but were attacked and defeated later in the day by a superior force of Confederates. (W. R. 24, p. 27.)

August 7th, fifty Federal cavalry surprised and routed one company of Confederate cavalry at Dyersburg, Tenn. (W. R. 24, pp. 29-30), and on August 16th one company attacked and routed 150 Confederate cavalry on the Obion River, Tenn. (W. R. 24, p. 31.) The same day Colonel Sheridan started on a reconnoissance with a brigade of cavalry to Carrollton and Guntown, Miss. (W. R. 25, p. 175.)

August 19th to 21st an expedition consisting of 300 cavalry was sent from Rienzi, Miss., to Marietta and Bay Springs. They had several skirmishes on the way, but no serious action. (W. R. 24, p. 35.) In a skirmish near Rienzi August 27th, the Confederate force was routed. (W. R. 24, p. 41.)

The cavalry was kept on the move most of the time, and the lack of forage and water, together with the trying nature of the duty, had the effect of wearing the cavalry out. (W. R. 24, p. 40.) However, continued success spurred it on to further efforts.

On August 30th, in a skirmish near Bolivar, Tenn., six companies of Federal cavalry executed a successful mounted charge (W. R. 24, p. 44), and on September 1st, at the same place, a brigade of cavalry attacked a Confederate force of two regiments of infantry, two squad-

rons of cavalry and two pieces of artillery, capturing the artillery and 200 prisoners. (W. R. 24, p. 51.)

During September the principal Federal cavalry forces were at Jackson (2,100) and at Corinth (2,800). With General Sherman at Memphis was Colonel Grierson with 700 cavalry. (W. R. 25, pp. 245-6.)

September 5th and 6th Colonel Grierson was on a scout with 160 cavalry. At Olive Branch, Miss., being attacked by a superior force of Confederates, he fought dismounted and repelled the attack. Mounting, he charged and drove the Confederates back in confusion on their reserves, but was then compelled to retire. A Federal cavalry brigade then came up, and the Confederates were defeated. (W. R. 24, pp. 55-6.)

Shortly after this, at Cockram's Cross Roads, Miss., Colonel Grierson, with 850 cavalry, attacked and routed 1,000 Confederate cavalry. The attack was made dismounted, driving the Confederates from their position. The Federal cavalry then mounted and charged on the flanks, finally routed the Confederates and pursued them as far as Senatobia, then returning to Memphis. (W. R. 24, pp. 58-9.)

In the battle of Iuka, September 19, 1862, the cavalry division under Colonel Mizner was used to cover the Federal advance and to develop the Confederate position, and was used in observation and on the flanks during the battle, one regiment and four companies engaging dismounted. Upon the retreat of the Confederates, all of the cavalry was sent in pursuit on various roads. The retreat was harassed, but in the principal rear guard action, the Federal cavalry was roughly handled, encountering artillery. One regiment, fighting dismounted, was drawn upon a masked battery and had to retire, but was able to repulse a cavalry charge launched at it immediately afterwards.

General Granger commended the usefulness and efficiency of the cavalry in covering movements before, and protecting the flanks during the battle (W. R. 24, pp. 113-115, 189-40), and General Grant spoke of the work of the cavalry as being well done. (W. R. 24, p. 64.) The casualties of the cavalry in the battle of Iuka were only one killed and eight wounded. (W. R. 24, p. 78.)

On September 19th, at Peyton's Mills, one regiment of Federal cavalry, fighting dismounted, defeated a regiment of Confederate cavalry. (W. R. 24, p. 138.) On September 27th 270 Federal cavalry were surprised, and part of them were captured at Davis' Bridge, Tenn. (W. R. 24, p. 143.)

In the period preceding the battle of Iuka, the information duty had been well performed by the cavalry, and for the first time we find the Federal forces acting in the light of timely and complete information. Emboldened by success, the cavalry was to render still more important service in the battle of Corinth, October 3-4, 1862. When the Confederate army approached Corinth, strong parties of Federal cavalry were out on all the roads, especially south and west of Corinth, and various reconnoissances gave information of the Confederate movements. One battalion of cavalry even routed the rear guard of the Confederate army at Ruckeraville during its advance. On October 3d Colonel Hatch's brigade of cavalry was reconnoitering north and west of Corinth.

In the battle, one brigade of cavalry was in rear of the left wing, four companies skirmishing dismounted. One regiment and one battalion guarded the right flank of the line.

When the Confederates retreated, the cavalry formed two columns of one brigade each, following on either flank, and making dashes when opportunity offered. One battalion of cavalry formed the advance guard of General McPherson's column, engaging the Confederate rear guard three times, capturing prisoners, horses, and arms. One battalion of cavalry formed the advance guard of General MacArthur's column, and these two battalions were united as the rear guard of the entire force on the return from Ripley, at which point the pursuit was discontinued. One battalion and two companies of cavalry were left at Corinth during the pursuit.

The brigades of cavalry on the flanks skirmished almost continuously during the pursuit. The entire cavalry division was united at Ripley October 9th, and engaged in extensive reconnoissances around Ripley. It remained there until the main force of General McPherson returned to Corinth, when the cavalry division returned to that point also.

The wooded nature of the country prevented the participation in the engagements, but the service of the cavalry was invaluable in the approach and in the pursuit of the Confederates. (General Mizner's report, W. R. 24, pp. 242-5.)

The pursuit was in accordance with the orders of General Rosecrans, (W. R. 25, pp. 265-6, 271) to whom apparently much credit is due for appreciating the power and proper use of the cavalry, and for maintaining an effective organization enabling his cavalry to exert its strength. He now bestirred himself to get it properly armed (W. R. 25, pp. 281, 282, 284), but was shortly ordered to Kentucky to relieve General Buell of his command.

The stampede due to General Bragg's invasion of Kentucky being over, and the Confederate forces in Mississippi defeated, it became possible for General Grant to undertake the offensive against Vicksburg. The first attempt was to be made along the line of the Mississippi Central Railroad, along which the Confederates retreated after the defeat at Corinth.

The cavalry division, now under Colonel Lee, an able officer, entered Holly Springs November 13th (W. R. 25, pp. 470, 488-9), after skirmishing all day with five regiments of Confederate cavalry (W. R. 24, p. 489), continuing with a scouting party of 1,000 cavalry to Ripley. (W. R. 24, p. 490.)

On November 28th, Colonel Dickey assumed command of the cavalry division, now of three brigades, and sent one brigade each to report to Generals Hamilton, McPherson and Sherman (W. R. 25, pp. 363-4), but concentrated them again on December 3d for the pursuit of the Confederates retiring on Coffeeville from Oxford. The three brigades reached Water Valley December 4th. General Hatch's brigade was attacked by eight regiments of Confederate cavalry at Water Valley and drove them off. One of the other Federal cavalry brigades, unfortunately provided with gray overcoats, approached at this juncture to

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reinforce General Hatch. They were mistaken for Confederates and General Hatch withdrew. The time lost by this mistake prevented General Hatch from following up his success.

Colonel Hatch's report of the action at Water Valley (W. R. 24, pp. 490-502) states that after capturing the town he was attacked by a mixed Confederate force, and twelve companies formed dismounted to receive the attack, which was made in front and on both flanks, and was repulsed. He then extended both of his flanks and attacked the Confederates and defeated them.

The entire cavalry division moved forward on a single road December 5th. Near Coffeerville a heavy force of Confederate infantry and artillery was encountered by the dismounted skirmishers. After heavy fighting the Federal cavalry was driven back one and one-half miles, most of the fighting being dismounted. The Federal cavalry retired to its camps of the night before. December 6th they remained in observation on the Otuck River.

The narrow roads, with woods on both sides, made operations difficult, but the cavalry had captured 750 prisoners on the advance and had saved the railroad bridges from destruction. Under orders from General Grant (W. R. 25, pp. 410-11) to destroy the Mobile & Ohio Railroad as far south as possible, Colonel Hatch, with 800 picked men, started eastward on December 14th, the rest of his brigade being sent to camp on the Yockna River. One battalion was sent from Paris to make a demonstration toward Grenada. The remaining two brigades under Colonel Mizner were to guard the Otuck River and make a strong demonstration toward Grenada via Coffeerville.

The force under Colonel Hatch marched via Pontotoc to Tupelo, detaching one hundred men to destroy the Coonewar bridge. Colonel Hatch spent December 16th and 17th destroying thirty-four miles of the Mobile & Ohio Railroad from Saltville to Okolona, and a large bridge south of Okolona. On the return he reached Pontotoc December 17th. There he avoided a large force of Confederate cavalry, fearing to engage on account of the worn out condition of his command. He reached Oxford December 19th, his men and horses completely worn out and temporarily unfit for duty. The expedition had lived on the country during the period, and had not lost a man. (Colonel Dickey's report, W. R. 24, pp. 491-9.)

On December 19th General Grant ordered General Mizner with all the available cavalry at Water Valley in pursuit of the Confederate cavalry under General Jackson (W. R. 25, p. 489), but before this move was inaugurated attention was turned to General Van Dorn, who had captured Holly Springs December 20th. Apparently all of the cavalry everywhere was ordered after him (various telegrams, W. R. 25, pp. 448-455), but all efforts were unsuccessful. (W. R. 24, pp. 502, 518, 519; W. R. 25, pp. 498-9.)

The pursuit of General Van Dorn was given up December 27th. About one hundred of the Second Illinois Cavalry were captured at Holly Springs. (W. R. 24, pp. 512-18.) The rest of the regiment took part in the pursuit. (W. R. 24, pp. 514-15.) The regiment fought well at Holly Springs and part of it cut its way out, being praised for its action by General Grant. (W. R. 24, pp. 515-16.)

Meanwhile an expedition from Helena, Arkansas, was directed against the Mississippi & Tennessee Railroad November 26th to December 7th. The principal work of the expedition was done by a cavalry command numbering about 1,900 men under General Washburn, accompanied part of the way by infantry. The cavalry struck the railroad at Garner Station and did some damage on the Mississippi & Tennessee and on the Mississippi Central Railroads, and then returned to Helena. (W. R. 24, 533-9.)

A mixed force was sent from Corinth against the Mobile & Ohio Railroad at Tupelo, December 13th to 19th. (W. R. 24, p. 544.)

General Forrest attempted to create a diversion by a raid into western Tennessee in the early part of December. He failed in his object of drawing the Federal cavalry from Mississippi. All garrisons were warned to be on the lookout, and the cavalry available in Tennessee was sent after him, but his raid was not permitted to seriously disarrange plans. A Federal cavalry force of 600 was defeated by General Forrest at Lexington, Tennessee, December 18th. (W. R. 24, pp. 533-4.)

When General Sherman started on his expedition against Vicksburg on December 20th he took from Memphis only 200 cavalry. He sent the 2,000 cavalry at Helena on the expedition against the Mississippi & Tennessee R. R. above noted. (W. R. 24, p. 605.) The cavalry took no part in the assault on Chickasaw Bluffs December 29th. After this battle General Sherman retired to Milliken's Bend, where General McClernand took command January 4, 1863, and shortly undertook an expedition against Arkansas Post with 32,000 infantry and 1,000 cavalry. (W. R. 25, p. 553.) A small force of cavalry (forty) was used in reconnoitering Arkansas Post January 10th, and a force 300 strong was sent on reconnoissance immediately after in the direction of White River and St. Charles. (W. R. 24, pp. 719-20.)

After the capture of Arkansas Post, January 11th, General McClernand was ordered to return to the Mississippi River and to be prepared to move against Vicksburg. General Grant assumed command in person, and the army was largely reinforced. No statement of the strength of the cavalry of General Grant's army at this date has been found. The return of January 31, 1863, shows one brigade of cavalry (2,000) at La Grange, Tennessee, and one brigade (3,000) at Germantown, Tennessee. (W. R. 38, p. 20.) General Grant evidently contemplated securing the assistance of the cavalry in his Vicksburg campaign by operations directed from Memphis by General Hurlburt, who was in command at that place. To this end, General Grant on March 9th directed Colonel Dickey to report to General Hurlburt, and ordered that all cavalry be put in condition for heavy service to operate south from La Grange. (W. R. 38, p. 95.)

The report of the organization of the army before Vicksburg shows that in general each corps and division commander had one company of cavalry as an escort, while four regiments of cavalry were unattached. (W. R. 37, pp. 149-58.) This, from the average strength of the regiments at that time, would give the cavalry strength of General Grant's army as about 1,500 men.

Of this cavalry it is impossible to find any operations worthy of note. It was used to some extent in scouting in advance of the columns after the capture of Port Gibson. In that action twenty-one companies of cavalry were present, but apparently took no part, the sum total of the casualties being one wounded. (W. R. 36, pp. 582-5.) On May 11th one regiment was sent on an expedition against the Jackson & New Orleans Railroad, destroying one and one-half miles of track and telegraph. (W. R. 36, p. 701.) One battalion of cavalry was with General McPherson's corps, and was used in reconnoissance most of the time during the advance. It was also used to pick up stragglers and to escort trains. (W. R. 36, pp. 734-6.)

The regiment with General Sherman led his advance against Vicksburg (W. R. 36, p. 753), and was sent forward to seize Haynes Bluff, to be used as a base of supply. (W. R. 36, p. 755.) In the battle of Champion's Hill the cavalry drove in the Confederate vedettes. They also executed a charge which was unsuccessful. (W. R. 37, pp. 28-9.) This is the only reported instance of actual participation by the cavalry of the army of General Grant in any battle in the advance against Vicksburg.

When General Grant had completed the investment of Vicksburg his force was rapidly increased. A portion of his infantry and all of his cavalry were used to cover the interval between the Big Black River and the Yazoo, there being constant fear of an attack by General Johnston, who was assembling a force at Jackson, Miss. Of this cavalry outpost a small force (130) was defeated near Birdsong Ferry on June 22d by a superior force of Confederates. (W. R. 37, pp. 509-10.)

From the cavalry under General Hurlburt at Memphis General Grant received the greatest assistance. This force was formidable in numbers, and was used vigorously against the principal aggregations of Confederate cavalry, and to suppress guerilla operations.

On March 31st one division of cavalry was at Helena, Arkansas, under General Washburn, and one division in Tennessee. Of the latter, one brigade was at La Grange and one at Germantown. (W. R. 38, p. 163.) General Washburn was on April 3d ordered to command all of the cavalry in western Tennessee. (W. R. 38, p. 169.) General Hurlburt complained to General Grant that he needed 1,500 good cavalry horses, those sent him having been rejected. (W. R. 38, p. 174.) On April 10th General Washburn requested General Prentiss, in command at Helena, to lend him 1,000 cavalry, and on May 5th General Grant ordered General Prentiss to send all of his cavalry, except two regiments, to General Hurlburt at Memphis. (W. R. 38, p. 273.) This increased the total of the cavalry force in the vicinity of Memphis to 6,100 on June 30th (W. R. 38, pp. 452-3), of which 700 were at Memphis, 1,800 at Corinth and 3,500 at Germantown.

Thus it is seen that the principal cavalry force during the campaign against Vicksburg was under the command of General Hurlburt, under orders from General Grant to further as much as possible by its operations the movement against Vicksburg.

One or two small and unimportant expeditions were sent out in January and February, 1863, but with the beginning of March the cavalry became active and aggressive.

The principal Confederate cavalry forces in northern Mississippi were under the command of Generals Jackson and Chalmers. Most of the scouts and expeditions sent out from La Grange were against these two forces, and to protect the Memphis & Charleston Railroad from them and from the depredations of guerilla forces. The record of these operations must be brief.

Colonel Grierson, on an expedition with 900 cavalry March 8th to 12th, in a skirmish near Covington, Tennessee, defeated a Confederate force. (W. R. 36, p. 423.) The Sixth Illinois Cavalry scouted along the railroad from La Grange to Saulsbury March 21st to 22d (W. R. 36, pp. 471-2), and shortly after this two forces, each of 200 cavalry, started from La Grange to Moscow and to Somerville. One of these parties was surprised, but succeeded in beating off the attack. Colonel Grierson took a brigade of cavalry and scoured the country, but failed to find the Confederate force that made the attack. (W. R. 36, pp. 481-3.)

These expeditions now took on a more formidable character. Colonel Grierson's famous ride started from La Grange on April 17th, and ended at Baton Rouge May 2d. Its beginning was covered by general demonstrations along the line of the Memphis & Charleston Railroad (W. R. 36, pp. 520-1), and was made simultaneously with Colonel Streight's raid from the front of General Rosecrans' army. The principal of the covering demonstrations was an expedition sent from Corinth to Tupelo, April 15th to May 8th, consisting of 4,000 infantry and 1,500 cavalry. In a skirmish at Tupelo, May 5th, the cavalry attacked both mounted and dismounted, and defeated the Confederates. (W. R. 34, p. 241.)

Colonel Grierson left La Grange with 1,700 men. He proceeded southward through central Mississippi. On April 20th he sent back a detachment of 175 men with the prisoners and captured property. From near Houston 500 men under Colonel Hatch were sent on a detour east and north with orders to return to La Grange. At Palo Alto in an engagement, Colonel Hatch had one company captured, and he had continual skirmishing for some days, but finally got back safely with the rest of his command.

The main column of Colonel Grierson, now numbering 950 men, continued southward, finally arriving at Baton Rouge May 2d. The latter part of the march was attended with much difficulty on account of the concentration of the Confederates against Colonel Grierson. The net result of this raid was the capture of 500 prisoners, the destruction of over fifty miles of railroad and telegraph, of over 3,000 stands of arms and an immense amount of property, and the capture of over 1,000 horses and mules. (Campaigns and battles, U. S. M. A. Pamphlet, pp. 47-50; W. R. 36, pp. 520-1, 521-9.)

Colonel Grierson's operations were considered one of the most brilliant cavalry exploits of the war. (W. R. 36, pp. 34, 58.) He had no sooner arrived at Baton Rouge than General Grant began to try to get him back. He made several requests to General Banks to send him back (W. R. 38, pp. 289, 346-7, 492-3), but General Banks was very deficient in cavalry and found Colonel Grierson so useful (W. R. 38, pp. 360, 366-7) that it was not until July 18th that Colonel Grierson's com-

mand finally reached Vicksburg. (W. R. 38, p. 523.) It was immediately sent to Memphis to report to General Hurlburt. Colonel Grierson was then assigned as General Hurlburt's chief of cavalry. (W. R. 38, p. 550.)

To distract attention from Colonel Grierson, and in the hope of finding General Chalmers, an expedition of 1,300 cavalry was sent from La Grange into northern Mississippi, April 29th to May 5th, but nothing was accomplished (W. R. 36, p. 579), and an expedition under Colonel Hatch, consisting of 500 cavalry and 300 infantry was no more successful. (W. R. 36, pp. 702-3.)

Two brigades of cavalry left La Grange May 21st after General Chalmers. They found and defeated him in a skirmish at Senatobia Swamp May 26th. (W. R. 37, pp. 427-8.) Several small expeditions were sent from Memphis to Hernando May 23d to 28th, but they accomplished nothing. (W. R. 37, pp. 429-32, 443-4.)

An expedition of 1,400 cavalry from Corinth May 26th to 31st captured Florence after a slight skirmish. (W. R. 34, pp. 349-51.)

At Mud Creek, June 20th, a force of about 125 cavalry had a severe fight with a superior force of Confederates, but finally repulsed the attack. (W. R. 37, pp. 490-1.) Three brigades of cavalry were sent on an expedition into northwestern Mississippi after General Chalmers, June 15th to 26th. This force had several skirmishes and destroyed much property, but failed to catch General Chalmers. (W. R. 37, pp. 490-2.)

At Hernando, Miss., June 18th (about), a force of 100 Federal cavalry was surrounded, surprised, and captured. (W. R. 38, p. 423.) This is one of the few reverses suffered by the Federal cavalry in Mississippi in this year.

Immediately after the capture of Vicksburg, General Grant ordered General Sherman with three infantry corps to proceed against General Johnston at Jackson, Miss., and ordered practically all of the cavalry to go with him. (W. R. 38, p. 471.) General Sherman ordered the cavalry to proceed via Brownsville, Bolton, and Clinton. (W. R. 38, pp. 481-2.) This cavalry formed General Sherman's advance, and skirmished frequently with the Confederates July 6th to 10th, the principal skirmishes being at Clinton, July 8th, and around Jackson July 9th and 10th. From July 10th to 17th, the cavalry was engaged in destroying the railroad north and south of Jackson to prevent its further use by the Confederates. (W. R. 37, pp. 551, 577-9; W. R. 38, p. 496.) General Johnston evacuated Jackson on July 16th, and no pursuit was attempted on account of the hot weather and the lack of water. General Sherman's whole force then returned to the vicinity of Vicksburg.

July 7th and 8th a brigade of cavalry was on a reconnoissance from Corinth to Iuka. It found the Confederates in force at Iuka. Most of the brigade made a dismounted attack, the reserve remaining mounted. The Confederate force was defeated. (W. R. 37, p. 663; W. R. 38, p. 518.)

On July 18th at Jackson, Tenn., a force of 1,200 cavalry under Colonel Hatch had a severe skirmish with the Confederates and defeated them. (W. R. 37, pp. 673-4.)

A brigade of cavalry scouted through southwestern Tennessee July 16th to 20th, but found no Confederate force. (W. R. 37, pp. 682-3.) At

this time General Grant sent a large portion of his force to General Banks at Port Hudson, to Memphis, and to Virginia, and the scene of activity passed to Arkansas and to eastern Tennessee. The return of July 31, 1863, shows 600 cavalry at Vicksburg, 1,250 on the Big Black River, and 5,100 at La Grange, Tenn.

Cavalry expeditions were sent out from the Big Black River August 10th to 22d, 800 strong, and from Memphis, August 12th to 23d, 1,500 strong. These met at Grenada August 17th, where a skirmish with the Confederates occurred. The two expeditions then separated and proceeded by different routes to Memphis. They destroyed most of the rolling stock on the Mississippi Central Railroad. (W. R. 38, pp. 578-9; W. R. 50, pp. 7-8, 11-24.) The cavalry at Memphis was reorganized into a division of three brigades August 20th. (W. R. 52, pp. 82-3.)

During the remainder of August and September, there was little activity among the cavalry in western Tennessee and in Mississippi. September 14th three regiments of cavalry were ordered to Memphis to proceed to Vicksburg. (W. R. 52, p. 622.)

In October, the Confederate cavalry under General Chalmers became active, making a raid October 4th to 17th against the Memphis & Charleston Railroad. He attacked a brigade of Federal cavalry at Lockhart's Mills, Tennessee, October 5th, but was repulsed. The Federal cavalry was then concentrated at La Grange and started in pursuit. One brigade and one regiment of Federal cavalry were attacked at Salem October 8th and driven out. October 10th the pursuit began in earnest. General Chalmers was attacked near Collierville October 12th and dislodged by a flank movement. The pursuit was continued via Hernando to Wyatt, Miss., where the Confederates made a stand October 13th. The action went against the Confederates and they retreated during the night. The pursuit was then discontinued on account of the scarcity of ammunition. (W. R. 51, pp. 740-3.)

General Chalmers again appeared at Collierville November 3d. He attacked Colonel Hatch's brigade of cavalry and was repulsed and pursued. The Federal cavalry fought both mounted and dismounted. (W. R. 54, p. 243.) The effective cavalry force in the vicinity of Memphis at this time was about 5,700 men. (W. R. 51, p. 472.)

November 12th General Hurlburt ordered his cavalry to take station so as to cover the Memphis & Charleston Railroad, to protect General Sherman's communications during his march to Chattanooga.

General Chalmers executed a third raid against the railroad in the early part of December. He attacked and defeated a brigade of Federal cavalry at Ripley, Miss., December 1st. Continuing, he attacked Saulsbury December 2d, and was defeated. He encountered Colonel Hatch's brigade near Moscow December 3d and 4th, where a brief but severe engagement was fought, and the Confederates were repulsed. (W. R. 54, pp. 576-90.) The Federal cavalry spent the remainder of the month in scouting without any incident worthy of note.

General McPherson, in command at Vicksburg, had a force of about 2,100 cavalry. It was sent on several expeditions from its station on the Big Black River, but was uniformly unsuccessful. General McPherson said that his cavalry was inferior in morale to the Confederate cavalry.

Every time it was sent out it was stopped without accomplishing any thing, and as a result it had become timid. (W. R. 54, p. 749.)

The cavalry of the Military Division of the Mississippi came under the command of General W. S. Smith by his appointment as chief of cavalry by General Grant on November 11th. The further operations of this cavalry may therefore properly be recounted under the operations from Chattanooga.

VIA NASHVILLE TO CHATTANOOGA.

It has been seen that three principal Federal forces were concentrated in Kentucky in 1861, all of which eventually fell under the command of General Buell in the advance into Tennessee in 1862.

The main force at Camp Nolin had with it as late as November 4, 1861, but one regiment of cavalry, and the division at Camp Dick Robinson had with it a like force. (W. R. 4, pp. 333-4). The force under Colonel Garfield, operating in eastern Kentucky, consisted on January 4, 1862, of one brigade, numbering 1,800 infantry and 600 cavalry. (W. R. 7, pp. 21, 27-8.)

Colonel Garfield's Operations.

On January 7th, at Jennie's Creek, a Federal cavalry force numbering 800 attacked the outpost of General Marshall's force and drove it off the field. The cavalry seems to have taken no part in the fight at Prestouburg, the principal action of Colonel Garfield's campaign.

In his advance, the cavalry was used in scouting, and a small force of cavalry (110) was sent on an expedition to Piketon. (W. R. 7, p. 34.)

The cavalry of Colonel Garfield's command seems to have been armed with sabers, navy revolvers, and breech-loading rifled carbines. (W. R. 7, p. 46). However, it was unreliable, and was spoken of disparagingly in his reports. (W. R. 7, pp. 26-27, 32.)

The last operation of Colonel Garfield was an expedition to Pound Gap in March, 1862. The force engaged was 600 infantry and 100 cavalry. The Confederate force guarding the Gap was defeated. In the attack, the cavalry struck the front of the position and was unsuccessful. In the retreat consequent upon the success of the Federal infantry, the cavalry pursued a distance of six miles. (W. R. 10, p. 33.)

Operations From Camp Dick Robinson.

Of the cavalry under General Thomas, nothing but caustic criticism is to be found. Its most creditable action was at Rock Castle Hills, October 21st, where 250 cavalry fought dismounted. Under fire, they wavered and retreated, but re-formed and fought fairly well.

The most of General Thomas's cavalry was with General Schoepf, in advance at Camp Wildcat. Of these, two companies were used to guard a ford near Mill Springs. (W. R. 7, p. 8.)

After a skirmish near Somerset, Kentucky, December 8, 1861, General Schoepf reported: "The cavalry under my command, as usual,

behaved badly. They are a nuisance and the sooner they are disbanded the better. • • • Is there no such thing as obtaining a regiment of reliable cavalry?" (W. R. 7, pp. 8-9.)

In the battle of Mill Springs, January 19, 1862, the one battalion of cavalry with General Thomas was on picket duty at the time of the Confederate attack. (W. R. 7, p. 79). They fell back and formed dismounted to resist the attack. Coming under fire, they again fell back and found their horses surrounded by the Confederates. The horses were cut loose and driven to the rear, where they were caught. The cavalry, having secured their horses, again formed and took part in the engagement. (W. R. 7, p. 100.)

On February 14th, two companies of cavalry were sent on a reconnoissance in the direction of Cumberland Gap. (W. R. 7, p. 417.) About this time General Thomas was ordered to join General Buell, and General Morgan assumed command of the force operating against Cumberland Gap. His force was constituted the Seventh Division, and had with it one battalion of cavalry which was used with one regiment of infantry as the advance guard in the advance to Cumberland Gap. (W. R. 10, p. 57). This battalion is also mentioned as having done good work throughout the campaign on picket duty, in scouting for the entire division, and on advance and rear guard duty. (W. R. 10, p. 61.) The battalion was sent to convoy an incoming train of supplies to Cumberland Ford on May 6th.

After the occupation of Cumberland Gap, June 19th, General Morgan was on the defensive, and he accomplished nothing except to worry the authorities at Washington for reinforcements at a time when they were fully occupied with other things.

When General Kirby Smith advanced into Kentucky in the latter part of August, General Morgan evacuated Cumberland Gap and retreated north to the Ohio River.

General Buell's Operations.

It has been seen that the main force concentrated at Camp Nolin, Kentucky, had but one regiment of cavalry at the beginning of November, 1861. On December 30th a small force of cavalry (168) from General Crittenden's command was surprised and defeated at Calhoun, Kentucky, but the reports of the action indicate that the cavalry fought fairly well. (W. R. 7, pp. 62-3.)

General Buell's report of January 23, 1862 (W. R. 7, p. 563), shows that of his total force of 62,000 infantry and 7,500 cavalry, he regarded only 41,500 infantry and 2,500 cavalry as fit for field duty. A later report of February 14, 1862 (W. R. 7, p. 611), states that two companies of regular cavalry, numbering eighty-eight men, were the only cavalry in the department completely armed, equipped and mounted. What cavalry General Buell had was assigned to three of the five divisions of his army. (W. R. 7, pp. 467-8.)

His report of March 14, 1862 (W. R. 11, p. 37), shows the force at Nashville to have been 55,000 men. It was organized into divisions, and had one cavalry regiment to each division. (W. R. 11, pp. 614-5.)

He complained that only three of his regiments of cavalry were fully armed, and stated that some were armed with sabers and rifles, some with sabers and muskets, and some with sabers and pistols. (W. R. 11, p. 616.) From March 11th to the end of July General Buell's main force was operating under the command of General Halleck in western Tennessee.

On April 17th General Buell ordered four companies of cavalry to the north border of Tennessee to prevent marauding. (W. R. 11, p. 110.)

With General Mitchel's division, sent forward to Fayetteville, was one regiment of cavalry, 734 strong. From the time of General Buell's departure from Nashville until his recall by General Bragg's invasion of Kentucky, General Mitchel was advancing as far as Huntsville, Alabama, which point he reached April 17, 1862. (W. R. 11, p. 111.) His cavalry was scouting during his advance. He asked for reinforcements (W. R. 11, p. 133), which of course could not be spared. His cavalry advanced as far as Stevenson, and apparently met no determined resistance, all available Confederate forces having been concentrated at Corinth. This premature advance exposed General Mitchel to guerilla operations, which his small force of cavalry was inadequate to effectually cope with. This had the effect of calling forth from General Mitchel repeated requests for cavalry. (W. R. 11, pp. 167, 206, 212, 251.) What he had was worn out by trying duty. (W. R. 11, p. 212.) General Buell could only repeat General Mitchel's request in a telegram to the Secretary of War. (W. R. 11, p. 183.)

While General Buell was trying to restore the Memphis & Charleston Railroad from Corinth toward Chattanooga, his cavalry was fully occupied trying to guard the railroad and scouting to the south to ascertain what Confederate movements were taking place. The impression in Washington was that the Confederate army in Virginia was being heavily reinforced from Mississippi, and General Halleck was urged to ascertain the truth.

By the end of July, General Buell had resumed the line of the Louisville & Nashville Railroad. During the summer of 1862 Generals Forrest and Morgan had each accumulated a force sufficient to be formidable, and they began the series of raids and expeditions which were to prove to the Federal authorities the necessity for a large, well trained, and well mounted force of cavalry.

It is impossible within the limits of this article to give in detail the operations of the Federal cavalry in Tennessee during the summer of 1862. General Buell's cavalry was distributed over the whole area of middle Tennessee, rarely more than a battalion in a place. Of the various operations, successful and unsuccessful, against guerillas and against the commands of Generals Forrest and Morgan, the following are the principal:

On May 5, 1862, at Lebanon, Tennessee, a Federal cavalry force consisting of parts of three regiments, about 600 strong, surprised a Confederate force of 800 cavalry under General (then Colonel) Morgan, defeated it after a hard fought battle, and pursued it fifteen miles. About 150 prisoners with their horses and arms were captured. The Federal

loss was six killed and twenty-five wounded. The gallantry of the troops is praised in the report of this action. (W. R. 10, pp. 884-5-6.)

On May 12th, an expedition consisting of parts of three companies was sent out from Fort Heiman to intercept Confederate medicinal supplies. Instead, they struck 1,300 Confederate cavalry and were badly cut up, most of them being captured. (W. R. 10, p. 881.)

Early in June an expedition was sent forward to Chattanooga. Two cavalry regiments formed part of the force. Arriving before Chattanooga, the cavalry was used to protect the rear of the force. After two or three days spent in observing and bombarding the town, the expedition returned. (W. R. 10, p. 921.)

On June 13th five companies of cavalry were sent out from Bowling Green against marauders, but accomplished little. (W. R. 10, p. 914.) Meanwhile General Buell, on May 12th, represented the need of at least five more regiments of cavalry in his department, but was informed that there was none to send him. (W. R. 22, p. 34.) Immediately afterward the operations of Generals Forrest and Morgan began to impress upon General Buell the importance of cavalry. On July 11th all cavalry south of Murfreesboro was ordered to be on the lookout for a force of 200 Confederate cavalry. (W. R. 23, p. 123.) General Buell's chief of staff complained that the lack of cavalry prevented any real check being administered to General Morgan in Kentucky. (W. R. 23, p. 131.) General Buell immediately telegraphed to General Halleck that he wanted more cavalry (W. R. 23, p. 159), and repeated later that cavalry raids could only be effectually met by cavalry, and that he needed five to eight more regiments. (W. R. 23, p. 197.) He followed this the next day by another telegram urging the importance of a large force of cavalry, and said that there was no safety against raiders without cavalry to pursue, and that he was concentrating all the cavalry he could to operate in force. (W. R. 23, p. 202.) A brigade of three regiments was ordered to concentrate at Columbia, Tenn., July 23d (W. R. 23, p. 204), and General R. W. Johnson placed in command. (W. R. 23, p. 208.) He was immediately ordered to Murfreesboro. (W. R. 23, p. 212.) Meanwhile, General Nelson was trying to concentrate a force of cavalry in Kentucky to check General Morgan, and although he got together a brigade under General Jackson (W. R. 23, p. 214), it was not successful in doing so. Finally, on August 16th, General Buell began telegraphing all around in a general endeavor to concentrate his cavalry at Murfreesboro (W. R. 23, pp. 346-7-8), and General Nelson sought cavalry from General Buell to operate against General Morgan. (W. R. 23, p. 341.)

On August 18th General Buell ordered all cavalry not otherwise engaged or assigned to join General Johnson's command. (W. R. 23, p. 361.) The same day he telegraphed General Halleck that he needed a sufficient force of cavalry to cope with the Confederate cavalry and keep open 400 miles of railroad; that lacking cavalry, he had built stockades to diminish the railroad guards; that his communications could only be protected by cavalry; and finally, that he had represented the need of cavalry three months before. (W. R. 23, p. 361.) It would

seem that the fault was partially with General Buell, since his return of July 10th (W. R. 23, p. 120) shows that he had 6,000 cavalry.

July and August, 1862, were busy months for the Federal cavalry in Tennessee and Kentucky. In his first Kentucky raid, July 4-23, 1862, General Morgan attacked and defeated four companies of cavalry at Salina, Ky., July 8th. (W. R. 22, p. 754.) July 9th he cut to pieces four companies of cavalry at Tompkinsville, Ky. (W. R. 22, p. 731.) July 24th he captured part of the Seventh Kentucky Cavalry at Cynthiana, Ky. (W. R. 22, p. 757.)

On July 18th General Forrest captured Murfreesboro with its garrison of fifteen companies of infantry, seven companies of cavalry, and two pieces of artillery. (W. R. 22, pp. 792-3.) On July 26th a reconnoitering party of three companies of Federal cavalry was defeated at Tusculum, Ala. (W. R. 22, pp. 830-1.) In the latter part of July a concentration of cavalry against the Confederates near Nashville was ordered, but it got together too late to interfere. (W. R. 22, p. 815.)

In the early part of August scouting operations were indulged in by a battalion of cavalry near Woodville, Ala. (W. R. 22, p. 837), and by two companies from Woodville to Gunterville. (W. R. 22, p. 870.)

The effectiveness of General Buell's concentrated cavalry was now to be tested. General Johnson, with 640 cavalry, supported by a brigade of infantry and some artillery, was sent from Murfreesboro after General Morgan, operating north of Nashville. For some reason not clear the infantry and artillery were left behind, and the cavalry alone struck General Morgan's force near Gallatin. A surprise was attempted, and the Federal cavalry charged. Half of it ran away and could not be rallied. The remainder retreated, and being pressed by General Morgan, formed to fight on foot. Upon the approach of General Morgan's force, all but seventy-five ran away, and these surrendered. (W. R. 22, p. 871.) Many stragglers were captured by the Confederates.

The difficulties of the Federal cavalry in Tennessee were well expressed by the commander at Nashville in a letter to General Buell. (W. R. 23, p. 406): * * * "Whatever force we send out for any real purpose, we are repelled by a greater force; but when large forces are sent up for no particular purpose, no enemy is seen." Such is the disadvantage of cavalry operating in a hostile country.

About August 15th General Kirby Smith appeared at Cumberland Gap, a forerunner of General Bragg's invasion of Kentucky. During his advance on August 17th, five companies of Federal cavalry were attacked and defeated at London, Ky. (W. R. 22, p. 861.) On August 23d in an action at Big Hill, Ky., the Seventh Kentucky Cavalry fled, and their action was such that members of the regiment were ordered arrested wherever found. (W. R. 22, p. 885.) A battalion of Tennessee cavalry with them fought well.

General Morgan's raid in Kentucky had caused the formation of several regiments of cavalry, and these were of some use in the campaign inaugurated by General Bragg. General Kirby Smith's advance struck Richmond, Ky., August 30th. General Nelson's raw command was routed. (W. R. 22, p. 909.) The two cavalry regiments with him were not engaged.

In the latter part of August, immediately preceding General Bragg's northward movement, General Buell complained that the lack of cavalry in sufficient force for reconnoissance made him depend on spies and other sources for information. (W. R. 23, p. 416.) He ordered the concentration of some cavalry August 27th for the protection of the railroad to Nashville. (W. R. 23, p. 431.)

Two or three reconnoissances were made when General Bragg concentrated at Sparta, to ascertain his dispositions. (W. R. 23, pp. 454, 489, 498.)

On September 5th an important step was taken in the organization of a cavalry division of two brigades of four and three regiments, under Colonel Kennett. (W. R. 23, p. 484.) General Buell was at Bowling Green September 16th, and from that point ordered the cavalry division to be ready to move.

During General Buell's northward movement to Louisville, little mention is made of the operations of the cavalry. On October 1st Colonel Kennett's cavalry division had about 3,000 men (W. R. 23, pp. 562-3) with 1,300 unattached cavalry. General Buell's total force was 69,000.

September 27th to October 4th one brigade of cavalry was used in escorting a train to Louisville. The report of the commander shows this brigade to have been pretty well broken down. (W. R. 23, pp. 567-8.) The other brigade of the cavalry division and the remainder of the cavalry of the army were probably used in reconnoissance until General Buell reached Louisville.

The cavalry division was at Elizabethtown October 2d (W. R. 23, p. 564), and near Perryville October 7th. (W. R. 23, p. 580.) On September 29th a detachment from Colonel McCook's brigade surprised and captured a Confederate cavalry regiment. (W. R. 22, p. 1016.) This was followed by the capture of a small party of Confederate cavalry at Elizabethtown October 3d. (W. R. 22, p. 1018.)

The organization of the army of General Buell October 8, 1862 (W. R. 23, pp. 591-6), shows six of the nine divisions to have had cavalry assigned to them, while the cavalry division had been increased to three brigades of four, three and two regiments respectively. At Nashville were twelve companies of cavalry.

The trains of the army having reached Louisville safely, the cavalry resumed its normal function of screening General Buell's advance against General Bragg. There was a sharp skirmish at Bardstown October 4th (W. R. 22, p. 1018), but the details of this engagement have not been found.

In the battle of Perryville, October 8th, we find for the first time with General Buell a fairly efficient cavalry force. On October 7th a force of 1,350 cavalry skirmished all day with the Confederates. (W. R. 23, p. 1037.) On October 8th this force was joined by an additional brigade under Colonel McCook. By dismounted action they drove in the Confederate advanced cavalry. They then took a position in the line attacked by the Confederates, and held it during the attack. (W. R. 22, p. 1037.) General Buell's report of the battle of Perryville states that the cavalry rendered excellent service. (W. R. 22, p. 1030.)

On October 7th an action was fought between a Federal force of 400 cavalry and 400 infantry, with two pieces of artillery, and General Forrest's command of about 3,000 men at La Vergne, Tenn., resulting in the defeat of General Forrest. (W. R. 22, p. 1020.)

Immediately after the battle of Perryville the cavalry was sent to keep touch with the retreating Confederate army. (W. R. 23, pp. 597, 598, 600, 605, 623.) Owing to the lack of forage, General Buell was later compelled to keep most of his cavalry in the rear, and to depend on his infantry to keep touch. (W. R. 23, p. 621.) Meanwhile, General Morgan (Confederate) was keeping things moving to cover General Bragg's retreat. On October 18th he captured 500 of the Fourth Ohio Cavalry at Lexington (W. R. 23, p. 630), and a brigade of cavalry was sent after him without success. (W. R. 23, pp. 645-9.)

General Buell could not follow General Bragg on account of the difficult country and the exhaustion of its resources by the retreating Confederates. He gave up the pursuit and determined to move to Nashville. He reported October 26th sending one brigade of cavalry to Lebanon and one to Bowling Green. (W. R. 23, p. 644.)

General Rosecrans relieved General Buell on October 30, 1862. He immediately sought to improve the organization and efficiency of his cavalry. The day that he assumed command, he telegraphed General Halleck that he had eight good regiments of cavalry, and asked for General Stanley for duty as chief of cavalry. (W. R. 23, p. 665.) On November 2d he again telegraphed that he must have cavalry and cavalry arms and a capable division commander, again asking for General Stanley. (W. R. 30, p. 8.) The requests for additional cavalry and cavalry arms were urged repeatedly (W. R. 30, pp. 9, 27, 31, 36, 58, 59, 127, 323), and failing an increase of cavalry strength, he made urgent requests for horses and equipments to mount infantry. (W. R. 30, pp. 58, 331.) In support of these requests, he stated that his cavalry was half armed and two-thirds demoralized (W. R. 30, p. 31), and that the Confederates had 10,000 to 12,000 cavalry, and had things all their own way. (W. R. 30, p. 331.) These deficiencies were remedied as far as possible. (W. R. 30, pp. 64, 327.)

As a matter of fact, the Confederate cavalry under Generals Forrest, Morgan and Wharton, had the cavalry of General Rosecrans' army pretty thoroughly terrorized. In a communication to General Halleck December 7th, General Rosecrans stated that his cavalry was but one-fourth the number of the Confederates, and not fully armed, and that he wanted more cavalry before he tried them against the Confederate cavalry. (W. R. 29, p. 41.)

In his report of the battle of Stone's River, General Rosecrans stated that the enormous superiority of the enemy in cavalry kept the little cavalry he had almost within the infantry lines. (W. R. 29, p. 139.) The Federal cavalry was mostly concentrated in the cavalry division commanded by General Stanley, who reported for duty on November 24th, and was immediately appointed chief of cavalry. (W. R. 30, p. 94.)

The cavalry numbered about 3,000 December 8th (W. R. 30, p. 135), and the return of December 31st shows a total of 6,200 cavalry present

for duty with General Rosecrans, of which 4,400 were in the cavalry division under General Stanley. (W. R. 30, pp. 283-5.)

Three regiments were sent to join the cavalry division on January 13th. (W. R. 30, p. 326.) The actual results of the operations of the cavalry were small.

In the advance on Nashville, the cavalry division was directed to move November 4th, one regiment on the Nashville Pike, two regiments to Tyree Springs, and the other two regiments to Springfield, scouting forward to Gallatin and Hendersonville, covering the advance of the army. (W. R. 30, p. 7.) On November 7th, General Rosecrans ordered the cavalry to occupy Hartsville and advance across the river, scouting to Lebanon. (W. R. 30, pp. 19-21.) This movement was to cover the advance of General Crittenden's division. On November 12th Colonel Kennett, commanding the cavalry division, was at Hartsville with 2,000 cavalry. (W. R. 30, p. 40.) On November 13th General Negley reported that the Fourth Ohio Cavalry was attacked by General Forrest and driven into Nashville in great confusion. (W. R. 30, p. 42.) The same day General Rosecrans ordered a cavalry reconnoissance in force beyond Lebanon. (W. R. 30, p. 42.)

On November 18th the cavalry division was ordered to Nashville (W. R. 30, p. 66), and was then ordered to act as rear guard and to guard trains on the advance to Stone's River, returning when this duty was completed to Nashville. (W. R. 30, p. 71.) On November 28th a train and its escort of forty cavalry were captured near Hartsville, but most of it was recaptured the same day by a battalion of cavalry. (W. R. 29, pp. 24-5.) The same day a brigade of cavalry was sent out on the Hillsborough road on a reconnoissance, but saw nothing. (W. R. 30, p. 78.)

December 4th a force of 300 cavalry had a small skirmish south of Nashville. (W. R. 29, p. 29.) December 7th the garrison of Hartsville, 1,800 strong, was captured. This included the Second Indiana Cavalry, 350 in number. (W. R. 29, p. 45.) The attack was a surprise, but the cavalry at least offered some resistance. They formed dismounted, but none of the rest of the garrison came to their assistance, and all surrendered. (W. R. 29, pp. 51-2.)

December 11th three regiments of cavalry were sent on a scout to Franklin. They attacked dismounted and captured the town. (W. R. 29, p. 767.)

An expedition consisting of 1,000 cavalry was sent by General Wright into East Tennessee December 20th to January 5th, 1863. This force had a skirmish at Watauga Bridge December 30th, and at Jonesville January 2d. They destroyed two important bridges on the East Tennessee Railroad and about ten miles of track. The total journey was about 470 miles. (W. R. 29, p. 86.)

General Morgan's second Kentucky raid was made from December 22, 1862, to January 2, 1863. He avoided action as a general rule, a small and unimportant skirmish with four companies of cavalry at Green's Chapel, Ky., being the only fight. (W. R. 29, p. 151.)

From General Wright's forces in Kentucky, an expedition of two battalions of cavalry was sent from London, Ky., into east Tennessee. They defeated a small Confederate force at Perkins' Mill, Tenn., December 28th. (W. R. 29, pp. 159-63.) A force of 150 cavalry attacked a

guerilla camp in Powell County, Ky., December 26th, capturing a few prisoners. (W. R. 29, p. 164.)

Preparatory to the advance on Murfreesboro, resulting in the battle of Stone's River, December 31, 1862, and January 2, 1863, General Stanley reported that he was able to march with about 1,700 men (W. R. 30, p. 227), and the orders for the cavalry were to advance in three columns of one brigade each, one under Colonel Zahm on the Franklin Pike, one under Colonel Minty on the Murfreesboro road, and the reserve under General Stanley on the Nolensville pike. The Fourth U. S. Cavalry, 400 strong, was ordered to report to General Rosecrans. (W. R. 30, p. 241.) The cavalry advanced in accordance with these orders on December 26th.

The brigade under General Stanley encountered the Confederates in force on the Nolensville pike, and fought from 10:00 A. M. December 27th until evening, driving them two miles beyond La Vergne. The brigade executed a reconnoissance to College Grove December 28th, and was joined by Colonel Zahm's brigade on December 29th. General Stanley's force advanced on the Bole Jack road and Colonel Zahm's brigade by the Franklin road, communicating at Stewart's Creek. The Confederates were encountered by General Stanley at Wilkinson's Cross Roads and driven back rapidly across Overall's Creek. One troop in pursuit fell into an ambush and was defeated. On December 30th the entire cavalry division, numbering 3,000 to 3,200 men (W. R. 29, pp. 191, 196), was employed in guarding the flank of the army in position.

The brigade under Colonel Zahm, numbering 950, proceeded via Franklin, where on December 26th it had a skirmish with 900 Confederate cavalry and drove them out. On December 27th and 28th this brigade made a reconnoissance to the front and right, via Triune, joining General Stanley as above. On the 29th this brigade was attacked by General Wharton's brigade of Confederate cavalry and a heavy fight followed, neither side gaining any advantage. On the 30th a severe skirmish occurred on the Franklin road.

The brigade under Colonel Minty covered the advance on the Murfreesboro road, one regiment on the road and one on each flank. There was light skirmishing all day on December 29th. On December 30th, this brigade formed a chain of vedettes in rear of the army to drive up stragglers. One regiment and one battalion were sent back toward Nashville to look after General Wheeler.

In the battle on December 31st, the cavalry performed important services. Colonel Zahm's brigade was on the right flank, and was heavily engaged. It was thrown into great confusion and practically routed. One regiment ran away, but on the whole this brigade did as well as could be expected under the circumstances. One regiment executed a mounted charge, which was repulsed. The whole brigade gave ground continually, but was able from time to time to repulse charges by the Confederate cavalry. On January 1st, one regiment and one company of this brigade were sent to escort a train to Nashville. On January 3d, while escorting a train from Nashville to Murfreesboro, this same cavalry escort was attacked by a portion of General Wheeler's command, but repulsed the attack. On January 4th the whole brigade

proceeded to the front, and on January 5th was sent out on the Shelbyville road, but did nothing, and returned to camp. On December 31st Colonel Minty's brigade, 950 strong, was sent to the right flank of the army, where it formed dismounted, but was out-flanked and had to retire. It was followed by the Confederate cavalry, which again threatened the flank, but was driven off by a charge. The brigade also charged successfully on the force in front at the same time.

On December 31st Colonel Kennett's brigade was also ordered to the right, thus throwing the entire cavalry force on this flank. This brigade formed dismounted, and at 4:30 P. M. was attacked and out-flanked, whereupon it mounted and retired, re-formed and made a successful charge.

Thus it is seen that when the battle opened all of the cavalry was sent to the right flank and used to assist in staying the rout on that flank. On January 1st, 2d and 3d the cavalry was used to guard the flanks. On January 4th it was concentrated and moved to the fords of Stone's River, and on January 5th entered Murfreesboro. On January 6th the cavalry moved out in two columns on the Shelbyville pike and toward Manchester. The latter column encountered the Confederates three and one half miles from Murfreesboro and fought till sundown, driving them back toward Manchester. The Federal cavalry then returned to Lytle's Creek, one and one-half miles from Murfreesboro.

One regiment, the Third Ohio Cavalry, did valuable service on December 31st, standing off an attack of the Confederate cavalry of General Wharton long enough to enable a large part of the ammunition train, then in danger, to be drawn off. The Confederate reports mention this regiment as having accomplished this result by a saber charge, but incidentally state that the Federal cavalry was driven from the field in the wildest confusion, which it must be acknowledged was not far from the truth. (Condensed from various reports, W. R. 29, pp. 617-649, 967.)

The Fourth U. S. Cavalry distinguished itself by a successful charge, in which 300 prisoners were recaptured. (W. R. 29, p. 188.) This charge was executed in line of companies in columns of fours. (W. R. 29, pp. 648-9.)

General Rosecrans gives the strength of the cavalry at Stone's River as 3,200. (W. R. 29, p. 196.) The total casualties show 160 killed and wounded, and 236 missing. The work of the cavalry was praised by General Rosecrans in his report. (W. R. 29, pp. 194, 198.)

January 13th to 15th Captain Otis, with 700 cavalry, accompanied an expedition from Murfreesboro to Nolensville and Versailles. (W. R. 29, p. 984.) On January 19th one battalion of cavalry had a skirmish at Woodbury, in which a few prisoners were captured. (W. R. 29, pp. 985-6.)

After the battle of Stone's River, General Rosecrans immediately began an effort to increase his cavalry force by stripping Kentucky of cavalry, enumerating nine regiments serving there which he desired General Wright to send him (W. R. 30, p. 333) under the general instructions of General Wright to send to General Rosecrans such reinforcements as he could spare without endangering Kentucky. General Wright apparently sent all of the above regiments except one.

In January, 1863, the Fifteenth Pennsylvania Cavalry (Anderson Cavalry) mutinied. Three hundred of the regiment were present at the battle of Stone's River. The remaining 700 were under guard at Nashville. (W. R. 35, p. 151.) The regiment was finally reorganized with new officers in May, 1863. (W. R. 30, pp. 345-381.)

As long as General Rosecrans remained in command, he continued his appeals for cavalry, and for the necessary horses, arms and equipments to make his cavalry effective. (W. R. 35, pp. 14, 22-3, 33-4, 154, 199, 245, 270-1, 559-60.) His appeal for horses drew forth from the Quartermaster General a long letter (W. R. 35, pp. 300-303) in which attention was drawn to the fact that the horses already furnished had been broken down by hard and unnecessary work, pointing out a case where a very long and hard march had been made with no other object than to get back to camp, and citing other instances of like abuses. He advised General Rosecrans to see that his cavalry cared for their horses properly, advice which appears not to have been out of place.

General Halleck, the Secretary of War, and the Quartermaster General all appeared willing to do their best to help General Rosecrans fit out his cavalry and mount such of his infantry as he wished, though General Halleck finally got tired of the continual stream of telegrams about the need of cavalry, informing General Rosecrans that he had his share or more of cavalry and cavalry arms (W. R. 35, p. 31), and finally requesting a cessation of the telegrams, saying that General Rosecrans' wants were fully known. (W. R. 35, pp. 37-8.)

However, General Rosecrans' persistence was to be rewarded, and the returns show a steady increase in the number of cavalry present for duty to 4,500 January 31st (W. R. 35, pp. 28-9), 5,000 February 28th (W. R. 35, p. 93), 6,300 March 31st (W. R. 35, pp. 196-7), and 5,000 April 30th (W. R. 35, p. 298.)

A cavalry corps was organized in May, 1863, and the return of May 31st shows its strength as 5,000 (W. R. 35, p. 378), while by July 31, 1863, it had reached the strength of 614 officers and 10,289 men present for duty. (W. R. 35, pp. 572-3.) At that time the cavalry was concentrated at Winchester, Tennessee.

From the battle of Stone's River until June 24, 1863, General Rosecrans' army lay at Murfreesboro preparing for an advance. This epoch is an important one for the cavalry in the West, being marked by a steady increase in efficiency and in numbers. The period was filled with expeditions and reconnaissances. Until the cavalry became sufficiently numerous to take care of itself, these expeditions were generally supported by infantry.

January 31st to February 13th an expedition of one division of infantry and two brigades (1,800) cavalry was sent from Murfreesboro to Franklin. In a skirmish at Unionville, January 31st, one regiment executed a successful saber charge. The expedition then moved via Triune to Franklin and returned to Murfreesboro. (W. R. 34, pp. 24-7.) February 8d to 5th an expedition of one division of infantry and one brigade of cavalry was sent from Murfreesboro to Auburn, Liberty and Alexandria. The cavalry acted as advance guard. (W. R. 34, pp. 43-4.) February 18th to March 5th a force of one regiment of infantry, one

regiment of mounted infantry, and one regiment and one battalion of cavalry was engaged in a futile chase after a Confederate raiding force near Paris, Kentucky. (W. R. 34, pp. 51-8.)

In a skirmish near Bradyville, March 1st, in which three regiments of Federal cavalry acting as a train guard were attacked, two regiments executed a mounted charge with sabers and pistols, and drove the Confederates off in confusion. (W. R. 34, p. 65.) Spring Hill was captured by the Confederate cavalry March 5th, with a garrison of 1,000 infantry. The cavalry, 650 in number, and the artillery made their escape. (W. R. 34, p. 75.)

An expedition of 850 cavalry was sent from Murfreesboro to Columbia, Tennessee, March 4th to 14th. In a skirmish at Rover, March 4th, one regiment executed a successful saber charge. There was also a skirmish at Thompson's Station March 9th. (W. R. 34, p. 129.) An expedition of 750 cavalry was sent from Franklin to Columbia March 8th to 12th, skirmishing with the Confederates at Thompson's Station March 9th, and at Rutherford's Creek March 10th and 11th. (W. R. 34, p. 142.)

A Confederate force of 6,000 mounted men under General Pegram, made an expedition into Kentucky March 22d to April 1st. The principal action was at Somerset, Kentucky, March 30th, in which the Federal force was 1,250 cavalry and mounted infantry. This entire force fought dismounted and attacked and defeated the Confederates. (W. R. 34, pp. 169-70.)

Brentwood, Tennessee, was captured March 25th by the cavalry of Generals Forrest, Morgan and Wharton. A force of 600 cavalry was sent to the relief, and succeeded in recapturing some of the wagons and arms. The whole Confederate force then came up, and the Federal cavalry retreated, fighting dismounted. They lost the wagons and had to destroy the arms to keep them from falling into the hands of the Confederates. (W. R. 34, p. 179.) A small Federal cavalry force (sixty-five) was defeated in a skirmish on the Woodbury pike March 27th. (W. R. 34, p. 197.)

General Stanley went on a reconnoissance April 2d to 6th with two brigades of cavalry (1,500) from Murfreesboro to Auburn, Liberty, Snow Hill, Cherry Valley, Statesville, Cainsville and Lebanon. (W. R. 34, p. 207.)

General Van Dorn attacked at Franklin April 10th with 10,000 men, a force of 5,200 infantry and 2,700 cavalry. One brigade of Federal cavalry charged and captured a battery and some prisoners, all of which were recaptured. (W. R. 34, p. 222.)

An expedition of 4,000 infantry, 1,500 cavalry and 1,100 mounted infantry was sent from Murfreesboro to McMinnville, April 20th to 30th, to clear out the Confederates and destroy the resources of the country. (W. R. 34, pp. 266-9; W. R. 35, p. 242.)

About this time General Rosecrans ordered General Stanley to Louisville with all of the dismounted cavalry to remount them. (W. R. 35, p. 246.) He also ordered the detail of infantry soldiers as orderlies, horses to be provided by the quartermaster's department. He prescribed that the cavalry guards and vedettes should be under the

control of the senior cavalry officer, and that each cavalry brigade should detail a brigade officer of the day. (W. R. 35, p. 338.) These were steps toward increasing the available numbers and the efficiency of the cavalry. General Rosecrans had also by this time succeeded in mounting a brigade of infantry under Colonel Wilder.

A raid by a force of mounted men under Colonel Straight into northern Alabama and Georgia in connection with Colonel Grierson's raid and general demonstrations along the Memphis & Charleston Railroad had been planned, and was started from Tusculum, Ala., April 26th. The expedition consisted of 1,700 men. After numerous skirmishes the force finally surrendered to inferior numbers near Cedar Bluff, Ala., May 3d. (W. R. 34, pp. 290-293.)

An expedition including one brigade of cavalry was sent toward Monticello, Ky., April 26th to May 12th. The whole force was defeated in a hard fought battle at Horseshoe Bottoms, Ky., May 10th. (W. R. 34, pp. 296, 299-302.)

While on an expedition from Murfreesboro to Middleton, May 21st and 22d General Stanley's cavalry division captured the camps of the Confederates at Middleton, 800 stands of arms, 300 horses, and all of the Confederate camp equipage. General Stanley in reporting this expedition makes the claim that his cavalry was fast becoming a terror to the Confederates. (W. R. 34, pp. 334-5.)

One brigade of cavalry had a small skirmish near Murfreesboro June 3d, and a brigade had a severe action near Franklin June 4th, fighting dismounted and mounted, defeating the Confederates. (W. R. 34, pp. 331-2.)

During the early part of June, the reconnoissances and expeditions were in the main without incident, the most important being a raid from Kentucky into East Tennessee June 14th to 24th, by 1,500 mounted men. They destroyed some bridges on the Tennessee Central Railroad, and some supplies and arms belonging to the Confederate government. (W. R. 34, p. 334.)

What is known as the "Middle Tennessee" or "Tullahoma" campaign, commenced on June 24, 1863. Under orders from General Rosecrans (W. R. 35, p. 446) the cavalry corps took the advance, General Turchin's division toward McMinnville, and General Mitchell's division via Rover. The latter encountered strong opposition near Rover, and was brought to a standstill June 23d. One brigade was detached from General Turchin's division to reinforce General Mitchell, and the other brigade of General Turchin was broken up in detachments. The Confederates withdrew from Rover, and at Middleton, June 24th, were defeated by General Mitchell. June 26th the entire cavalry corps was moved to Christiana, two regiments being sent forward to reconnoiter Guy's Gap. The day was rainy, and the rest of it was spent in getting up forage. June 27th the cavalry was ordered to take Guy's Gap, which was done. The Confederates were pursued to near Shelbyville, where a stand was attempted, but they were driven off, and Shelbyville was captured with 600 prisoners and some guns. June 28th the cavalry went back to Guy's Gap for supplies, thence June 29th via Shelbyville to Fairfield, and June 30th to Manchester.

July 1st the entire cavalry force was ordered via Hillsboro to Pelham. General Mitchell's division and one brigade of General Turchin's left Manchester July 2d in pursuit of the retreating Confederates. Twelve companies under General Turchin encountered the enemy at Morris's Ford and were repulsed. The rest of the cavalry corps came up and the Confederates abandoned the defense of the ford, and the cavalry crossed. July 3d the corps marched to Decherd, sending one regiment forward to Brakefield Point, and one to Cowan.

July 11th the entire cavalry corps having rested and refitted, was ordered forward to Huntsville, Ala. (From various reports, W. R. 34, pp. 538-556.)

General Rosecrans alleged as one reason for not advancing against General Bragg earlier, that his cavalry could not be ready before about June 15th. (W. R. 34, p. 403.)

The cavalry corps at this time was commanded by General Stanley, and comprised two divisions: First Division, General Mitchell; First Brigade, Colonel Campbell; Second Brigade, Colonel E. M. McCook. Second Division, General Turchin; First Brigade, Colonel Minty; Second Brigade, Colonel Long. The corps numbered 10,500 men. (W. R. 34, p. 410.) The only misfortunes of the cavalry in this campaign were the capture of 250 men by General Forrest at Lexington June 29th (W. R. 34, pp. 628-9), and the capture of two companies of cavalry on outpost at Union City, Tenn., July 10th. (W. R. 34, pp. 822-3.)

The prospects of the Federal cavalry in Tennessee, already bright, were made brighter by the disastrous termination of the Confederate General Morgan of his Ohio raid, July 2 to 28, 1863. His whole force numbered about 3,000 men, and all of it was captured. No heavy action was fought with him, his capture being the result of a gradual disintegration of his force. Seven regiments of cavalry were in pursuit. (W. R. 34, p. 637.) The capture of General Morgan and his command at a time when the Federal cavalry was already getting the upper hand anyway, was a long step toward complete mastery.

A second Confederate raiding force of 1,500 to 2,000 men under Colonel Scott was sent into Kentucky July 25th to August 6th to relieve the pressure on General Morgan. A Federal force of 500 mounted men was routed at Richmond, Ky., July 28th. (W. R. 34, pp. 834-5.) The heavy cavalry force let loose by the capture of General Morgan compelled Colonel Scott's hasty return to Tennessee. (W. R. 34, pp. 839-42.)

A Federal expedition of about 1,000 mounted men was sent into southwestern Virginia July 3d to 11th. (W. R. 34, pp. 818-19.)

On July 11th General Stanley reported the cavalry stationed, one division at Fayetteville, one brigade at Pulaski, and one brigade at Salem. (W. R. 34, p. 825.)

The cavalry in Kentucky and Ohio which pursued and captured General Morgan was organized August 6th into a cavalry division of three brigades and one independent brigade, a total of 8,000 mounted troops. (W. R. 35, pp. 596, 603.) It fell under the command of General Burnside in his East Tennessee or Knoxville campaign.

General Stanley's cavalry remained in observation in advance of the army, watching the Tennessee River until the railroad was repaired

and General Rosecrans was again ready to advance. Reconnoitering parties were sent out from time to time.

While General Rosecrans was preparing for his forward movement, the cavalry in western Tennessee became active to create a diversion in his favor, and to prevent the reinforcement of the Confederate cavalry in his front. The simultaneous expeditions from Vicksburg and Memphis in August were for this purpose.

When General Rosecrans began the advance which precipitated the battle of Chickamauga, September 19 and 20, 1863, his cavalry corps numbered 585 officers and 10,114 men present for duty. (Return of August 31st, W. R. 52, p. 276.)

Colonel Minty's brigade of cavalry and Colonel Wilder's brigade of mounted infantry were along the Tennessee River from Chattanooga up to Washington. (W. R. 50, p. 51.) The remaining three brigades were below Chattanooga. On August 17th Colonel Minty's brigade marched from McMinnville via Pikeville for Sparta, where he had a skirmish and defeated the Confederate cavalry, threatening the communications. He then returned to the Tennessee River. This brigade and Colonel Wilder's brigade of mounted infantry operated on the left flank of General Rosecrans' army during the Chickamauga campaign. Colonel Wilder's brigade entered Chattanooga September 9th, and the next day moved toward Ringgold. On September 11th, two miles from Ringgold, his brigade attacked the Confederates and during the day drove them within four miles of Dalton. It was then ordered to return to Ringgold and thence to La Fayette, where a skirmish occurred and the brigade was nearly surrounded, but cut its way out and proceeded to Gordon's Mills. September 15th it executed a reconnoissance to Pea Vine Church, and moved September 16th to Cooper's Gap. September 17th it guarded the crossing of Chickamauga Creek at Alexander's Bridge. September 18th Colonel Wilder's brigade was attacked by a brigade of Confederate infantry, which was repulsed. A portion of the brigade was detached to assist Colonel Minty, when the remainder was attacked by three brigades of infantry, and although almost surrounded, managed to hold on until the following morning, when the brigade was ordered to the right flank of the line. There it was heavily engaged on September 19th. On the 20th the brigade occupied the right flank of the line, charged the Confederates and drove them back. It was then ordered to fall back to Lookout Mountain, which it did. (Note. This account of the part played by Colonel Wilder's brigade seems necessary in this connection, since it was apparently considered as cavalry, affecting the distribution of the cavalry. This brigade was transferred to the cavalry corps October 18th, and constituted the Third Brigade, Second Division.)

Colonel Minty's brigade marched from Chattanooga to Gordon's Mills September 13th, crossed Missionary Ridge into Lookout Valley the next day, and was ordered back via Gordon's Mills to Pea Vine Valley September 15th. September 16th and 17th light skirmishing only occurred. September 18th the Confederates advanced in force. Colonel Minty was reinforced by two regiments of Colonel Wilder's brigade and became heavily engaged dismounted at Gordon's Mills in the evening. September 19th the brigade moved to near Rossville, and

to Missionary Mills September 20th. From there it was ordered to take a position on the Ringgold and Rossville road to cover the retreat of the army, standing off a force of 1,500 Confederate cavalry and mounted infantry at Red House Bridge. On September 21st this brigade fell back to Rossville, and the next day to Chattanooga.

The main cavalry force of three brigades crossed the river at Caperton's Ferry September 3d, leaving guards at the crossings, and proceeded to Town Creek, moving to a point near Valley Head September 4th. The next four days were spent in scouting and in shoeing up the horses. September 9th the whole command moved into Broomtown Valley, where a skirmish occurred. September 10th to 12th were spent in reconnoissances toward La Fayette, Rome and Summerville. September 13th a reconnoissance by two brigades to La Fayette developed the presence there of the Confederates in force, and the whole command moved to Alpine. September 14th the whole command moved to the top of the mountain, and the next day one brigade to Dougherty's Gap, and a division to Valley Head, the whole command concentrating at Dougherty's Gap September 16th. Minor movements only were made on September 17th and 18th. September 19th the three brigades were moved to Crawfish Springs on the right of the Federal line and remained there in line of battle all day. September 20th they guarded the fords of Chickamauga Creek and were ordered to retire when the Federal army retreated. It is worthy of note that this order was verified before it was obeyed.

September 21st these brigades formed line of battle in Chattanooga Valley, skirmishing all day. September 22d they retired to Chattanooga, the rear brigade being heavily engaged. The whole of the cavalry then crossed the river to protect the trains in the Sequatchie Valley, and was disposed so as to observe the crossings from Washington to Bellefonte. These dispositions were completed by September 27th, one division being north of Chattanooga and the other south.

These operations were carried out without serious reverse except in one instance. On September 19th one brigade (Third Brigade, First Division) was thrown into confusion near Crawfish Springs and lost about 200 prisoners. The brigade was rallied, formed dismounted in rear, and repulsed an attack. (From various reports, W. R. 50, pp. 890-926, 445-9.)

General Stanley commanded until September 14th, when on account of sickness he transferred the command to General Mitchell.

General Rosecrans in a report to the Adjutant General, says that the obstinate stand of Colonels Minty and Wilder on September 18th gave time for the formation of the infantry, and that on September 18th, 19th and 20th the cavalry behaved with conspicuous gallantry, covering the shattered right and the trains. (W. R. 50, pp. 79-80.) The casualties of the cavalry in the Chickamauga campaign were thirty-two killed, one hundred and thirty-six wounded and three hundred missing. (W. R. 50, p. 179.)

General Rosecrans' dispositions after the battle of Chickamauga had scarcely been completed when on September 30th, a Confederate raiding force under General Wheeler, about 4,000 strong, crossed the Tennessee River at Cottonport Ferry, near Washington, and started

against the Federal communications via McMinnville, Murfreesboro, Shelbyville, Farmington and Pulaski, again crossing the Tennessee River at the mouth of the Elk River October 9th. As soon as General Wheeler had crossed the river, the cavalry was all ordered after him. General Crook's division and Colonel Wilder's brigade, which were along the river north of Chattanooga were ordered in direct pursuit. General Mitchell's division, which was in the vicinity of Bridgeport and Stevenson, was ordered to move via the Sequatchie Valley to join General Crook. After some hard marching and slight skirmishing, the whole command was concentrated six miles north of Shelbyville, October 6th. From there one division was ordered to Unionville, and the other division and the mounted infantry were ordered to Farmington in an attempt to head off the Confederate column. A severe action was fought at Farmington, which was signalized by a mounted charge of the mounted infantry, followed by a saber charge by the cavalry, four guns being captured. From the Confederate report (W. R. 51, p. 737) it appears that this engagement was fought by one brigade, which was thrown into action to delay the Federals. This brigade was badly cut up.

The pursuit of General Wheeler was given up when he crossed the Tennessee River, and the Federal cavalry was returning to Stevenson when, at Huntville, it was turned aside after another raiding force under General Roddey, with whom a skirmish occurred at New Market October 13th, but he got away.

One division of cavalry (General Crook's) was now ordered to Flint River, and the other (General Mitchell's) to Winchester. The cavalry was badly used up, having marched 247 miles in six days, and several marches by brigades of more than fifty miles in a day were made. (Various reports, W. R. 51, pp. 664-5, 667-76, 690-3, 684-8.)

The prompt expulsion of Generals Wheeler and Roddey from Tennessee is in marked contrast with the previous performances of the Federal cavalry. Prior to this time the Confederate cavalry had roamed at will over Tennessee, doing immense damage to the railroads. In this attempt on the communications, not only was the damage small, but the raiding parties were expelled in the brief period of eight days, losing guns and prisoners, and this hasty exit was necessary to avoid capture. The principal damage done was the destruction of a wagon train in the Sequatchie Valley, and the Confederates barely had time to destroy this before they had to move on.

On October 25th General Mitchell reported that his horses were unfit for service, having been broken down in the pursuit of Generals Wheeler and Roddey. He gave the effective force of the first division as 1,000, and of the second as 1,400. He also complained bitterly of the quality of the horse equipments that had been furnished, saying that the leather was green, the trees of the saddles were green, the saddle irons too light, and that the inferior quality of the saddles was largely responsible for the condition of his horses. Many of the saddles which were new before the pursuit of General Wheeler were at this time condemned. He concluded with a request for 3,000 horses and 3,000 or 4,000 horse equipments. (W. R. 54, p. 835.)

At the same time General Crook reported his division as in unfit condition to move. (W. R. 54, p. 842.)

During the siege of Chattanooga, the headquarters of the cavalry corps (General Elliott) and the First Division (Colonel McCook) remained at Winchester until ordered November 23th to Knoxville. The Second Division (General Crook) and the mounted brigade of infantry (Colonel Wilder) were at Maysville, Ala. This disposition was necessary on account of the difficulty of transportation, the cavalry moving back to where it could be supplied from the railroad. (W. R. 56, pp. 95, 143, 162.)

On November 11th General W. S. Smith was appointed chief of cavalry of the Division of the Mississippi (W. R. 56, p. 115), giving him command of all the cavalry at Vicksburg, Memphis and Chattanooga. He immediately proceeded to Nashville and inspected the corral and complained of the quality of the horses being furnished, advocating a private mark for each purchasing quartermaster in order that the responsibility for the purchase of unfit horses might be fixed. He also complained of the arms, saying that there was scarcely a single regiment armed with weapons of uniform caliber. (W. R. 55, p. 438.)

On November 18th General Crook was ordered to send Colonel Long with 1,500 to 2,000 cavalry to Chattanooga for raiding duty. (W. R. 56, p. 167.) This is the only cavalry force which took part in the campaign for the relief of Chattanooga.

Colonel Long left Chattanooga November 23d with 1,500 men and proceeded via Cleveland and Harrison, doing extensive damage to the railroads. He returned to Chattanooga November 27th and left again November 29th, proceeding via Benton and Columbus (on the Hiwassee River) to Charleston December 1st, thence via Athens December 2d to Knoxville December 4th. He left Knoxville December 6th in pursuit of a Confederate wagon train, which he pursued as far as Murphy, N. C., where he arrived December 9th. He then gave up the pursuit, and received orders to return leisurely via Charleston to Chattanooga. (W. R. 55, pp. 560-5.)

The force under General Burnside operating against Knoxville consisted of 23,000 infantry and 6,500 cavalry. (W. R. 51, p. 557.) Owing to the fact that all Confederate forces were concentrated against General Rosecrans, General Burnside encountered little resistance in his advance. The cavalry was organized into four brigades, three constituting a cavalry division, and the fourth unattached.

Three brigades covered the advance and one guarded the trains. Arriving at Knoxville, one brigade was sent up the valley to Cumberland Gap, remaining there as a containing force, together with a Federal force already at the northern entrance to the Gap. The infantry came up from Knoxville and the Confederate garrison of 2,500 men surrendered. During the latter part of September the cavalry was occupied in driving small Confederate forces from the Tennessee Valley. General Burnside was ordered to cooperate with General Rosecrans, the cavalry being sent down the valley to open communication September 30th, but it was immediately recalled and sent up the valley. General Burnside apparently avoided as far as possible doing anything to assist General Rosecrans. (W. R. 51, pp. 546-51.)

October 20th 700 of Colonel Wolford's cavalry brigade were surprised by a Confederate force consisting of an infantry division and 3,000 or 4,000 cavalry, and badly defeated, losing six mountain howitzers and about 400 men captured. (W. R. 54, p. 5.) It is alleged that this attack was made under cover of a flag of truce. (W. R. 54, p. 273.)

General Longstreet was detached with his corps to operate against Knoxville November 4th. He had with him about 8,000 cavalry. (W. R. 54, p. 290.) It is difficult to ascertain General Burnside's effective force of cavalry at this time. The return of October 31st (W. R. 54, p. 311) shows 345 officers and 7,113 men present for duty. General Shackelford, in command of the cavalry, reported that he had not exceeding 1,200 well mounted men. (W. R. 56, p. 24.)

On November 3d, General Burnside organized his cavalry into a corps, with General Shackelford in command. It consisted of two divisions: First Division, Colonel Sanders; First Brigade, Colonel Wolford; Second Brigade, Colonel Byrd; Third Brigade, Colonel Pennebaker. Second Division, Colonel Carter; First Brigade, Colonel Garrard; Second Brigade, Colonel Foster. (W. R. 56, p. 35.) General Burnside reported to General Grant November 4th that his cavalry was much broken down, but that he could organize a force of 1,200 or 1,500 men. (W. R. 56, p. 45.)

This cavalry force, whatever it may have been, was posted in observation across the Valley of the Tennessee about Kingston at the time of General Longstreet's advance. One brigade (Colonel Garrard) was surprised and totally defeated at Rogersville by the Confederate cavalry November 6th, losing 775 prisoners. (W. R. 54, pp. 550-4.) There was constant skirmishing with General Longstreet's cavalry until the vicinity of Knoxville was reached. Here on November 17th the cavalry, fighting dismounted, delayed the Confederate advance until the infantry took position in the defensive works, and the siege began, lasting until December 4th. During the siege the cavalry appears to have been inactive as such, the men being used in the trenches. (W. R. 54, p. 271.)

On November 28th General Bragg's investment of Chattanooga having been broken up, General Sherman was sent to the relief of Knoxville, the siege of which was raised on his approach. He arrived at Knoxville December 6th. General Longstreet retreated northward toward Virginia. The cavalry was sent in pursuit, but the horses were broken down. (W. R. 54, p. 271.)

The first division of General Mitchell's cavalry corps was ordered to Knoxville from Alexandria, Tenn., November 27th, but was delayed by high water and did not reach Knoxville until December 12th. It started immediately in pursuit of General Longstreet. General Foster had meanwhile relieved General Burnside in command, and had placed his cavalry under the command of General Sturgis. (W. R. 54, p. 283.)

There was more or less skirmishing with General Longstreet's rear guard. At Hay's Ferry the Confederates administered a check to the pursuit, but in an action at Mossy Creek December 27th the Federal cavalry was victorious. (W. R. 54, pp. 496-8.)

In this action the most of the cavalry had been sent on a flanking movement, with one brigade and detachments of three regiments of cavalry to hold the front while the movement was made. This latter force was attacked by the entire Confederate cavalry and fought the whole day, most of the time dismounted. The cavalry was supported by a brigade of infantry which formed part of the pursuing force under General Sturgis. The tide of battle was turned by a flank attack made by a regiment of infantry. At the close of the action a dismounted charge was made by a regiment of cavalry and the Confederates retired. The remainder of the Federal cavalry had been recalled at the beginning of the action, but took no part in it. (W. R. 54, pp. 646, 648, 657.)

After the battle of Mossy Creek the main force of General Sturgis's cavalry remained in that vicinity on picket and observation duty until January 13th, at which time on account of the lack of forage it moved to Dandridge. (W. R. 57, pp. 44, 54.) At Kimbrough's Cross Roads near Dandridge on January 16th three brigades of Federal cavalry were attacked by the Confederate cavalry supported by three brigades of infantry, and were defeated and driven back. (W. R. 57, pp. 45, 80.) The Federal cavalry fought dismounted. After this fight the cavalry retired via Knoxville and Sevierville to Fair Garden. They arrived at this place January 22d, and on January 26th and 27th attacked and defeated the Confederate cavalry, clearing the field by a saber charge, but the Confederate infantry supported the cavalry and General Sturgis was driven back. (W. R. 57, pp. 42, 46.) Skirmishes occurred at Bainbridge's Ferry January 28th (W. R. 57, p. 122), and at Kelly's Ford January 28th. (W. R. 57, p. 54.)

One brigade of dismounted cavalry was then sent to Kentucky to remount, and the rest of the cavalry went to the Little Tennessee River for forage. (W. R. 57, p. 46.) One brigade, whose horses were unfit for service, was in Lee County, Virginia. (W. R. 57, p. 54.)

General McCook's division from Chattanooga returned to Cleveland, Tenn.

No further cavalry operations worthy of note occurred in east Tennessee except General Stoneman's raid, hereafter to be described. The cavalry force engaged in the operations in January numbered about 6,000, of which only about 3,500 were mounted. (W. R. 57, p. 47.) It comprised the cavalry of the Twenty-third Army Corps, and General McCook's division of the cavalry corps of the army at Chattanooga.

CHATTANOOGA TO THE END.

In giving an account of the cavalry operations after January 1, 1864, under this head some difficulty is encountered on account of the extent of the theater of operations. Aside from the cavalry force in east Tennessee, the operations of which have already been given, there remained the two principal cavalry forces at Chattanooga and at Memphis.

The first division was in east Tennessee. The second division (Colonel Miller) was practically broken up by reenlistment as "veteran volunteers" and the thirty days furlough consequent thereto. One

regiment of this division was sent to Memphis and one to Cleveland, Tenn. A portion of one brigade was at Calhoun, Tenn., during February, and took part in a demonstration against Dalton, near which place dismounted skirmishing occurred February 23d to 25th. In March the fragments of the division were concentrated at Huntsville, Ala., and finally, in the latter part of April, the strength was increased by returns from furlough, and two brigades moved to Chattanooga April 30th, complete in arms, horses and equipments, to be followed shortly by the remaining brigade.

The third division was organized in April under the command of General Kilpatrick. It moved through Hooker's Gap April 29th and engaged a superior force of Confederates and was driven back.

From the above it is seen that the cavalry at Chattanooga was engaged in no important operations during the period from January 1 to April 30, 1863. On the latter date we find it posted—one division at Cleveland, Tenn., and two divisions at Chattanooga. (Itinerary of the Cavalry Corps, W. R. 57, pp. 33-40.)

The cavalry corps was reorganized April 11th into four divisions of three brigades each, the brigades averaging three regiments. (W. R. 57, p. 19.)

For the forces in western Tennessee and Mississippi, an expedition against Meridian, Miss., was planned. An infantry force of two corps and a cavalry force of 2,000 moved from Vicksburg against Meridian February 3d to March 6th. In conjunction with this movement, a cavalry force of 6,500 was to proceed south from Memphis and join at Meridian.

The brigade of cavalry with the expedition from Vicksburg performed its duty well. At Jackson February 5th it attacked with one regiment mounted and one dismounted and surprised and routed the Confederate cavalry, pursuing it through the fortifications and contributing materially to the capture of Jackson without serious fighting. (W. R. 57, pp. 248-50.) General Sherman in his report particularly commends the cavalry for this work. (W. R. 57, p. 178.) In the retrograde movement this brigade of cavalry was sent on a circuit north in an endeavor to communicate with the cavalry from Memphis under General Smith. (W. R. 57, p. 178.)

The operations of the cavalry force from Memphis were a dismal failure. The force consisted of the cavalry at Memphis, reinforced by 2,500 from middle Tennessee and a brigade from Columbus. Delayed by the late arrival of the latter, the expedition did not start from Memphis until February 10th, too late to cooperate with the force from Vicksburg. Advancing to West Point, General Forrest was found so strongly posted that General Smith was afraid to attack. He then retired to Okolona, skirmishing all the way. At Okolona General Forrest attacked and stampeded the rear guard and inflicted a severe defeat on the whole force. The pursuit was finally checked by combined mounted and dismounted action after a running fight of ten miles. The Confederate force followed as far as New Albany.

General Smith attributes the failure of these operations to the clumsiness of a large command, to an unfavorable terrain, and to the

fact that the Confederate cavalry was better armed for dismounted fighting than was his own command. (W. R. 57, pp. 251-60.) General Smith's column returned to Memphis February 26th. From the Confederate reports, it appears that General Smith was driven from Mississippi by an inferior force, General Forrest having only 3,000 cavalry to oppose him. (W. R. 57, p. 346.)

During March the Federal cavalry force was much reduced by reenlistments and furloughs as "veteran volunteers" (W. R. 57, p. 261), and by the withdrawal of the force sent from middle Tennessee, so much so that when General Forrest made his raid into western Tennessee, March 16th to April 14th, in which he captured Union City and Fort Pillow, General Grierson was able to put in the field an effective force of only 2,200 cavalry to operate against him. (W. R. 59, p. 194.) General Forrest was so superior in numbers that this cavalry had to be supported by infantry in its operations, and, as was to be expected, nothing was accomplished. When General Forrest finally left Tennessee, he was followed as far as Ripley. The "pursuit" was ineffective on account of the delay due to the infantry, and was discontinued on account of the scarcity of forage. (W. R. 57, pp. 693-703.)

The period from January 1 to April 30, 1864, must be regarded as one of reorganization, recuperation, and refitting for the cavalry. Its numbers were greatly reduced by furloughs as veteran volunteers. The cavalry horses necessary for remounts had not been forthcoming, and the "present for duty" strength is little indication of the effective mounted strength.

The Cavalry Bureau had gone from bad to worse, and General James H. Wilson was ordered to Washington January 17th to reorganize it. (W. R. 58, pp. 115, 131.) April 4th, in a report to the Secretary of War (W. R. 59, pp. 255-258), he recommended that the chiefs of cavalry of the various armies have no command, but be regarded as staff officers; that steps be taken to collect the broken-down horses under proper care for recuperation; that surplus ordnance stores be turned in; and that preference be given in issue of supplies to those regiments which took proper care of their horses and arms. He expressed the opinion that the organization of the cavalry into corps was not expedient on such an extended front of operations, and cited the fact that the principal success had been scored by well-mounted commands numbering 1,500 to 2,000 men. Finally, he recommended that mounting infantry be discouraged, as they used horses needed for the cavalry and took no care of them.

April 7th General Smith reported that nearly 15,000 cavalry were at Nashville awaiting horses, arms and equipments.

The return of April 30th (W. R. 59, pp. 550-589) shows a great increase in the cavalry strength. With the army at Chattanooga was an aggregate of 20,000 cavalry, constituting a corps under General Elliott, as follows:

- First Division—General McCook, 4,000, Cleveland, Tenn.
- Second Division—General Garrard, 6,700, Columbia, Tenn.
- Third Division—General Kilpatrick, 3,600, Ringgold, Ga.
- Fourth Division—General Gillem, 5,200, Nashville, Tenn.
- Detachment, 400, Rossville, Ga.

In addition, within the theater of operations were the following:

Cavalry Division—General Grierson, 4,800, Memphis, Tenn.

Cavalry Brigade—Colonel Munford, 800, Vicksburg, Miss.

Cavalry Corps—General Stoneman, 3,700, Kentucky.

a grand aggregate of nearly 30,000 cavalry.

From this point, it is more convenient to chronicle the operations of the cavalry in the campaign through Atlanta, Savannah, and the Carolinas, and then conclude with a chronological record of the remaining operations in the western theater.

Atlanta, Savannah, and the Carolinas.

When General Sherman started the campaign against Atlanta, his cavalry numbered 12,500 men. (W. R. 72, p. 101.) It embraced the First, Second and Third Divisions of the Cavalry Corps under General Elliott, attached to the Army of the Cumberland; a detachment of 700 cavalry with the Army of the Tennessee; and the division of General Stoneman which had been brought from Kentucky, and was attached to the Army of the Ohio. The strength of this cavalry force remained about 12,500 until June 30th, falling to 10,500 July 31st, and to 9,500 August 31st. (W. R. 72, p. 115.)

When General Sherman's advance began, McCook's division moved from Cleveland to Varnell's Station, covering the front and left flank of the army. Stoneman followed with his division. Kilpatrick's division moved out from Ringgold covering the front and right flank of the army. While developing the position at Dalton, McCook's division had a heavy dismounted skirmish at Varnell's Station, getting the worst of it. In the turning movement, McCook's and Stoneman's divisions and one infantry corps took position in front of Dalton, while the turning column, preceded by Kilpatrick's division covering its front and right flank and covered in rear by two brigades of Garrard's division, moved through Snake Creek Gap on Resaca. Dalton having been evacuated, McCook's and Stoneman's divisions moved through Ray's Gap to Resaca.

At Resaca, Garrard's division was sent to Rome, May 15th, to break the railroad, and returned May 18th to the right flank of the army. At Resaca, May 14th and 15th, and on the advance to Cassville, McCook's division covered the front and right flank, Garrard's division the left flank, and Kilpatrick's division the front.

In the operations around Cassville, McCook's and Kilpatrick's divisions covered the left flank, and when Cassville was evacuated, May 20th, McCook's division took the advance to Stilesborough and thence via Burnt Hickory to Burnt Church on the left flank. Garrard's division moved to Dallas on the front and right flank. Kilpatrick's division was left at Kingston to guard the railroad. Garrard's and Stoneman's divisions then moved to Allatoona and seized the pass, contributing thereby to the retirement of the Confederates from Kenesaw Mountain. These operations occupied from June 10th to July 8d. McCook's division had meanwhile passed to the right flank of the army. When the Confederates retired from Kenesaw Mountain, McCook's

division moved via Powder Springs to the Chattahoochee, and Garrard's and Stoneman's divisions forward to Roswell, thus covering the right and left flanks of the army. After the evacuation of the position on the Chattahoochee River, McCook's division was posted from Turner's Ferry to Vining's Station. Garrard's division forced a crossing at Roswell and moved forward on a raid to Stone Mountain, breaking the railroad. It then returned to Roswell. Stoneman's division moved over to Sandtown, on the right flank of the army.

The cavalry remained thus covering the flanks of the army until after the battle of July 20th, when McCook's division moved forward to Proctor's Creek, and Garrard's division occupied the country from Decatur to Roswell, covering the left flank and rear of the army.

Meanwhile a division of cavalry under General Rousseau, 2,000 strong, left Decatur, Alabama, July 10th and moved via Talladega to Opelika, reaching Opelika, July 17th. Two days were spent in destroying the railroads around Opelika, and the command then moved without serious opposition to Marietta, reaching there July 22d. Rousseau moved forward to Sandtown, replacing Stoneman, who then moved to the left flank of the army, joining McCook.

Thus toward the end of July, when General Sherman had reached the vicinity of Atlanta, we find Stoneman's and McCook's divisions on the left flank and rear of the army, Garrard's division in front, Rousseau's division on the right flank, and Kilpatrick's division in rear guarding the railroad.

The cavalry was now directed against the communications of Atlanta. Two columns were started forward simultaneously on July 27th.

The first of these under McCook, with his own division and four additional regiments, started against the railroads west and south of Atlanta. After several severe skirmishes, a superior Confederate force was encountered near Newnan, Georgia, July 30th. The Federal force was surrounded, but cut its way out by a charge in column, losing 500 men and the artillery. Returning from this rough experience, McCook's division exchanged places with Kilpatrick's.

The other column, under Stoneman, started from Decatur against the railroads east of Atlanta. Leaving Garrard's division at Flat Rock, Stoneman marched rapidly to the vicinity of Macon with 2,100 men. He attacked Macon July 30th, but was unsuccessful. He then bent his principal efforts to effecting his escape. Everywhere he turned he struck the Confederates, finally encountering them in force near Hillsboro, was repulsed in his attack and surrounded. About 500 of his force escaped by cutting their way out, and the rest, including Stoneman, were captured. One thousand one hundred and seventy-one men were reported missing as a result of this disastrous raid. The columns of McCook and Stoneman were to meet south of Atlanta, but the difficulties encountered prevented.

As soon as Kilpatrick moved forward to Sandtown to take McCook's place, he executed a reconnoissance to Fairburn and did some damage to the railroad.

General Wheeler then executed a raid to Adairsville against the Federal communications. General Sherman seized the opportunity

presented by the reduction of the cavalry force in his front to send Kilpatrick with 4,000 men on a raid west and south of Atlanta. Kilpatrick left Sandtown August 18th, and proceeded via Jonesborough to Lovejoy's Station. He was prevented from doing material damage to the railroad. Near Lovejoy's he was surrounded and had considerable difficulty in extricating his command. He succeeded in breaking through, and returned via McDonough to Decatur August 22d.

August 25th Garrard's and Kilpatrick's divisions covered the withdrawal and movements of the Fourth and Twenty-third Army Corps to the west and south of Atlanta. After the battle of Jonesborough, August 31st to September 1st, Garrard's division covered the rear and right flank, and Kilpatrick's division the rear and left flank in the movement into Atlanta.

One brigade of McCook's division, which was guarding the railroad, was attacked by General Pillow at La Fayette, and the Confederates were defeated.

Thus from Chattanooga to Atlanta the cavalry screened the front and guarded the flanks and communications of the army. In the turning movements the cavalry was on several occasions used to hold the front while the turning movement was made. This work was attended by almost constant skirmishes and engagements, to which no reference can be made. (Various general reports, W. R. 72, pp. 23-50, 61-79, 140-175; Reports of cavalry commanders, W. R. 73, pp. 745-9, 750-68, 803-11, 855-61, 904-11, 911-15.)

Atlanta to Savannah.

After the capture of Atlanta most of McCook's division was sent to Nashville for remount, one brigade remaining at Calhoun, and a portion of another at Cartersville. The division of Stoneman had been broken up by his disastrous raid. Garrard's and Kilpatrick's divisions remained near Atlanta, posted respectively at Blake's Mills and Campbelltown.

In the movement north from Atlanta to protect the communications against General Hood, these two divisions were concentrated at Noye's Creek October 3d. They then moved covering the front and left flank of General Sherman's advance, and October 10th Garrard's division was at Stilesborough and Kilpatrick's at Van Wert's. At the latter place Kilpatrick repulsed a Confederate attack.

October 10th to 13th Garrard's division moved via Rome to Summerville, and Kilpatrick's division to Rome. Kilpatrick's division was then ordered to Dallas, and Garrard's division reached Gaylesville October 20th. October 21st Garrard's division and one brigade of McCook's division defeated General Wheeler at Leesburg, Ala. October 23d this force moved forward to King's Hill and found the Confederates, but did not attack. (Various reports, W. R. 77, pp. 581-91, 724-9.)

Up to this point the cavalry operations had not been conducted to suit General Sherman. He bluntly informed General Elliott that the cavalry acted as if afraid (W. R. 79, p. 108), and that it was lacking in enterprise. (W. R. 79, p. 127.)

At Gaylesville, General Sherman, having driven General Hood from his attempt on the communications, turned over all of his cavalry except General Kilpatrick's division to General Thomas, to whom General James H. Wilson, now appointed to command all of the cavalry in the Military Division of the Mississippi, was ordered to report November 1st.

General Sherman then repaired to Atlanta to organize his force for the advance to Savannah. Four infantry corps and General Kilpatrick's division of cavalry constituted his force. General Kilpatrick's division numbered 5,500, and was put on an effective footing by taking horses from General Garrard's division. (W. R. 79, p. 494.)

In the movement on Savannah, General Kilpatrick was sent on a demonstration against Macon, covering the left flank. Leaving Atlanta November 15th, he fought and defeated General Wheeler at Lovejoy's. He reached Clinton November 19th, was attacked at Griswold's Station November 20th and 22d, the Confederates being repulsed. November 24th General Kilpatrick moved to Milledgeville, and swinging thence to the left flank of the army, moved forward to liberate the prisoners at Millen, but learned that they had been removed.

At Waynesborough, November 27th and 28th, severe skirmishes occurred. On the 28th General Kilpatrick himself and two regiments were cut off and nearly captured. The same day a heavy action was fought at Buck Head Creek, and General Wheeler was defeated. General Kilpatrick then moved back to Louisville so as to have the infantry in supporting distance. Moving thence to Waynesborough, General Wheeler's force, dismounted behind breastworks, was attacked December 3d. The first attack failed. Again attacking dismounted, the breastworks were carried.

The whole cavalry division was united ten miles south of Springfield December 10th, and covered the rear of the army in the march to, and in the deployment before Savannah. The cavalry was sent to communicate with the fleet December 15th, and then returned to King's Bridge, closing the cavalry operations until the northward movement began. (General Sherman's report, W. R. 92, pp. 7-14; General Kilpatrick's report, W. R. 92, pp. 361-8; itinerary of the cavalry division, W. R. 92, pp. 54-5.)

General Sherman states that the work of the cavalry was well done, keeping the Confederates from even approaching the trains, (W. R. 92, p. 13) and securing him from annoyance by the Confederate cavalry. (W. R. 92, p. 368.)

Campaign in the Carolinas.

In the northward movement, the cavalry was delayed by high water and did not cross the Savannah River until February 3, 1865. At that time, the cavalry division consisted of three mounted and one dismounted brigades, numbering, according to General Kilpatrick's report (W. R. 98, p. 857), a little more than 5,000 men. During this campaign, the cavalry was under orders not to engage needlessly, as no useless diminution of the strength of the cavalry could be afforded. (W. R. 98, p. 863.) From Savannah to Avera'sborough, the duty of the

cavalry was to protect the front and left (exposed) flank, shifting to the right flank for but a brief period on the march from Averasborough to Goldsborough. (W. R. 98, pp. 24-5.)

The greater part of the march was without incident. Skirmishes occurred at Barnwell and at Blackville, S. C., February 6th and 7th. General Kilpatrick sent a brigade on a reconnoissance to Aiken, and it was attacked by General Wheeler's entire force February 11th, and driven back to the barricades of the position at Johnson's Station, where the remaining brigades were. The combined force was able to repulse General Wheeler's attack.

The march then continued via Columbia and Lancaster to Wadesborough, which was reached on March 2d. A skirmish occurred at Rockingham March 7th. On March 9th, at Monroe, one brigade of cavalry was completely surprised and routed by an early morning attack by General Hampton. Headquarters and the artillery were captured, General Kilpatrick himself escaping on foot. While the Confederates were securing the guns and animals, the brigade rallied and drove them off, recapturing the artillery. The cavalry then stood off the attacks of the Confederates until supported by the infantry.

In the battle of Averasborough, one brigade of cavalry was in the part of the line first attacked by the Confederates. This brigade held its ground until supported by the remaining brigades of the division. The entire division was engaged both mounted and dismounted in connection with the infantry all day. This engagement concluded the operations of the cavalry in this campaign. In the battle of Bentonville, the cavalry was in reserve and was not engaged. The total casualties of the cavalry in this period were 107 killed, 235 wounded, 185 captured, and 77 missing. General Kilpatrick states that the cavalry was in better condition at the close of the campaign than at the beginning.

General Sherman commended the cavalry, saying that its work had been done with spirit and skill. (General Sherman's report, W. R. 98, pp. 17-26; itinerary of the cavalry division, W. R. 98, pp. 145-6; General Kilpatrick's report, W. R. 98, pp. 857-64.)

OPERATIONS IN TENNESSEE, ALABAMA, AND MISSISSIPPI, MAY 1, 1864 TO END.

The month of May was devoted to scouting and to preparations for further operations against General Forrest.

For this purpose, a force was collected consisting of 5,000 infantry, 3,800 cavalry, and sixteen guns, the whole under the command of General Sturgis. The cavalry was commanded by General Grierson.

The movement of this column began June 1st, and progressed favorably until June 10th, when a considerable Confederate force was encountered at Brice's Cross Roads. When the Federal cavalry struck this force the Confederates promptly attacked, the Federals having formed dismounted. For a time the attack was held off, and General Grierson asked to be relieved by the infantry. The infantry was hurried forward and thrown into the action exhausted, and the cavalry retired. As it was withdrawing, it became necessary for one brigade

to again dismount and assist in meeting an assault by the Confederates. The infantry was utterly routed, losing over 600 killed and wounded, and over 1,600 missing.

The cavalry was used to protect the retreat of the wreck of the infantry, which was accomplished with the loss of the artillery and trains. (W. R. 77, pp. 84-85.)

There is nothing to commend and much to criticize in the conduct of the cavalry in this expedition. From the reports, it seems that once the Confederates were encountered, the one anxiety of the cavalry was to get out of the fight as quickly as possible. The conduct of the whole expedition was execrable, and was the subject of official investigation. The loss of the cavalry was 139 killed and wounded and 194 missing.

July 5th to 21st another expedition consisting of two divisions of infantry and 3,000 cavalry was sent from LaGrange to Tupelo. At the latter place July 14th General Forrest was defeated by the infantry, one brigade of cavalry observing each flank during the battle. The loss of the cavalry was seven killed and fifty-five wounded. The expedition then returned on account of lack of forage and supplies. The cavalry acted as rear guard during the return. (W. R. 77, pp. 250, 256, 304.)

Determined to destroy General Forrest's command, a third expedition was sent from LaGrange to Oxford August 1st to 30th. The force consisted of 13,000 infantry and 4,000 cavalry. (W. R. 78, p. 242.) This expedition did not succeed in bringing General Forrest to action. He slipped by and attacked Memphis August 21st, during the absence of these troops, and succeeded in penetrating the city and capturing some prisoners, but was driven out. (W. R. 78, p. 282.)

General Forrest then passed into northern Alabama and middle Tennessee, remaining from September 16th to October 10th, during which time he was practically unopposed by cavalry. The force near him was ineffective, comprising about 1,000 at Huntsville, a like number at Pulaski and at Columbia (W. R. 78, p. 406), and in addition to these, about 3,500 at various other places, none, however, in condition to take the field.

October 24th General James H. Wilson was assigned to command the cavalry of the Division of the Mississippi. (W. R. 79, p. 414.) His appearance on the scene was marked by energetic measures for increasing the numbers and efficiency of the cavalry. His first act was to order all dismounted cavalry to Nashville. He then ordered General Hatch's division from Memphis to Nashville; ordered General Grierson to collect the balance of the cavalry at Memphis and be ready to join; and took steps to have Colonel Winslow's division return from Missouri. He ordered 10,000 horse equipments, 10,000 Spencer carbines, and 300 rounds of ammunition per carbine. (W. R. 79, p. 417.)

General Kilpatrick's division was fitted out and mounted at the expense of General Garrard's division. The latter was ordered to move to Nashville, and General Garrard was ordered then to turn over the command of the division to Colonel Long. (W. R. 79, pp. 494, 511.) General McCook's division was also ordered to Nashville October 31st. (W. R. 79, p. 531.)

The return of October 31, 1864 (W. R. 79, p. 573), shows a total of about 24,000 cavalry in Tennessee, Alabama and Georgia, and 5,700 in

Missouri, the latter including Colonel Winslow's division. General Kilpatrick was sent with General Sherman, and Colonel Winslow's division was ordered up. Finally, November 6th orders were issued to General Grierson and to the cavalry at Vicksburg (except one regiment) to proceed to Nashville (W. R. 79, p. 662), thus completing the arrangements for the concentration of all of the cavalry of the Division of the Mississippi (except General Kilpatrick's division) at Nashville, a grand total of about 25,000 men.

November 9th the order for the organization of a cavalry corps was issued. The corps was to consist of eight divisions of two brigades each, each brigade consisting of five regiments. The commanders whose services had been unsatisfactory were relieved. The new organization was as follows:

Cavalry Corps, Brevet Major General J. H. Wilson. First Division, Brigadier General E. M. McCook; Second Division, Brigadier General Eli Long; Third Division, Brigadier General J. Kilpatrick; Fourth Division, Brigadier General B. H. Grierson; Fifth Division, Brigadier General E. Hatch; Sixth Division, no commander designated; Seventh Division, Colonel Spalding; Eighth Division, to be organized.

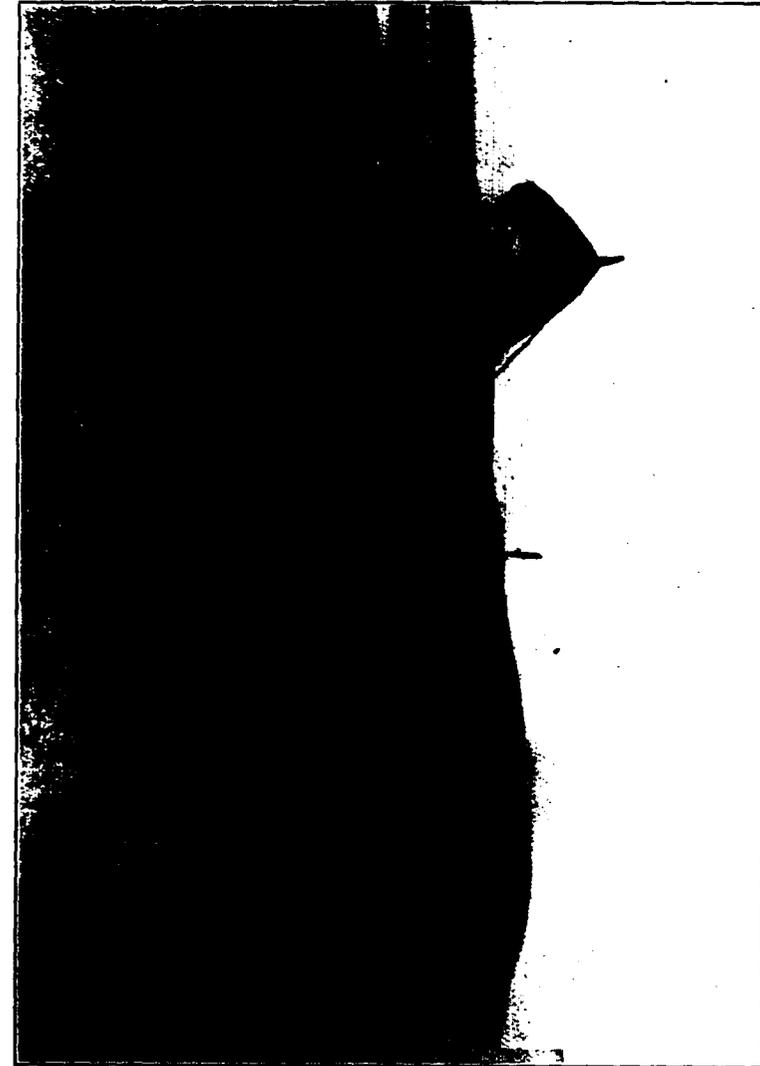
Franklin and Nashville.

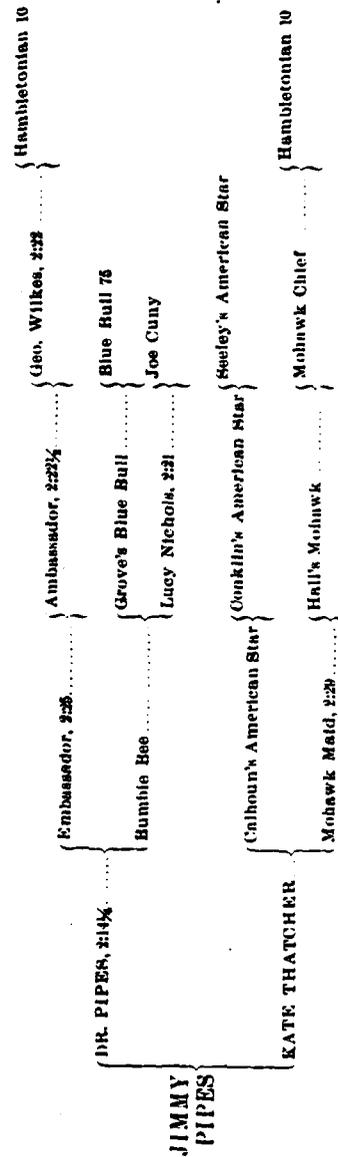
When General Hood began his movement against Nashville, not much had been accomplished toward refitting the cavalry corps. The original movement by General Hood westward to Tusculumbia was discovered by a reconnoissance by General Garrard's division.

Of the cavalry at Nashville, one division and two brigades (4,300) were sent forward to watch the Tennessee River and observe General Hood's army. One brigade was driven from near Bainbridge October 30th, and from Shoal Creek November 5th. A reconnoissance in force was made to Florence November 9th, and the cavalry continued to reconnoiter until November 21st, when General Hood's advance began.

The Federal cavalry had a severe engagement with the Confederate advance at Lawrenceburg November 23d, held the position until night, and then retired. November 23d the cavalry retired to Campbellville skirmishing, was driven from this place November 24th, and retired to Lynnville. November 25th the entire cavalry force was concentrated at Columbia, and was posted to watch the crossings of the Duck River. The Confederate cavalry forced a crossing and the Federal cavalry was concentrated at Hurt's Cross Roads November 28th. November 29th the cavalry retired skirmishing heavily to Douglass Church, four miles south of Franklin, and part of it crossed the Harpeth River. November 30th one brigade of cavalry was in front of the position at Franklin, repulsing the first advance. It then crossed the river. The whole cavalry force engaged the Confederate cavalry, which crossed the Harpeth in the afternoon.

On the night of November 30th the cavalry covered the withdrawal of the infantry from Franklin, and covered the flanks and rear in the retreat to Nashville.





OWNER, CAPTAIN LANNING PARSONS, 9TH CAVALRY.

December 2d the cavalry was ordered to the north bank of the Cumberland, and remained there refitting until December 11th, having in this interval been increased by reinforcements till it numbered 12,500 men with 9,000 horses. December 11th this whole force crossed to Nashville, and was ordered to the right flank of the line.

One division and one brigade were ordered to attack along the Hardin pike, one division to take a Confederate battery on the river west of Nashville, and one division to remain in reserve. In the battle of Nashville December 15th and 16th, the cavalry fought dismounted on the right flank of the infantry, their task being to attack and envelop the Confederate left. This work was accomplished, in the course of which one division of cavalry captured two Confederate field works and their artillery.

On the evening of December 16th the horses were ordered up and dispositions made to mount two divisions for the pursuit of the Confederates. This pursuit began early on the morning of December 17th, the Confederate rear guard being encountered and defeated one mile from the position of the previous evening. The pursuit was joined in by the rest of the cavalry, and the attempt was made to get in rear of the Confederate army, but was not successful. The Confederate rear guard was driven from successive positions at Hollow Tree Gap and Franklin without heavy fighting.

The cavalry reached a point seven miles north of Columbia December 18th, and December 19th were stopped by Rutherford's Creek, which was swollen by rains and could not be crossed. One division crossed December 20th, only again to be barred by the Duck River. December 24th the whole cavalry force crossed the Duck River. A sharp action was fought with the rear guard December 25th, in which the Confederates turned on one brigade and drove it back. December 26th the pursuit was discontinued, the delay at the Duck River having spoiled the chance for further damage to the Confederate army. The return of General Forrest also had something to do with the situation.

During this campaign the cavalry captured thirty-two guns and 3,200 prisoners, with a loss of 122 killed, 521 wounded, and 259 missing.

On December 11th General McCook had been ordered with two brigades to Bowling Green to look after a Confederate raiding force which he defeated at Hopkinsville December 16th.

General Wilson on December 30th asked permission to concentrate his corps for recuperation and refitting, preparatory to a spring campaign. General Thomas ordered him to send one division to Eastport, Miss., and the balance to Huntsville, Ala. While this movement was in progress General Grant ordered a continuance of active operations, and General Wilson was ordered to concentrate his corps at Eastport. While en route he was halted to look after the Confederate force against which General McCook had been operating, but it escaped, and the cavalry corps was finally concentrated at Gravelly Springs, Ala., about January 15, 1865. (General Thomas' report, W. R. 93, pp. 32-47; General Wilson's report, W. R. 93, pp. 554-571.)

The return of December 31, 1864, shows the cavalry corps to have numbered about 23,500 present for duty. (W. R. 94, p. 465.) General Wilson's idea was to raise the effective *mounted* strength to 25,000.

East Tennessee.

A force of three regiments of cavalry had been left in east Tennessee under General Gillem. This force was attacked and routed November 18th at Morristown by a Confederate force of about 3,000 men under General Breckinridge, losing several hundred prisoners and the artillery. General Gillem escaped to Knoxville, with about 1,000 men. (W. R. 98, p. 96.) General Stoneman took charge of the punitive expedition against the Confederates. His force consisted of 4,200 mounted men from Kentucky under General Burbridge, and General Gillem's command, now numbering 1,500. The expedition left Knoxville December 10th, routed and captured or dispersed a Confederate force of about 1,200 at Kingsport December 13th. The expedition then proceeded via Abingdon, Va., to Marion, where December 16th and 17th General Breckinridge was defeated. The lead mines near Wytheville, Va., were destroyed December 17th, and the salt works at Saltville, Va., were captured and destroyed December 21st and 22d. The expedition returned to Knoxville December 29th. (W. R. 98, pp. 806-11.)

General Gillem's division of three brigades remained at Knoxville until the middle of March, 1865. March 22d, it was concentrated at Mossy Creek and moved on an expedition through east Tennessee, North Carolina and Virginia. Wytheville, Va., was captured April 6th, after slight resistance, as was Martinsville, N. C., April 8th, and Salisbury, N. C., April 12th. At the latter place an immense amount of military stores was destroyed. Hendersonville, N. C., was captured April 23d, and at Asheville, N. C., General Gillem was informed of the truce between Generals Sherman and Johnston, and his operations came to an end, except for a concentration and march for the purpose of attempting to intercept the fleeing Confederate President.

General Stoneman commanded this expedition until April 17th, and General Gillem after that date. One division of infantry followed the column and secured the passes when the cavalry moved east of the mountains. (W. R. 108, pp. 330-338.)

Western Tennessee.

An expedition of 3,500 cavalry under General Grierson started from Memphis December 21st, and proceeded via Verona and Egypt, Miss., to Vicksburg. Unimportant actions were fought at Verona December 28th, and at Franklin January 2d. The expedition destroyed a large amount of stores at Verona and at other points along the route. (W. R. 96, pp. 844-8.)

General Wilson's Raid.

After the Franklin and Nashville campaign, the idea of prosecuting active operations continuously was given up, and an infantry division and 5,000 cavalry were sent to General Canby to assist in a campaign against Mobile. This cavalry force left Nashville February 12th and was placed under the command of General Grierson. It took no active part in the operations against Mobile. After its capture, the

cavalry was ordered from Blakely, Ala., April 17th, marched to Greenville, Ala., and thence one column to Georgetown, Ga., and the other to Union Springs, Ala., at which points operations were arrested by the armistice. The wholesale destruction of property characteristic of other raids at this time was omitted by General Grierson on account of the evident close proximity of the end of the war. (W. R. 103, pp. 300-301.)

General Wilson's main command remained at Gravelly Springs. February 13th General Grant ordered the movement to be known in history as "Wilson's Raid." Due to the state of the roads and to the necessity of recuperating after the Franklin and Nashville campaign, General Wilson was not ready to start until March 22d. When he did start one division remained at Eastport and one at Pulaski, as it was impossible to fully mount them. The division at Eastport was dismounted and their horses taken to complete the mounting of the three divisions that were to take part in the raid. This division then gave an example of self-sacrifice by voluntarily giving up their Spencer carbines in order that they might be used to arm as well as possible these same divisions for which their horses had been taken.

General Wilson, with three divisions, General Upton, General Long and General McCook, a total of 13,563 men (W. R. 104, p. 170), left Chickasaw, Ala., March 22d, and reached Elyton, Ala., March 30th, after a difficult march. One brigade was detached to Tuscaloosa, which was captured April 4th. This brigade then continued through northern Alabama, captured Talladega April 22d, and rejoined the main command at Macon, Ga.

The remainder of the force proceeded to Montevallo, where a Confederate force was routed March 31st. Selma was captured by a dismounted attack April 2d, with 2,700 prisoners and twenty-six guns. General Forrest was in command of the Confederate forces at Selma. General Wilson remained at Selma until April 10th, destroying the military stores and property there.

Again advancing, Montgomery surrendered without resistance April 12th. April 14th one division was sent to Columbus, and three regiments to Opelika. Columbus was captured April 16th by a dismounted attack made by 400 men. This was one of the most brilliant exploits of this campaign. The prisoners captured numbered 1,200 with fifty two guns. Immense quantities of war materials of all kinds were destroyed at Columbus.

April 16th one brigade captured Fort Tyler at West Point, Ga., after a stubborn resistance. April 20th Macon, Ga., was captured, and there on April 21st General Wilson was notified by General Sherman of the armistice.

April 27th came the order from Washington to resume operations on account of the disapproval of the terms of the armistice by the Secretary of War. Both the cavalry in North Carolina and General Wilson were ordered to make the necessary dispositions to capture the Confederate President.

General Wilson was then notified of the surrender of General Johnston, disposed his forces across Georgia, and on May 10th closed

the operations of the Federal cavalry by the capture of the fugitive Confederate President. (General Thomas's report, W. R. 103, pp. 342-8; General Wilson's report, W. R. 103, pp. 350-402.)

Operations West of the Mississippi River.

In the general outline of operations, no mention was made of the operations west of the Mississippi River after the middle of 1862, for the reason that these operations were comparatively unimportant, and to attempt to carry the account along would introduce complications which it was desired to avoid.

Although involving a considerable force, there are but two periods at which the operations west of the Mississippi reached sufficient magnitude to require attention. These are the Red River expedition, March 10 to May 28, 1864, and General Price's Missouri expedition, September 19 to December 2, 1864.

On the Red River expedition, General Banks had a force of 28,250 infantry and a division of cavalry under General Lee, numbering 5,250. (W. R. 61, pp. 167-8.) This cavalry was concentrated at Franklin, La., by March 14th, and marched to Alexandria, arriving March 19th. March 20th to 21st, an expedition of one brigade and two regiments of cavalry was sent to Henderson Hill, where the Confederates were encountered and defeated. Four guns and 300 prisoners were captured. The cavalry was supported by infantry in this action.

March 28th to 31st the cavalry moved forward to Natchitoches in advance of the column. A skirmish occurred at this point. April 2d, the entire cavalry force of three brigades defeated a Confederate force of 2,000 at Crump's Hill, fighting both mounted and dismounted. April 4th to 8th the cavalry continued in the advance, skirmishing at Campiti, and more severely at Pleasant Hill. In the latter action, the fighting was principally dismounted, two brigades executing a dismounted charge. April 8th, at Sabine Cross Roads, the Federal cavalry division was defeated. One brigade fought dismounted. The artillery and the trains were close up, and were captured. The loss in men was about twenty per cent of the command. This action was the turning point in the campaign, and the army retreated to Grand Ecore by April 21st, the cavalry forming the rear guard, and being several times engaged.

At Monett's Ferry, the cavalry passed to the front and attacked the Confederates April 23d and defeated them, clearing a crossing for the army. The Confederates attacked the next day, but were defeated. April 25th to May 18th, the army lay at Alexandria, protecting the fleet which accompanied the expedition and was held there by low water. The cavalry was engaged in constant skirmishes during this period. The fleet having been released by the construction of wing dams, the retreat was resumed May 14th. The cavalry covered the rear, one brigade being engaged at Moreauville May 18th. Donaldsonville was reached May 26th. (W. R. 61, pp. 444-455.)

General Steele's Expedition.

In connection with the Red River expedition, General Steele moved from Little Rock towards Shreveport with a force of 8,000 infantry and 4,500 cavalry. More than half of this cavalry was dismounted, and the rest very poorly mounted. General Steele left Little Rock March 23d, and returned May 3d. The expedition was turned back by the capture of its entire train at Mark's Mill April 25th. The cavalry played no important part in this campaign. (W. R. 61, pp. 659-669.) Three hundred cavalry were engaged at Poison Springs April 18th, and were badly defeated. (W. R. 61, p. 746.)

General Price's Missouri Expedition.

General Price's Missouri expedition was made with a force of about 15,000 mounted men. To oppose him were the troops in Missouri and Kansas, under Generals Rosecrans and Curtis. Colonel Winslow's cavalry brigade, 2,000 strong, was withdrawn from Memphis September 2d, crossed into Arkansas and marched to Cape Girardeau October 5th and there embarked for St. Louis, arriving by October 10th. (W. R. 83, pp. 327-30.) The brigade then moved westward, and was incorporated into the provisional cavalry division under General Pleasanton. This division then numbered about 4,500 men, and was organized into four brigades. Engagements occurred at the Little Blue River October 22d, and at the Big Blue River October 23d, in which Colonel Winslow's brigade bore the brunt of the fighting dismounted. General Price was defeated at the Big Blue and retreated, pursued by the cavalry. He was attacked by the cavalry at the Osage River October 25th, and defeated with a loss of eight guns and 1,000 prisoners.

General Price was pursued as far as Fort Scott, Kan., where the pursuit was discontinued October 27th, on account of lack of forage and the exhaustion of the command. The cavalry then returned to its former stations at Springfield and Rolla (W. R. 83, pp. 336-43), and preparations were made to send Colonel Winslow's brigade to Nashville.

While the cavalry force of General Pleasanton was considerable in numbers, it was composed largely of militia, and Colonel Winslow's brigade was the most effective portion of the command.

The Records of the Rebellion give many accounts of small expeditions and skirmishes in Missouri and Arkansas during 1864-5, all of minor importance.

The operations west of the Mississippi scarcely merit the designation of "military operations," and the mounted portions of the forces engaged are hardly entitled to be called "cavalry."

* * *

PURCHASE OF HORSES.

At the beginning of the war, the purchase of horses by the regular staff departments was provided for by the Army Regulations, and these provisions were reiterated in an order of the Secretary of War. (W. R. 8, p. 396.)

Notwithstanding all this, General Fremont promptly appointed a civilian to the position of inspector of horses for the Western Department, and sent him to Cincinnati. This inspector received two and one half per cent of the purchase price as a fee for inspection. Needless to say, as soon as this absurd arrangement came to the notice of the Quartermaster General, he took steps to stop it, and the purchase of animals reverted to the Quartermaster's Department and to the contract system.

The allowance of forty cents per day for the use and risk of private horses was found to work unsatisfactorily. After being in force for some time, it was discovered that most of the men drawing this allowance were mounted on horses properly belonging to the government. In 1863 this arrangement was terminated by the appraisal and purchase by the government of all private horses.

Many remounts were secured by impressment, certificates being given for subsequent payment. Under the Cavalry Bureau the purchase of horses was finally reduced to a proper basis of purchase by contract and inspection by cavalry officers. At the same time, proper provision for depots for recuperation was made, and such orders issued as would cause a proper disposition of unserviceable horses to be made.

In the efforts to mount General Wilson's cavalry corps at the end of 1864, impressment was resorted to and allowed to include mares, a thing theretofore prohibited.

SUPPLY.

In general the forage and rations of the cavalry were of regular issue. Whenever it was practicable foraging was permitted and required. In middle and west Tennessee foraging was ordinarily impracticable, all supplies having been secured by the Confederates. In east Tennessee in General Sherman's final campaign, and in Wilson's raid, the cavalry lived mainly off of the country, carrying only a small amount of forage and rations for an emergency, and such supplies as horse-shoes and salt, which could not be found in the country. As always, foraging was injurious to discipline and fatiguing to the horses and men.

GENERAL REMARKS.

The study of the operations of the Federal cavalry with the armies in the West is a distinct disappointment to those who seek brilliant examples of the proper employment of this arm.

Until 1863 the cavalry was badly organized and armed, and was frittered away in small detachments whose movements are difficult to follow and were without important purpose. Moreover, until the very end of the war, it was inferior in numbers to the Confederate cavalry to which it was opposed, and always had the disadvantage of operating in a hostile country.

When the appeals of Generals Buell and Rosecrans for cavalry had been answered, and the cavalry division under General Stanley had been organized, its part in the battle of Stone's River is a disappointment. The operations in the Chickamauga campaign and immediately after were an improvement, but still nothing remarkable.

The work of the cavalry corps and of General Stoneman's division in the Atlanta campaign was far from what it might have been, and around Atlanta Generals McCook, Stoneman and Kilpatrick in turn suffered defeat.

In western Tennessee the story is much the same. The cavalry assisted materially in the Vicksburg campaign, General Grierson's raid through Mississippi being a brilliant piece of work. The efforts against General Forrest in northern Mississippi in February, June, July and August, 1864, were without material result, and the first two ended in disaster.

The raids in the spring of 1865 were made at a time when the Confederate forces were disintegrating and met with no decided opposition.

Military reputations like that of General Forrest must be built up at the expense of his opponents, and he levied on all without partiality, continuing to the close of the war to ride almost at will over Tennessee, Mississippi and Alabama, always dangerous to small, isolated forces, and fighting larger ones only when he chose.

Only in the winter of 1864 and 1865 did the Federal cavalry in the West become formidable in numbers and in the field. The operations at Nashville and in the raid through Georgia show that the Federal cavalry finally reached a degree of efficiency which it is to be regretted was not attained at an earlier date.

THE AVENGER OF BLOOD.

BY THE AUTHOR OF "THE BATTLE OF THE SHADES."

FRANCISCO LOPEZ was a little boy playing about the streets of Naga, in the South Camarines province when the American troops came that way. His father had been killed in the insurrection of 1896, and his brothers had instilled into his young mind a hatred of white people. He believed they were all tyrants and oppressors. He liked the Americans when they whipped the Spaniards and sunk all their ships in Manila Bay, but his admiration turned to hatred when he was told that they were going to take his country and live in it. His two big brothers had marched out with the insurgent forces to live in the marshes and mountains, and fight the Americans.

As Troop K of the Sixteenth Cavalry entered the town, divided into squads and explored each street, he gathered up the pennies with which he had been gambling, and stood against the wall of a *tienda*, watching them. The big horses and the clanking equipment interested him, but his stolid little face gave no sign.

A lieutenant at the head of a section, the support of the advance guard, rode up, halting his command near the *tienda*. The older people had gone into their houses on the approach of the Americans. The lieutenant saw the boy, and, thinking him a probable source of information, went up to him. Francisco watched him stolidly.

"*Donde los insurrectos?*" he asked.

"*No intendo, Señor,*" replied Francisco, lying most loyally, for as a matter of fact he understood Spanish very well.

The officer called a Vicol interpreter, and proceeded further to question the boy. The information he got was

meager, and all as false as it could be made and still seem plausible. Francisco had seen many insurgents, but they had all gone away. They had gone the day before, and he didn't know to what place. No, he didn't know who was in command of the insurgents. He did not know where any cuartels were, and he was not familiar with any of the roads about the town.

"Well, you are either a remarkable ignoramus or a remarkable liar," remarked Lieutenant Shelton.

"*No intendo, Señor,*" said Francisco.

The column came in, and the town having been out-posted, the cavalry was assembled and a picket line arranged. Captain Helm and Lieutenant Shelton settled themselves in an abandoned house which was marked on a plan of the town furnished from Manila, as that of "Colonel" Capistrano, of the insurgent army.

They had just finished a light lunch, sent over from the troop, when a plaintive voice called up the stairway: "*Permiso, Señor?*"

"Come in," called Shelton.

Francisco appeared at the head of the stairs, and stood bashfully rubbing the top of one bare foot with the toes of the other, and twisting a remnant of a Spanish straw hat in his hands.

"Hello there! What's the matter now, *muchacho?*" queried Shelton in army Spanish. "Have you thought of something else to forget since I saw you?"

"Do you want a boy to work?" asked Francisco, seeming to speak Spanish with great difficulty.

"You are an *insurrecto!* I don't want you," returned Shelton.

"I am not an *insurrecto*. I am a friend," protested the boy. His Spanish had improved greatly.

"That boy looks all right," said the Captain. "We'll have to have somebody. Strike a trade with him and we'll try him. He doesn't look big enough to be very villainous."

Francisco was not hard to make a trade with. He only wanted ten pesos (five dollars gold) per month, and in a few minutes he was installed as maid of all work in the

establishment of Captain Helm and Lieutenant Shelton. He swept and oiled the floors, cleaned the furniture, looked after clothing, polished shoes, and did all the odd jobs. As a servant of the Captain he was tolerated about the troop, where seemingly he liked to spend his leisure moments. He didn't seem to have any relations in town, and said that his mother had gone to another town some distance away. This was not considered strange, as a boy can safely be left to the care of the elements and his own devices in the Philippines.

Captain Helm and Lieutenant Shelton soon forgot his existence except when he was wanted for something. They thought of him as a good servant, but somewhat dull of comprehension.

The insurgents about Naga were guerillas of the worst order. Their hiding places were in the nipa swamps and hemp-covered mountains. They made sorties, wrought murder and mischief, and disappeared. The troops marched day and night, and resorted to ruses of all sorts, but to no avail. If a wagon train under small escort was sent from Naga to Nueva Caceres it was sure to be attacked by overwhelming numbers. A similar train sent as a decoy with troops following it at a distance, would be undisturbed. The insurgents knew every move of the Americans. Expeditions sent out in the dead of night failed to surprise anyone. Natives in the town would tell the garrison that the soldiers who had gone out in the night had found nothing long before any official word had come back from them.

One night Captain Helm's troop was awakened very quietly soon after midnight. No lights were made. The men were sent out one by one to saddle their horses, and ordered to assemble under a clump of mango trees, beyond the outposts, on the upper river road. The trumpeters took the officers' horses out. After a sufficient time for the troop to assemble, Captain Helm and Shelton left their quarters and went cautiously past the outposts. Reaching the troop they mounted and without command a sergeant moved forward into the darkness as advance guard, and soon the officers and the troop followed. All was done quietly, no

one speaking. Saddles were so packed that nothing rattled.

"I believe we got away without anyone knowing," said the Captain, when they were well on the trail. "No one knew of the order except the commanding officer and you and I."

The officers forgot one small person. Francisco was not told, but he found out. As the Captain came out of his room a small head was raised from a cot in the corner of the hallway, and Francisco watched him pass carefully down the stairs. He was about to get up when the Lieutenant also came out and passed down as noiselessly. Now Francisco was sure something was going on.

Slipping on his blue checkered suit, he went out as carefully as the officers had gone, and dodging along by the fence reached the picket line. The horses were gone. The troop must have gone by the upper river road. To make sure, he cut loose the only horse that was left behind. It ran toward the outpost on the upper river road.

It was the work of only a few minutes to slip out between the outposts, the intense darkness making this easily possible for a single person. At the house of his cousin, Filipe, he rattled the bamboo door lightly and whispered, "Filipe! Filipe! Go by the upper river road. Americans have just gone that way."

"Si," said a voice on the other side.

Francisco turned back toward town and in a moment a figure came down the ladder, mounted a pony which was already saddled and tied under the house, and rode away, taking a dim trail through the bamboo.

Francisco returned to the house and slept well. The next morning he went to the sergeant major's quarters and seeming greatly concerned, said that the Captain and the Lieutenant were gone. He was reassured when told that they had gone out with their troop.

Filipe was one of the couriers who were always ready to carry news of American expeditions going out from Naga. He had gone many times before. He had always followed the dim trail in the bamboo until he was about four miles from town, where he entered the main road and sped on

ahead of the troops. This time he failed. The troops rode faster than he thought. When he entered the main trail his pony almost ran into a big American horse, and in an instant a pistol ball ended Filipe's life.

"He was a courier," said the Captain. "Now, how in the devil do you suppose he found out we were out? Well, he won't deliver his message now."

The expedition succeeded. At dawn the following morning, detachments of the troops took station around a field of nipa palms and vine-like brush, which had often been passed by expeditions. Taking a platoon with him, and guided by a Filipino prisoner who had been brought from the post and was now inspired by the officer's revolver at his back, the Captain followed a barely visible path under the tangled growth. After a time they came to an open space where the prisoner pointed out a cuartel. The troop rushed upon it. There was a short fight, and the troop had killed or captured nearly all of "Colonel" Capistrano's band, including the worthy "Colonel" himself. The cuartel, which seemed to be also a sort of clothing depot, was burned.

Among the prisoners taken back to Naga was one young Filipino officer, whose arm had been shattered by a bullet. Francisco's heart ached when he saw this wretched prisoner being taken to the hospital that afternoon, but his face gave no evidence of grief, or even recognition. The prisoner was his brother, Alejandro. Filipe was not there and Francisco wondered where he was.

Days passed, and there was no news from Filipe. One day the Captain was talking with a Spanish guide about the roads near the town, at the same time following them on a map. Francisco was oiling the floor in the next room.

"Is there any road entering this upper river road about here?" the Captain asked. "The night we went out and captured Capistrano and his band a Filipino rode into the trail about here and Sergeant Short shot him. He was probably a courier, but where did he come from?"

"The guide could give no information. Francisco knew. The words brought new grief to him. Filipe was dead, and buried by the road side in unconsecrated ground.

Sergeant Short had killed Filipe. Francisco hated him, and silently plotted his revenge.

A few days later Sergeant Short reported that some one had stolen his revolver. A searching investigation was made, but no trace of it could be found. There had been no natives about the quarters. Yes! Francisco had been around there, but he didn't take it, for the officers' revolvers were always available for him to steal, and he had never touched them. In fact, he seemed to be afraid of firearms. The revolver was charged against the Sergeant and its loss listed with the troop mysteries.

Sergeant Short was in the habit of going to a house near the river to play monte with a Filipino family, in which there were some pretty girls. One night he was returning late and, as he was passing a broken place in a wall, a shot blazed from the fragment of the wall, and he fell dead. It was another mystery. Among the broken pieces of the wall the Sergeant's own revolver was found.

Just after the officers had responded to the alarm that was raised, a little form slipped into their house by the side door. When they came back Francisco was apparently asleep in his cot in the hallway.

A few days later Juan Cruz, a brother of Filipe, came in from the camp of "General" Legaspi. He had a sad story to tell. When Legaspi had heard of the taking of Colonel Capistrano's camp he had sent for Gregorio Lopez and demanded a reason for Filipe's failure to perform his duty by bringing news of the expedition.

"I do not know, my General," replied Captain Lopez. "The last I heard, he was on watch at his house, and my little brother was working in the cavalry captain's house. I have not heard from him since, nor from my brother Alejandro. I fear my brother was killed.

"You need not fear," roared the General. "Your brother is now with the Americans and well cared for. Your family seems to do well with the Americans. Take this detachment here and make a scout to Colonel Capistrano's old cuartel and see what you can find out."

That order was Gregorio's death warrant. He went with the detachment, and late that day the detachment returned and reported that they had been fired upon by the Americans and that the captain had been killed. Francisco knew that no Americans were out that day, and told Juan so. Juan had suspected before that Gregorio had been murdered.

"General" Legaspi, evidently controlled by the evil destiny which causes men of evil deeds to make errors which are their own undoing, had sent Juan to Naga to take the post of courier and to report what he could learn about Filipe. The "General" had overlooked the fact that he was a brother of Filipe and a cousin of Gregorio.

"Do you know the way to the place where General Legaspi will be to-morrow?" asked Francisco.

"Yes," answered Juan, "and if I should be captured by the Americans they would probably torture me until I would have to show them."

"They would bind you and command you to guide them, and if you failed to guide them properly, they would kill you," suggested Francisco.

"I would have to take them to the cuartel," said Juan.

Francisco went to the Captain's quarters, and finding him alone, said mysteriously, "One of General Legaspi's soldiers is in town. He is not a brave man, and if he is caught and tied and you tell him you will kill him if he doesn't guide you to the camp of the General, he will do so."

"Where is he?" asked the Captain quickly.

"In the fifth house beyond the outposts on the right of the road to Mabato-bato," said Francisco. "His name is Juan."

Taking two men with him Captain Helm went to the house and found it an easy matter to secure Juan. He did not stop to question the prisoner, but reported at once to the commanding officer, and was given permission to take his troop and go on an expedition after Legaspi.

The troop was saddled at once, and placing Juan on a big American horse, the Captain moved out, riding rapidly until the point where Filipe had entered the road was reached.

A short halt was made and the Captain told Juan he was to lead them to General Legaspi's camp.

"I do not know where it is, señor," he replied.

"I know you are an insurgent, just come from him," said the Captain, "and it's no use to lie."

"I am not an insurgent," maintained Juan.

"Sergeant! tie him on his horse, and if he guides us into an ambush you are to kill him. Take him with you on the point."

Juan was then tied fast on the horse with a lariat, and the Captain explained the orders he had given, and also said that if he failed to take the command to the camp he would be killed and left in the jungle. Juan made no reply or comment. He looked hopelessly about him as the sergeant led his horse up to the point of the advance guard.

All night long the troop blundered along over a trail which was often so closely overhung with bamboo that the men had to dismount and walk. Juan was left on the horse to do the best he could. Toward morning they found the trail was ascending the mountain along a ravine.

Just before dawn Juan wanted to speak to the Captain, as he said they were near the camp. When Captain Helm came up the prisoner explained that the camp was in the ravine, about a half mile beyond. It was in some thick bamboo where the ravine was wide and shallow. The higher ground was open. There was an outpost about a quarter of a mile ahead on the trail. There were no outposts on the flanks or rear of the camp.

Shelton was sent around the right to gain the right and rear with one section, while the first sergeant was to gain the left and rear with another.

When it became light enough to see, the Captain moved forward to a frontal attack. The insurgent outpost fled after firing a single shot. A storm of bullets followed them, but not a man fell. It is wonderful how many bullets can miss a man. Then firing was heard from the right and rear, and then from the left and rear. In a moment scurrying figures appeared in front of Captain Helm's men, and were greeted with a volley that sent them scurrying back.

The three parties closed in rapidly. A figure, clad only in underclothing, ran toward Captain Helm's men with a white flag. "Cease firing" was sounded. The man with the white flag was "General" Legaspi. The surrender was complete. Soon the cuartels and storehouses were burning, and the soldiers amused themselves by blowing up a primitive arsenal and powder factory.

Shelton approached Juan and started to loose his hands, but he protested. "No. Take me back bound, and let the people see," he said. He was left bound.

"General" Legaspi observed to one of his fellow prisoners: "Some Americanista has betrayed Juan, and they have forced him to betray us. See how he has suffered. He was loyal."

Juan remained a fellow prisoner with the "General" until they were both released under the general amnesty order.

Francisco trailed along with the troop when it went north. Somehow he felt lost away from it. The doctors cured Alejandro's wound, and Francisco forgot the grudge he had held on account of his brother having been wounded. When the troop came to the States he came with it, and now lives at an army post, still working for Shelton and doing odd jobs for spending money.

"I suppose he was an insurrecto at heart," Shelton remarked to a friend, "but not a treacherous one. He has always been loyal and faithful."

ODDS AND ENDS OF IMPROVEMENT.

BY CAPTAIN WM. W. FORSYTH, SIXTH CAVALRY.

IN choosing a subject for the essay required by the recent General Order of the War Department, the writer has been mindful of the injunction that subjects of immediate military importance should be preferred to those of mere historical interest. That injunction places the essayist on a strictly business basis and makes the same demand of him that the spirit of the age makes of everybody: *i. e.*, your wares must be useful as well as ornamental; if they cannot be both, discard the ornaments.

The age in which we live is matter-of-fact, practical, and progressive; it has little patience or even tolerance for what is merely pleasing or ornamental, and our profession, more perhaps than all others, shows how relentlessly the useful has attacked the beautiful or spectacular. The pomp and panoply of war is going, if it isn't gone. The flounces, frills, and furbelows of the military calling are passing, if they have not passed. The soldier no longer goes forward on the battlefield arrayed in brilliant uniform and inspired by the strains of martial music from a hundred bands. Or if he does, he at once calls forth the Frenchman's exclamation, "It is magnificent, but it isn't war!" So, when we read of Russian bands playing on the battlefields in Manchuria we are either incredulous, or we note it as an indication that the Russians are behind the times, and our surprise at their reverses is swallowed up in amazement at their folly.

The spirit of the age whispers to us that a hundred bands means 2,000 men, and that if men are scarce, 2,000 men with rifles in their hands might turn defeat into victory; or, if

men are plentiful, the place for the bands is the camp and the hospital for the diversion of the sick and wounded.

The touchstone of every new invention and of every new idea is utility, and every old invention and every old idea survives only as long as it can maintain its superiority over the new, and thus we see in progress in the inanimate world a struggle for existence and a survival of the fittest not unlike what occurs in the creature kingdom.

In the search, therefore, for a subject that would fulfill requirements, and at the same time perhaps escape the attention of other writers, a number of things have been found, not each in itself of sufficient importance for an essay, but when taken together might justly be so considered.

It would be an improvement in the way of increased efficiency if each cavalry squadron had a quartermaster sergeant. When the army reorganization measure of 1901 became law its failure to provide such a sergeant was, to many, so striking that the omission was believed to be an oversight. The provision of a squadron sergeant major gives only partial relief to a trying and vexatious state of affairs that arises whenever a cavalry regiment takes the field for an extended period. That is, the detail away from their troops, where they are presumably efficient, of a number of noncommissioned officers for the performance of staff duties of which they are, as a rule, utterly ignorant. Of course they are inefficient.

Whenever a cavalry regiment goes to the field in one body the regimental quartermaster sergeant is, if he does his duty, an over-worked man. The fact becomes apparent at once, and several of the aforesaid noncommissioned officers are detailed to his assistance. Formerly, this might have been said with equal force of the regimental sergeant major, but the provision of the squadron sergeant major has relieved the pressure there.

At this most inopportune time, then, we find the regimental quartermaster and his sergeant occupied in teaching inexperienced noncommissioned officers their new duties, sometimes to the neglect of other important and pressing official business.

Again, if a squadron is detached a noncommissioned officer must be detailed from some troop to act as its quartermaster sergeant, and, as in the other cases, he is usually ignorant of what is required of him, and must be taught. It is inadvisable for several obvious reasons to detail a troop quartermaster sergeant for this duty, however well qualified he might be. Again, either the quartermaster or commissary of the regiment is detailed as ordnance officer, and he must make his own sergeant, or some other sergeant, acting ordnance sergeant. He usually makes his own because the other one is ignorant of paper work and there is not time at that strenuous period to teach him.

But this is not all of the evil. In addition to the delays, mistakes, unnecessary labors, and general lack of efficiency in staff administration, brought about by the detail, in this hour of rush, hurry and excitement, of noncommissioned officers to new and unaccustomed duties, there is to be considered the impaired efficiency of the troops from which the men are taken. At this time above all, these men are needed with their troops, and it is a hardship on a troop commander and a serious blow to the efficiency of his troop to take from him on such occasions one or more of his good noncommissioned officers. A full measure of relief from this state of affairs would be given if a quartermaster sergeant were provided for each squadron.

In garrison, if it were a regimental post, one of these might be detailed as overseer in the quartermaster department in charge of the issues and sales of fuel, forage, straw and oil; the second one in charge of shipping and receiving stores, and the third one as post provost sergeant. In case there is no regular ordnance sergeant, the second one instead of serving as described above, should be detailed as acting post ordnance sergeant, and in case there is one, the second one should be detailed as his assistant in addition to his other duties. From time to time all three should be shifted from one duty to another, so that they would all learn the duties of the quartermaster and ordnance sergeants in the post, where the circumstances are favorable for instruction.

If the squadrons of the regiment are at different posts, the same end could be attained by slightly changing the above arrangement. In the field, then, there would be available from the start a sufficient number of experienced sergeants to do the work required without calling on the troops, and the administration of staff affairs would go on with a refreshing absence of mistakes, delays, friction, turmoil and confusion.

Of course this almost ideal condition is based on the supposition that the regimental and squadron noncommissioned staff officers are, in time of war, to serve with their regiments. If, however, they are not; if, instead, they are to be detailed to special duty at brigade, division and corps headquarters, as happened in the Spanish War, then the relief fails of effect, and the ideal vanishes. ●

ADMINISTRATION.

Much has been done in recent years to foster patriotism and devotion and reverence for the flag. From time to time observances of a patriotic nature have been prescribed with these ends in view. Would it not be in harmony with this policy if each post not otherwise provided with the national colors for ceremonies, should be furnished with one stand of colors, to be carried at all garrison ceremonies by such company as shall be designated by the post commander? It would also add to the dignity and impressiveness of such occasions, it would promote *esprit de corps*, and it would not be expensive.

The present method of making issues of clothing will not stand the test of war. It did not stand the test of the Spanish War. It was too slow, and like other methods of administration based on the hypothesis of eternal peace, it went by the board.

Formerly the company commander was accountable for his camp clothing and garrison equipage, and made his own issues of clothing to his men, and while that arrangement had its drawbacks, the clothing feature of it was better in time of war than the present method.

Under this latter method it requires in the field a week or ten days to make a complete issue of clothing to a regiment. Ask any company commander or any regimental quartermaster who served as such during the Spanish War if this is not so.

When the troops that were engaged in the Santiago campaign arrived at Montauk Point, although it was August, the cold winds and fogs that blew across that end of Long Island chilled the men to the marrow, and they had to be supplied at once with warm clothing. In one of the regiments there the following plan was adopted: The clothing called for by each schedule was sorted out and placed in one pile, and the totals of articles called for by the schedule jotted down in a memorandum receipt book; the company commander was then requested to send an officer to receive the clothing, and this officer checked it into the wagons, which had been ordered up from the train to haul it. After checking it he receipted for it in the memorandum receipt book and the clothing schedule was returned to him to be used in making the issues to the men, and later returned to the quartermaster to be extended.

The issues to the men then went on simultaneously in the different companies under the supervision of their own officers, and the plan was so expeditious that the whole regiment was clothed in two days.

The writer believes that the feature of the old system, which made the company commanders accountable for clothing, is more satisfactory in time of war than the present arrangement, and that it is unwise to practice in time of peace methods that, although admittedly in some respects less laborious, will have to be abandoned when war comes.

The regulations now require that the descriptive records of enlisted men shall be kept on loose leaves, and when men become separated from the service their leaves shall be filed away and permanently preserved, but the means for preserving them are not provided. Unless some good binding file be used, the loose leaves are liable to be lost or destroyed; and it is hardly possible to protect them from mutilation or defacement.

The binding file furnished by the government for keeping the loose target record leaves would admirably serve the purpose, and, at the same time, facilitate the use of the leaves.

CAVALRY DRILL REGULATIONS.

The items of improvement that are suggested here in our drill regulations are only such as have, as far as known, escaped the attention of other writers.

The signal prescribed for fours right or left about is, execute rear point and turn the horse right or left about according as the fours are to wheel, but as rear point is to the right rear, the signal for fours left about often confuses the trooper. He sees his officer point to the right about and at the same time turn left about, and much drill and explanation are required to make it clear to him. The signal should be, point the saber to the right or left rear according as it is to be fours right or left about.

In closing chamber, Par. 100, two cases are presented. In the first case each man pulls the trigger and then locks the piece; in the second case he pulls the trigger but does not lock the piece. There is no necessity for locking the piece in either case, as the chamber is empty.

In throwing the horse. Par. 417, it is prescribed that the horse shall be brought down on his right side. In my troop it has proved just as easy to bring him down on his left side, and with the additional advantage that the trooper is behind his head when he comes down and is thus already in position to hold him down.

The regulations do not prescribe that the guidon socket shall be attached to the stirrup, but the ordnance department furnishes them thus attached, and this would seem to have the force of regulation. The writer has found, however, that at drill, at the faster gaits, the sergeant has better control of his guidon if he carries it with the socket strapped around his ankle. The former method is better for the march, the latter better for drill.

The regulations say, Par. 849, that the posts of the majors

in the regiment are the same as in the squadron, except in the line of masses, and then do not inform us where their posts are in line of masses.

Every cavalryman is familiar with the annoyance caused by the flapping of the canteen when the horse is moving at the trot or gallop, and several devices have been tried or suggested for fastening the canteen so that it can have no pendulous motion, but none seems to have given general satisfaction.

The writer thinks he has solved this problem by means of a leather-strap passed around the saddle bag and held in place by two loops on the under side of the bag. This strap also passes under the forward strap of the saddle pocket and is so placed that it will pass over the canteen just above its middle when the canteen is hung from the cantle ring. This contrivance has not been thoroughly tested, but so far it promises well. After having adjusted the strap, all that is necessary is for the trooper to snap his canteen into the cantle ring and then push the canteen well down between the saddle-bag and the strap. If it is not pushed well down it will work out.

Finally, we have for consideration the best method of carrying the new Springfield rifle.

Since the Civil War every change that has been made in our carbine has involved an increase in its weight; each new model has been heavier than its predecessor, but, nevertheless, it has always been carried on the saddle. The new rifle with which we are soon to be provided weighs about nine pounds, or nearly double the weight of the carbine of 1863. How shall it be carried in order that the cavalryman's ability for rapidity of movement may not be impaired?

It greatly increases his functions and responsibilities, for he will be expected to do all that he ever did before and display the shooting power of the infantryman also; and in order that his new quality may be made most profitable he must maintain his ability for rapid movement.

Many of our old cavalrymen believe, with the conviction born of experience, that our present carbine carried on the saddle is the principal cause of the sore backs that prevail to

some extent in every mounted command whenever long marches are made. How will it be then with the new rifle, which weighs about a pound more and is two and a half inches longer? That it has increased the importance of preserving the horse may be denied by some, but that it has increased the difficulty of preserving him will be admitted by all.

It is true that now when his horse is disabled the trooper will become a strong infantry soldier, whereas before he became a weak one; and that on occasions when he cannot be utilized mounted, such as service oversea when no horse-transportation is available, or impracticable theatre of operations, he may be used with increased value in his foot capacity.

Nevertheless, it seems clear that the richest harvest, the most glorious results will be obtained only when his increased fire power is used in combination with rapidity of movement, that is, when he seizes a vital point as a cavalryman and holds it as an infantryman.

The problem, therefore, of how the new rifle shall be carried is an important one, perhaps the most important now before the cavalry arm of our service, and its solution seems to involve either a change in our saddle, or that the trooper shall carry it.

As the McClellan saddle is the best military saddle in the world, it would seem to be the part of wisdom to test the practicability of carrying the rifle on the trooper before venturing on changes in the saddle.

AN INTERESTING CASE TO HORSEMEN.

BY MAJOR H. L. RIPLEY, EIGHTH CAVALRY, GENERAL STAFF.

ON the 15th of February, 1905, I was notified by the commanding officer at Fort Sill, O. T., Lieutenant Colonel H. P. Kingsbury, Eighth Cavalry, that Veterinarian Harry F. Steele, Eighth Cavalry, had reported to him that a horse of Troop C, Eighth Cavalry, ("Coxey") was suffering from farcy, and I was directed to make an examination of him and report at once. I found the horse with his near hind leg considerably swollen, the swelling having taken place within twenty-four hours. The lymphatic glands were hard and cord-like, especially from the hock up. Several ulcers or buds, characteristic of farcy, were distributed along the glands, some of which were discharging a thick yellowish pus. No ulcers could be seen in the nostrils and there was no discharge therefrom. The horse had no fever and there was no swelling or sign of ulcers upon the lips, neck, shoulders or any other part of his body. There was, however, a rash-like eruption, both inside and outside the swollen leg, extending from just below the hock to the fetlock. These swellings differed from the ulcers above the hock, in that they were much smaller, about the size of the half of a small pea, and much more numerous, covering practically the whole leg, and there was no discharge from them. This eruption resembled very much the "adobe itch," which affected our horses while campaigning during the rainy season in the Philippines.*

The horse was in good flesh, had a good appetite, and otherwise appeared to be in a perfectly healthy condition.

*See Surgeon Roberts' reference to this in his report of the post mortem examination, page 284.

He had been received at the post from St. Louis with others in October, 1904, and there had been no case of glanders or farcy at the post within the knowledge of the oldest resident. The case was certainly suspicious, but it was not conclusive to me, notwithstanding the diagnosis of the veterinarian and his belief that the horse should be immediately destroyed. He was at once isolated, however, and all precautions taken against infection of other animals.

I recommended to the commanding officer that the horse be not destroyed, but subjected to further observation, which recommendation was approved. Upon my further recommendation he telegraphed the Military Secretary at Washington for a supply of mallein from the Bureau of Animal Industry, Department of Agriculture, in order to apply that test to the horse. This mallein was promptly sent, and the test applied by Veterinarian Steele. The result was negative. The following is his report of it:

FORT SILL, O. T., March 2, 1905.

The Adjutant, Fort Sill, O. T.:

SIR:—I have the honor to report the following case:

On February 15, 1905, my attention was called to one public horse of Troop C, Eighth Cavalry, "Coxey," bay gelding, received by the troop October 5, 1904. The near hind leg was swollen from the hip to the hoof, the lymphatic glands and vessels forming well defined buds and cords from the inguinal region to the foot. Several buds had burst and were discharging characteristic discharge. There was no ulcer in the nostrils. After careful examination a diagnosis of "farcy" was made, and the commanding officer promptly notified.

At the request of Major Ripley the animal was isolated and after the temperature was taken for three days, was inoculated with one cubic centimetre of "mallein." The test was as follows:

Feb. 21.	5:30 P. M.	F. 100.3	Feb. 23.	5:30 P. M.	F. 101.4
Feb. 22.	7:30 A. M.	101.1	Feb. 24.	7:30 A. M.	101.3
Feb. 22.	7:30 P. M.	101.2	Feb. 24.	5:00 P. M.	100.3
Feb. 23.	7:30 A. M.	101.1			

Inoculated 1 c. c. (Bureau) mallein 5:00 P. M.

Feb. 25.	6:00 A. M.	F. 101.1	Feb. 25.	6:00 P. M.	F. 100.2
Feb. 25.	7:00 A. M.	101.0	Feb. 26.	8:00 A. M.	100.2
Feb. 25.	8:00 A. M.	100.3	Feb. 26.	9:00 A. M.	100.1
Feb. 25.	9:00 A. M.	100.2	Feb. 26.	10:00 A. M.	100.0
Feb. 25.	10:00 A. M.	100.2	Feb. 26.	11:00 A. M.	100.1
Feb. 25.	11:00 A. M.	100.3	Feb. 26.	12:00 NOON.	100.1
Feb. 25.	12:00 NOON.	100.2	Feb. 26.	1:00 P. M.	100.2
Feb. 25.	1:00 P. M.	100.2	Feb. 26.	2:00 P. M.	100.1
Feb. 25.	2:00 P. M.	101.1	Feb. 26.	3:00 P. M.	100.1
Feb. 25.	3:00 P. M.	100.2	Feb. 26.	4:00 P. M.	100.2
Feb. 25.	4:00 P. M.	100.1	Feb. 26.	5:00 P. M.	100.2
Feb. 25.	5:00 P. M.	100.2	Feb. 26.	6:00 P. M.	101.0

It will be seen from this table of temperatures, that the highest temperature before inoculation was on February 23d, 5:30 P. M., when the thermometer registered 101.4, while the highest register after inoculation was 101.1 F. at 6:00 A. M. February 25th, the day following inoculation.

While the figures of the test are negative, it in no way changes the diagnosis made.

Very respectfully,

H. F. STEELE,
Veterinarian Eighth Cavalry.

In the meantime and pending the arrival of the mallein, the post surgeon, First Lieutenant William M. Roberts, Medical Department, who besides being an able and efficient doctor is a most excellent horseman, became interested in the case and offered to make a microscopical examination of the pus from one of the ulcers or buds on the glands. His offer was gladly accepted, and he was encouraged to make the test as exhaustive as his facilities would allow. The result of his tests was negative. The following is his report:

REPORT ON BACTERIOLOGICAL EXAMINATION.

Bay gelding "Coxey," Troop C, Eighth Cavalry; six years; No. 1835; height, 15.1. Faint star, black points; weight about 950 pounds; received at post in apparently good condition October 5, 1904.

Several small abscesses were noticed February 12, 1905, on left hind leg, inner aspect below inguinal region.

February 13th the horse was isolated; abscess formation extended along lymphatic chains from inguinal region downward, with marked lymphadenitis, and lymphangitis, whole

leg oedematous, glands progressively breaking down and forming small tense circular painful abscesses, which when evacuated as aseptically as possible, gave following results:

Contents of abscesses: Thick orange yellow viscid pus, alkaline reaction, small quantities in each cavity, no burrowing tendencies apparent. Abscesses connected by enlarged and indurated lymphatic trunks.

Smear preparations from pus show pus cells, sero fibrinous exudate, and small amounts of connective tissue debris, no organisms. Stain, Loeffler's alkaline, methylene-blue, steaming five minutes.

Negative also by Schutz method.

Culture examination.

Blood serum. A few minute grayish spots tenth day, microscopically composed of small cocci in chain formation.

Bouillon, no apparent results for first seven days. On the eighth, a very faint clouding, a small amount of flocculent precipitate, finally settling to the bottom of tube; no odor.

Precipitate consists of series of small cocci (about five m. in diameter) in chains; no other organisms discovered.

Stained by Loeffler's method; do not discolorize by Gram's method.

Agar-agar negative to fourteenth day.

Glycerine agar-agar negative.

Potato negative.

Gelatin stab culture, faint speck like growth along upper portion of needle track; gelatin not liquified.

The only infection apparent is one of strepto-coccus pyogenes in very small numbers and uncontaminated by other organisms.

The inability to obtain Guinea pigs is unfortunate, as more positive tests could be made if these animals were obtainable.

The mallein test as conducted by Veterinarian H. F. Steele was negative.

WM. M. ROBERTS,
First Lieutenant and Assistant Surgeon, U. S. Army,
Surgeon.

A report of the tests made by Veterinarian Steele and Surgeon Roberts was sent to Dr. S. E. Salmons, Chief of the Bureau of Animal Industry, with a request for an opinion upon the data furnished concerning the horse. The following is his reply:

UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY.

WASHINGTON, D. C., March 15, 1905.

Major H. L. Ripley, U. S. A., Fort Sill, Oklahoma.

SIR:—I am in receipt of your letter of the 7th instant, in which you request an opinion upon the data furnished concerning a horse which you suspect of having glanders.

In reply I would say that the lesions you describe on the left hind leg of the animal are strongly suggestive of farcy, but in view of the negative reaction obtained by the mallein test and the failure of your surgeon to obtain the bacillus of glanders by the usual bacteriological methods, it would be necessary to exclude ulcerative lymphangitis and epizootic lymphangitis (so-called pseudo farcy), both of which diseases present suppurating ulcers not unlike farcy. However, it would be advisable to isolate this animal and treat him as a suspect until you can make a positive diagnosis. If this is impossible, I would suggest that no chances be taken with the horse, but that he be killed and buried as a suspicious case, and the premises, harness, trappings, stable implements, etc., thoroughly disinfected, deeming it inadvisable to expose the other horses of the regiment to the possibility of contracting such a serious disease.

Very respectfully,

D. E. SALMONS,
Chief of Bureau.

The latter part of March, about a month after the first mallein test, Veterinarian Steele was directed to make a second test, using a double dose of mallein. The result of this test was negative.

The following is Veterinarian Steele's report on the second mallein test:

FORT SILL, O. T., April 6, 1905.

The Adjutant, Fort Sill, O. T.

SIR:—I have the honor to report that a second "mallein" test was made on the bay gelding "Coxey," Troop C, Eighth Cavalry, March 31, 1905, using two (2) cubic centimeters Bureau of Animal Industry "mallein," by order of the commanding officer, Major H. L. Ripley, Eighth Cavalry.

The test was as follows:

March 27. 5:00 P. M. F. 100.1	March 29. 5:00 P. M. F. 99.3
March 28. 8:00 A. M. 100.1	March 30. 8:00 A. M. 99.4
March 28. 5:00 P. M. 100.1	March 30. 5:00 P. M. 99.4
March 29. 8:00 A. M. 100.1	
March 30th inoculated 2 c. c. (Bureau) mallein 5:00 P. M.	
March 31. 6:00 A. M. F. 100.0	March 31. 6:00 A. M. F. 100.1
March 31. 7:00 A. M. 100.0	April 1. 7:00 A. M. 101.1
March 31. 8:00 A. M. 100.0	April 1. 8:00 A. M. 101.0
March 31. 9:00 A. M. 100.0	April 1. 9:00 A. M. 98.2
March 31. 10:00 A. M. 100.1	April 1. 10:00 A. M. 99.4
March 31. 11:00 A. M. 100.3	April 1. 11:00 A. M. 99.3
March 31. 12:00 NOON 100.0	April 1. 12:00 NOON 99.1
March 31. 1:00 P. M. 100.2	April 1. 1:00 P. M. 98.3
March 31. 2:00 P. M. 99.3	April 1. 2:00 P. M. 99.4
March 31. 3:00 P. M. 99.3	April 1. 3:00 P. M. 98.4
March 31. 4:00 P. M. 100.0	April 1. 4:00 P. M. 99.3
March 31. 5:00 P. M. 100.0	

Very respectfully,

H. F. STEELE,
Veterinarian Eighth Cavalry.

After the negative reaction of the first mallein test and the failure of the surgeon to obtain any trace of the bacillus of glanders, efforts were made to obtain guinea pigs to inoculate, as much more positive results were to be expected if these animals could be used. Efforts, however, were fruitless in Oklahoma and Texas, and it was not until May 15th that they were finally obtained through the medical department from St. Louis, Missouri.

Fresh pus was secured and the guinea pig inoculated May 18th. The result was still negative. The following is Surgeon Roberts' report, made June 12th, on the guinea pig test:

OFFICE OF THE SURGEON,
FORT SILL, O. T., June 12, 1905.

Additional report on Bacteriological examination of bay gelding "Coxey," Troop C, Eighth Cavalry No. 1835:

Guinea pig inoculated May 18, 1905, with pus from abscess, inner aspect, left hind leg above hock. Abscess opened and pus obtained as aseptically as possible, to prevent contamination with organisms of skin. The matter so obtained was inserted subcutaneously in sacral region of male guinea pig, and the cut through which this matter was inserted was closed by sutures and sealed with collodion. About one (1)

c. c. of the pus was used, the results entirely negative. The guinea pig is now alive and well and free from all symptoms, scrotal or otherwise.

WM. M. ROBERTS,
First Lieut. and Asst. Surgeon U. S. Army, Surgeon.

I have since been informed by Surgeon Roberts that up to September 15th the guinea pig was perfectly well and hearty, and had been returned to the pen with the others.

During all this time the horse had remained in practically the same excellent physical condition. The swelling on the leg had gone down some. The ulcers had not increased in number appreciably, and the eruption below the hock remained about the same.

No other part of the body was effected, and the nostrils were perfectly clean. The horse was a difficult one to handle or treat. He was vicious and ugly in disposition and had to be thrown for satisfactory examination or treatment. Had he been gentle and easy to handle, further observation and treatment would have been given him. The garrison was under orders to leave for the Philippine Islands June 17th, and it was not deemed advisable or proper to leave even a suspicious case to a new command. Being now in command, I therefore directed that the horse be shot, not because he had the farcy, but because he was a suspicious case, and that a post mortem examination follow. This examination was made by Surgeon Roberts and Veterinarian Steele, and their reports follow:

FORT SILL, O. T., June 14, 1905.

Post mortem examination of bay gelding "Coxey," No. 1835, killed by order of the post commander this date; age about seven (7) years; height, 15.1; marks, faint star, black points.

General nutrition, excellent; horse is well nourished and in good spirits.

General condition of the skin normal, except in the left hind leg.

Elasticity, normal; free from discoloration or œdema.

Post mortem rigidity sets in early, beginning in maxillary muscles, then muscles of back and hind quarters.

Mucous membrane of the mouth and nasal passages normal. Nasal mucous membrane possibly somewhat grayer and paler than usual, especially about fifteen c. m. posterior to nostril, presenting a somewhat anæmic appearance, but entirely free from ulceration or other abnormalities.

Examination of aural cavities, negative.

Cervical, submaxillary, and axillary lymphatics, normal.

Right inguinal lymphatics, normal.

Left inguinal lymphatics are enlarged and indurated, without tendency toward periadenitis, the skin being freely movable over the enlargements. Lymphatic trunks extending down left leg show marked lymphangitis with occasional suppurating nodes, communicating in the recent state externally through skin by fistulous openings, which show tendency to heal promptly, with formation of flat hairless cicatrices. Content of nodosities—a thick, viscid, caseous pus containing the streptococcus pyogenes in small numbers uncontaminated by other organisms. (See bacteriological report.)

Infection shows signs, clinically, of having extended upward from foot of pastern.

On the outer aspect of the left hind leg are numerous small abscess formations from the size of a grain of corn to a small chestnut, situated in the skin, and apparently free from connection with the lymphatic channels.

The pus is free from all organisms except the streptococcus pyogenes in small numbers.

Early in the course of the disease there was considerable œdema of this leg, but subsequently this œdema subsided; and now the leg is dotted over with numerous small circumscribed swellings free from general enlargement.

Anus, sheath, and penis, normal, except for two lymphatic nodules on left side of sheath, which when opened are found to consist of a caseous pus similar to the nodules on the leg.

The subcutaneous fat is normal.

Blood, normal.

Muscles and fascia, normal.

Pleura, normal.

Heart, normal.

Peri cardium, normal.

Lung tissue, normal; free from any appearance of nodosities or circumscribed degeneration processes.

Internal tract, normal; small amounts of subperitoneal fat, normal in character.

Liver considerably smaller than normal, but normal in color and consistency. Free from degeneration processes.

Internal lymphatics, uninvolved.

Brain not involved, but clinically, no nervous symptoms were observed, and the nervous system generally is apparently normal.

In general, the only pathogenic process observed was one of infection with the streptococcus pyogenes taking the form of a chronic lymphangitis and lymphadenitis.

WM. M. ROBERTS,

*First Lieutenant and Assistant Surgeon U. S. Army,
Surgeon.*

FORT SILL, O. T., June 14, 1905.

The Adjutant, Fort Sill, O. T.

SIR:—I have the honor to report that the bay gelding of Troop C, Eighth Cavalry, which has been isolated since February, suffering with farcy, was destroyed this day by order of the commanding officer.

The post mortem examination which followed, did not show any of the symptoms or lesions on the nasal mucous membrane, the lungs or spleen, except that the nasal membrane had a decided leadish color and the lungs mottled. The examination of the near hind leg showed several enlarged glands, some of which had broken down and were discharging.

The glands of the inguinal region were much enlarged and showed more or less broken down material when exposed.

Respectfully,

H. F. STEELE,

Veterinarian Eighth Cavalry.

These reports show that no nodules were found in the liver, spleen, kidneys or lungs, and yet the best authorities state that an animal which has farcy, while the outward symptoms may under certain conditions be so ameliorated that he would pass any expert as sound, invariably has nodules in the lungs, which would of course be found in a post mortem examination.

The report of Surgeon Roberts is particularly exhaustive and satisfactory. It is to be noted that to the last the reports made by Veterinarian Steele refer to the horse as suffering from farcy.

This was his diagnosis when he first saw the case, and he adhered to it manfully, or unmanfully, to the end.

The evidence as shown by the above tests and examinations seems to preclude conclusively the presence of farcy in this horse. It is believed that the original diagnosis was a mistake, and it would be interesting to hear the views of some of our first-class veterinarians on the case.

THE MINDANAO MORO.

BY CAPTAIN C. C. SMITH, FOURTEENTH U. S. CAVALRY.

A SERVICE of two years among the Moros of Mindanao, during which it was our good fortune to get about considerably in their territory, and a pleasant personal and profitable acquaintance with Dr. Najeeb M. Saleeby, a learned Syrian, probably the best living authority on the Moro, has given us temerity enough to believe that we might say something of interest concerning a strange and fanatical people.

The Moro, from our standpoint, has few, if any, traits that appeal to or excite admiration. He is a polygamist, has no moral sense, is tyrannical, vain, fond of show, and brutal in his treatment of those who acknowledge him as a superior. He is cool and treacherous, and for his religion commits the worst of crimes—murder—and with no compunction. The following from the *Army and Navy Journal* of March 17, 1906, shows how Major R. L. Bullard, Twenty-eighth Infantry, regards him.

"The only question with the average Moro," Major Bullard is quoted as saying, "is when he can kill a Christian. It is never a question of whether he will do so or not. The Moro priests teach the murder of Christians as a requirement of their religion. The Moro is a born fanatic. He cares absolutely nothing for his own life if by risking it he can carry out the precepts of his religion. The Moros will hide their hate with cunning subtlety until an opportunity comes for them to secure revenge. It is for this reason that the American lives in constant fear of his life. No American who is wise ever leaves his tent without being securely armed. I once took a detachment in pursuit of a datto who

had slashed a soldier with a two-edged sword because our boat was skimming along near the shore of Lake Lanao. Suddenly I heard a death groan and a fearful struggle behind me. I turned to find in my boat a hostile Moro, kris in hand and the awful fire of murder blazing in his eye. One stroke of his deadly knife had half severed the head from the body of my soldier-steersman, and the flashing blade was raining blows into the bottom of the boat at the prostrate form and flying legs of the oarsman, who had occupied the place between me and the steersman. The latter, his head falling forward on his breast, sat bolt upright in his place, dying. Too fast to tell I poured four shots into the mad Moro, but to my consternation they seemed wholly without effect, and in desperation I spared the last two shots, springing forward in the hope of shoving the revolver's muzzle against him, and so blow out his brains or his heart. The Moro stooped to clear a bamboo bow that looped the narrow boat over the head of the fallen oarsman. I thrust the muzzle of my revolver against the top of his close-cropped head and fired. Then at last he felt the bullet and sank forward upon his own weapon and the legs of the soldier whose head was against my knees."

Major Bullard's experiences vividly disclose the character and conditions which confront the American forces in the Moro province. To temporize with them would be an act of madness that would lead to inevitable disaster. Any halting, half-hearted policy on the part of the military authorities would be construed by the Moros as a sign of American cowardice, and that would be recognized as the signal for massacre. The whole course of the army in the Moro country has been patient and conciliatory, but at the same time firm and vigilant, early experience having shown that the natives are naturally treacherous, cruel and hostile to all Christians.

Let us state that Major Bullard, whom we have the honor and pleasure to know personally, has had much experience with Moros, and knows them perfectly. He, along with Dr. Saleeby, may be considered an authority.

Dr. Saleeby, whom they greatly respect for his strong

personality, on account of expertness in their language, and his being an Arabic scholar, has recently written for the Ethnological Survey of the Philippine Islands a treatise on the history, law, and religion of the Moros. The Moro panditas (priests) preserve their religion by means of the Arabic



MORO PANDITA (PRIEST) WITH HIS SLAVE BOY, FROM LAKE LANAO, MINDANAO.

which is the only script they know, and the Doctor has in his work translated the records of the panditas, and other interesting data.

The history of a people begins when mythology merges into something tangible. The mythology of the Moro ends and history starts with the advent in Mindanao of the Mohammedan Kabungsuwan in about 1475. Previous to this, Moros (called so by the Spaniards on account of their brown

color) and the hill and mountain tribes of Mindanao were all one and the same people. It is not to be understood that all Moros are descended from the tribes just mentioned; as the Samals in the vicinity of Zamboanga, and the Sulu Moros, were originally from the Malay Peninsula. It is more than probable that most Philippine Islanders first came from the south of Asia, but the Samals and Sulus were the last comers,



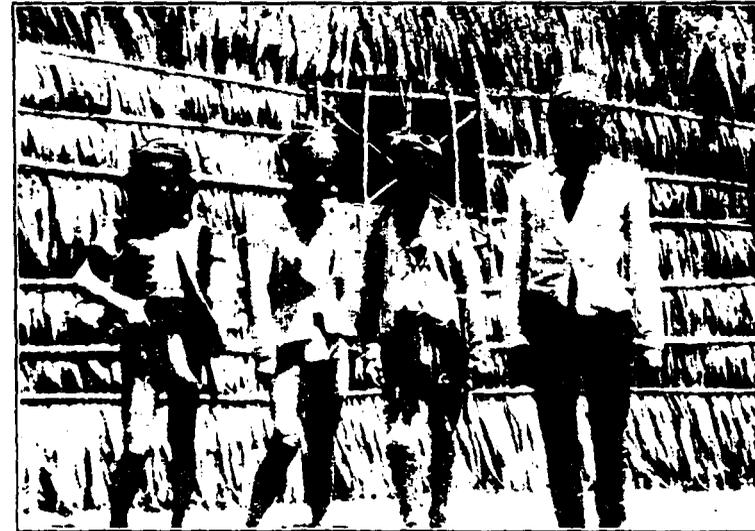
SAMAL MORO OF ZAMBOANGA, MINDANAO, LANDING HUGE SEA TURTLE.

and very likely appeared in the order named, and already converted to the Mohammedan faith.

Mindanao and Magindanao is the same, and was the old name of Cotabato, and the country in its vicinity, meaning "the inundated land," and most descriptive of this region is the title. Before the days of Kabungsuwan the people of Magindanao were pagans, as are the Subanos, Tirurays and Bilanes in the highlands about Cotabato to-day; but as a religion will change people, so the Moslem faith has made the Moro, originally a heathen of benevolent disposition, fierce, arrogant and haughty.

Tradition has it, that before the doctrine of Islam was introduced, the people of Magindanao were numerous and prosperous, and had many villages and settlements. This is probably so, for the mountain people, or descendants of the forefathers of the Moros, have that in their character which should, if developed, guarantee prosperous communities.

The spread of the faith of Mecca, with its precepts, has had the effect of disintegrating the old-time settlements and



SUBANOS FROM WESTERN MINDANAO.

These are mountain people, as the Moros were previous to their conversion to Mohammedanism.

villages of the mountaineers, who now seek safety in hidden valleys, or on high points from which they can watch the approach of the fierce Mohammedan slave hunter, and make such preparations or dispositions as they deem necessary, and as they abjectly fear the Moro, flight into the jungle is the rule.

As is common with a people who have no chronology, and few recorded narratives, the Moro has permitted fiction and fact, or more properly speaking, mythology and history

to become somewhat mixed, but as both may be of interest, we will slight neither, commencing, naturally, with the former, and take from Dr. Saleeby's book the following:

"Long ago, before the days of Kabungsuwan, Magindanao was covered by water, and the sea extended all over the lowlands, and nothing could be seen but mountains. The people lived on the highlands on both sides. They were numerous and prosperous, and many villages and settlements arose everywhere. But their prosperity and peace did not last very long. There appeared in the land pernicious monsters which devoured every human being they could reach. One of these terrible animals was called Kurita. It had many limbs and lived partly on land and partly in the sea. It haunted Mount Kabalalan and extirpated all animal life in its vicinity. The second was called Tarabūsaw. This ugly creature had the form of a man, but was very much larger. It was extremely voracious, and spread terror far and wide. It haunted Mount Matutun and its neighborhood.

"The third was a monstrous bird called Pah. This bird was so large when on the wing that it covered the sun and produced darkness underneath. Its eggs were as large as a house. It haunted Mount Bitan and the eastern Ranao region. It devoured the people and devastated the land. The people were awe-struck, and those who escaped hid themselves in the caves of the mountains.

"The fourth was a dreadful bird also, which had seven heads. It lived in Mount Gurayn and the adjacent country.

"The havoc was complete and the ruin of the land was awful. The sad news found its way to strange and far lands, and all nations felt sorry for the fate that befell Mindanao.

"When the news reached Raja Indarapatra, the king of Mantapuli, it grieved him very much and filled his heart with sympathy. Raja Indarapatra called his brother, Raja Sulayman (Solomon) and asked him to come to Mindanao to save the land from those destructive animals. Raja Sulayman was moved with sorrow, mingled with enthusiasm and zeal, and consented to come. Raja Indarapatra handed to his brother his ring and his kris, Juru Pakal, and wished him safety and success. But before they parted Raja Indarapatra took a sapling and planted it in the ground in front of his window. This he thought was a sure sign by

which he could tell what would happen to Sulayman after his departure. He said to Sulayman, if this tree lives you will live also; and if this tree dies, you will die too.

"Raja Sulayman left Mantapuli and came over to Mindanao in the air. He neither walked nor used a boat. The first place he reached was Kabalalan. There he stood on the summit of the mountain and viewed the land and the villages, but he could not see a single human being anywhere. The sight was woeful, and Raja Sulayman exclaimed, 'Alas, how pitiful and dreadful is this devastation!' As Sulayman uttered these words the whole mountain moved and shook, and suddenly there came out of the ground a dreadful animal, which attacked Sulayman and fixed its claws in his flesh. The minute Sulayman saw the Kurita he knew that it was the evil scourge of the land, and he immediately drew his sword and cut the Kurita to pieces.

"From there Sulayman went to Matutun. There he saw greater devastation and more awful condition of affairs. As he stood on the mountain he heard a noise in the forest and saw a movement in the trees. Soon there appeared Tarabūsaw, which drew near and gave a loud yell. It cautioned Sulayman and threatened to devour him. Sulayman in his turn threatened to kill Tarabūsaw. The animal said to Sulayman, 'If you kill me, I shall die the death of a martyr,' and as it said these words it broke large branches from the trees and assailed Sulayman. The struggle lasted a long while, until at last the animal was exhausted and fell to the ground; thereupon Sulayman struck it with his sword and killed it. As the animal was dying it looked up to Sulayman and congratulated him on his success. Sulayman answered and said, 'Your previous deeds brought this death on you.'

"The next place Sulayman went to was Mount Bitan. Here the devastation was worse still. Sulayman passed by many houses, but they were all vacant and not a soul lived there. 'Alas, what havoc and what misfortune has befallen this country!' he exclaimed, as he went on. But suddenly there came a darkness upon the land, and Sulayman wondered what it could mean. He looked up to the sky and beheld a wonderful and huge bird descending from the sky upon him. He at once recognized the bird and understood its purpose, and as quick as he could draw his sword, he struck the bird and cut off its wing. The bird fell dead, but its wing fell on Sulayman and killed him. At this same time Raja Indarapatra was sitting in his window, and he

looked and saw the little tree wither and dry up. 'Alas!' he said, 'Raja Sulayman is dead;' and he wept.

"Sad at heart, but full of determination and desire for revenge, he got up, put on his sword and belt, and came over to Mindanao to search for his brother. He traveled in the air with wonderful speed, and came to Kabalalan first. There he looked around and saw the bones of the Kurita, and concluded that his brother had been there and had gone. At Matutun he saw the bones of Tarabūsaw, but Sulayman was not there. So he passed on to Mount Bitā and resumed the search. There he saw the dead bird lying on the ground, and as he lifted the severed wing, he saw the bones of Sulayman, and recognized them by means of the sword that was lying by their side. As he looked at the sword and at the bones he was overwhelmed with grief, and wept with tears. Raising up his head, he turned around and beheld a small jar of water near him. He knew that the jar was sent down from Heaven, so he took it and poured its water on the bones of his brother, and his brother came to life again. Sulayman stood up, greeted his brother, and talked with him. Raja Indarapatra had thought that Sulayman was dead, but Sulayman assured him that he had not been dead, but that he had been asleep. Raja Indarapatra rejoiced, and life and happiness filled his heart.

"Raja Sulayman returned after that to Mantapuli, but Raja Indarapatra continued his march to Mount Gurayn. There he met the dreadful bird that had seven heads, and killed it with his sword, Juru Pakal.

"Having destroyed all these noxious animals, and having restored peace and safety to the land, Raja Indarapatra set himself searching for the people that might have escaped destruction. He was of the opinion that some people must have contrived to hide in the earth, and that they might be alive yet. One day during his search he saw a beautiful woman at some distance, and as he hastened to meet her she disappeared quickly through a hole in the ground where she was standing. Having become tired and pressed with hunger, he sat down on a rock to rest. Looking around for food, he saw a pot full of uncooked rice and a big fire on the ground in front of it. Coming to the fire he placed it between his legs and put the pot over his knees to cook the rice. While so occupied, he heard a person laugh and exclaim, 'Oh, what a powerful person this man is!' He turned around and, lo, there was an old woman near by looking at him and wondering how he could cook rice on a fire between

his legs. The woman drew nearer and conversed with Raja Indarapatra, who ate his rice and stood talking to her. He inquired of her about her escape and about the inhabitants of the land. She answered that most of them had been killed and devoured by the pernicious animals, but that a few were still alive. She and her old husband, she said, hid in a hollow tree and could not come out from their hiding place until Raja Sulayman killed the awful bird, Pah. The rest of the people and the datu, she continued, hid in a cave in the ground and did not dare to come out again. He urged her to lead him to the cave and show him the people, and she did so. The cave was very large, and on one side of it were the apartments of the Datu and his family. He was ushered into the presence of the Datu, and was quickly surrounded by all the people who were in the cave. He related to them his purpose and his mission and what he had accomplished, and asked them to come out and reinhabit the land. There he saw again the beautiful girl whom he had observed at the opening of the cave. She was the daughter of the Datu, and the Datu gave her to him in marriage in appreciation of the good he had done for them and the salvation he had brought to the land. The people came out of the cave and returned to their homes, where they lived in peace and prosperity again. At this time the sea had withdrawn, and the lowland had appeared.

"One day as Raja Indarapatra was considering his return home he remembered Sulayman's ring and went out to search for it. During the search he found a net near the water, and stopped to fish to replenish his provisions for the continuation of the march. The net caught a quantity of buganga fish, some of which he ate. Inside one of the fish he found his ring. This cheered Raja Indarapatra's heart and completed his joy. Later he bade his father-in-law and his wife good-bye and returned to Mantapuli pleased and happy.

"Raja Indarapatra's wife was pregnant at the time of their parting, and a few months later gave birth to twins, a boy and a girl. The boy's name was Rinamuntaw and the girl's was Rinayung. These two persons are supposed to be the ancestors of some of the Ranao tribes or Datus.

This narration was secured from Datu Kali Adam, who learned it from the late Maharaja Layla of Magindanao, and from Alad, one of the oldest and most intelligent Moros living. Alad says that Mantapuli was a very great city far in the land of the sunset, where, exactly, he does not know, but he is sure it was beyond the sea. Mantapuli was so large,

he said, and its people were so numerous, that it blurred the eyes to look at them move; they crushed the bamboo very fine if it was laid in the street one day.

"Raja Indarapatra is the mythological hero of Magindanao and Mantapuli is his city. These names are very frequently mentioned in Moro stories, and various miracles are ascribed to them.

"Kabalalan, Matutun, Bita, and Gurayn are the most prominent and picturesque peaks of Mindanao and Ranao with which the Moros are familiar. The whole narration is native and genuine, and is typical of the Magindanao style and superstitions. Some Arabic names and Mohammedan expressions have crept into the story, but they are really foreign and scarcely affect the color of the story.

"The animal Kurita seems to bear some resemblance to the big crocodiles that abound in the Rio Grande River. Tarabūsaw may signify a large variety of ape. A heinous bird is still worshiped and is greatly feared by the Tirurays and Manobos who live in the mountains south of Cotabato. The hateful Balbal, in which all Moros believe, is described as a night bird, and its call is supposed to be familiar and distinctly audible every night.

"What relation the names of Rinamuntaw and Rinayung bear to the ancestors of the Ranao Moros it will be very interesting to find out in the future."

A comparison of this mythological tale with the history of the introduction of Islamism will show that mythology and authentic happenings in this case are similar, and warrants us in saying that Moro history is interwoven with their mythology. For instance, the coming of Sulayman from Mantapuli in the land of the west to destroy the terrible pests Kurita, Tarabūsaw and Pah, may be taken as the allegorical representation of Kabungsuwan coming to Mindanao to free it from paganism.

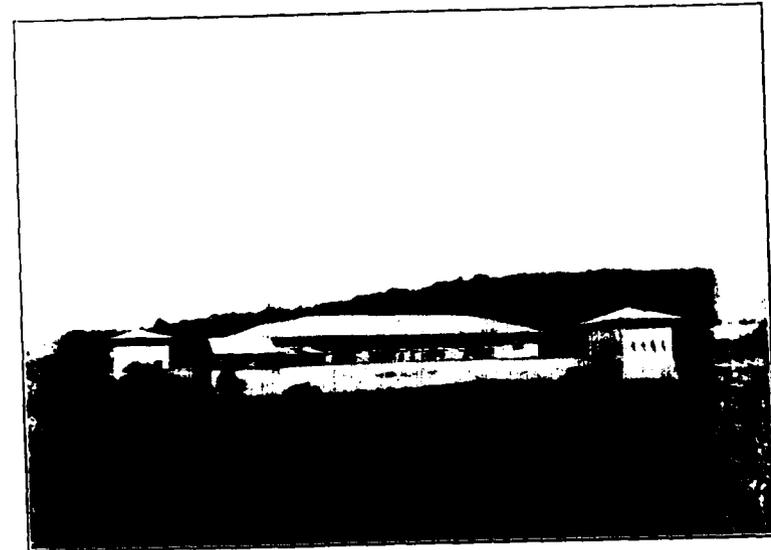
It may be that the perusal of the foregoing myth has excited the curiosity of the reader as to the location of the various places named in the story. If this is so, the map herewith marks the position of said points; and it is not out of place for a study of the Moro country.

The Pulangi is the Moro name for the river known to the Americans, Spaniards and Filipinos in the islands as the Rio Grande de Magindanao.

We will now pass to the early history of the Moros, and from this, work down to the present day.

Before Magellan discovered the Philippines to the nations of Europe, the religion of the Prophet had been established in Mindanao, and Mohammed Kabungsuwan, who introduced it from Jahore, had become the ruler of those whom he had converted. He came not as conqueror, simply as a missionary.

This zealot found where he landed, at the mouth of the Rio Grande de Magindanao, just such people as are the



A SPANISH BUILT FORT IN THE MORO COUNTRY.

present mountaineers of Mindanao—benevolent and kindly disposed toward strangers. His religion appealed to them, and we see in the Moro of to-day the great change that the precepts of Mohammed have worked in a people whose ancestors were rude pagans or heathens.

Kabungsuwan was the son of a Malay mother and an Arabian father, most of the people of Jahore being pure Malays. They had been converted to the religion of Mohammed some centuries before by Arabians who wandered

through India and the Malay Peninsula, spreading their faith. Later, some of these men came to Mindanao and Jolo, but Kabungsuwan was the pioneer Mohammedan missionary. Following him came Arab priests, Chereefs, etc., and some of these are now to be seen in the Moro settlements.

It is not strange that Kabungsuwan made converts quickly when we take into consideration the fact that he, and the few followers he brought with him from Jahore were of the same race as the people they came to work among. That is, Kabungsuwan's mother was a Malay, and many of his followers were full-blooded Malays.

Kabungsuwan married and settled in Mindanao, and one of his daughters, Putri Mamur, married Rajah Pulwa, the Sultan of Bwyan. From this union are descended the Moros of standing in the Cotabato Valley known to the Americans, viz: Datu Utu of Sapacan, Datu Ali of Tinunkup, Datu Mastura of Cotabato, and Rajah Putri (The Princesa) the widow of Datu Utu, who lives near Cotabato. As Kabungsuwan claimed to be a Chereef, or direct descendant of the Prophet, it is not to be wondered at that the Moros of the Cotabato Valley look up to and venerate his descendants just named.

The genealogy of these descendants has been handed down, in Arabic, from generation to generation and kept by the Panditas (priests) as well as by the Datus themselves. Datu Mastura and Chereef Ali (pandita) of Sapacan have both kept a genealogy of the royal line in the Cotabato Valley. The latter was reported by the Moros killed in a skirmish with the Provisional Troop, Fourteenth Cavalry, which the writer had the honor to command on December 16, 1904, at Buduc, on the Allah River in Mindanao. The following is a prayer taken from his turban on that occasion:

"We begin our task, and I know that no bullet can harm me; God and Mohammed will protect me. I believe in the great teachers, Abubeker, Othman and Ali. God deliver me from all evil. I praise Mohammed on account of his works, and ask his protection."

The above invocation was in Arabic, and translated for the writer by one of the secretaries to Governor Van Horn of the District of Cotabato.

The fact that the most prominent Moros of the Cotabato Valley, Sibuguey, and the Ranao region, are descended from Kabungsuwan, makes it clear why the Datus are revered by the common Moros, who when they approach their superiors, do so most humbly on hands and knees.

The Moro believes that the acme of immortal bliss is attained by having this life ended on the field of battle, or as



MORO CHURCH NEAR CAMP VICARS, MINDANAO.

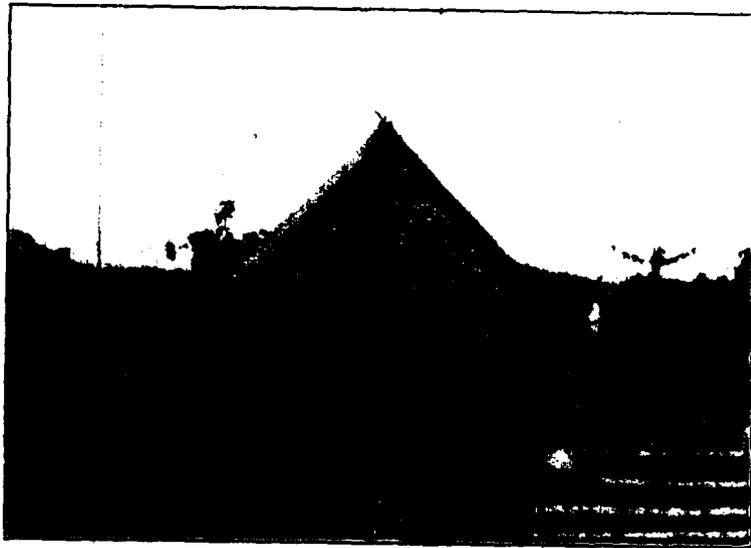
a Juramentado—that death in either of these two ways entitles him to a place in the highest heaven, where every man is a prince, served by slaves, and attended by beautiful hours.

A Juramentado is one who runs amuck (the word is Spanish, and comes from jurar, to take an oath). This the Moro does. He takes an oath before a pandita to kill as many Christians as he can. He runs with his kris like a

mad dog, bent on doing harm to man, woman, or child in his terrible frenzy, until shot down by some soldier.

The following is General Corbin's estimate of the Moro:

"The Moros are religious fanatics, and are not amenable to the influences of other peoples. They owe no allegiance except to their Mohammedan faith, and are liable to cause trouble at any time. Their acts have no more relation to the conduct of the Filipinos than the Apache outbreaks in former days in Arizona with the situation in other States and Territories.



MORO HOUSE SUCH AS SEEN IN THE RIO GRANDE VALLEY.

"No man can tell what the Moros are going to do. They are just as likely to fight among themselves as to attack others. When an individual Moro feels what he calls an inspiration he runs amuck and kills all he can. This condition has always existed and, presumably, always will, until the race becomes extinct. We are now educating many of their children, and from this enlightened generation there may soon spring a new and better type of Moro.

"Probably there are about 5,000 Moros on the island of Jolo. The number on Mindanao has been estimated as high as 40,000, but it is impossible to obtain a census, and this figure may be much exaggerated."

The Moros of Mindanao have never been united as a single power, but have always formed several distinct Sultanates. The most important are those of Magindanao, capital at Cotabato, and Bwyan, capital at Dulauan (Piang's place), both in the Rio Grande Valley; and Madaya, Ramain, Taracca and Bacolod, around Lake Lanao, with the kingdom of Illana on the east shore of Illana Bay, and that of Sibuguey bordering Sibuguey Bay. The Samals may also be considered, their country being around Zamboanga.

The Spaniards never more than nominally conquered Mindanao, being content to simply fortify and hold a few settlements, mainly on the coast, viz: Iligan, Zamboanga, Margos-sa-tubig, Malabang, Parang and Cotabato. Their most remote outposts in the Moro country were Reina Regente and Pikit, both in the Rio Grande Valley, the former about forty and the latter seventy miles from its mouth.

As the Spaniards never went much into the interior of Mindanao, it was left for the Americans to explore the country more. Captain R. O. VanHorn, Seventeenth Infantry, went from Cotabato to Cagayan on the north coast, following the Rio Grande to the watershed which divides it from the Rio de Cagayan, which stream he followed down to its mouth. Other explorations and expeditions have been made into the country, the writer being in command of a detachment which crossed the island from Misamis on Panquil Bay, to Margos-sa tubig on Dumanquilis Bay, in June and July, 1904.

In 1597 the Spaniards under Marquis Rodriguez first invaded Mindanao, and were driven out by the Moro Datus Silungan and Bwisan. Rodriguez, it is supposed, now sailed around to the north coast of Mindanao, anchored off where Iligan now stands, and sent an expedition to Lake Lanao. The Moro tradition of this invasion states that there were 400 Spaniards in armor and casques in this party, and not one of them got back to the ships. That something of this sort happened on the shores of Lake Lanao can hardly be doubted, for now and then an old Spanish helmet or coat of mail is brought to one of the market places frequented by Americans and offered for sale.

In 1636 General Corcuera made a successful invasion of the Magindanao country. At this time there was a Sultan, very famous among the Moros for his prowess, named Dipatwan Qudrat, called by the Spaniards "Corralat." This Qudrat was the son of Bwisan who drove Rodriguez from the country, and he fought the Spaniards bitterly, and held them off for many years, his pirates terrorizing Luzon and the Visayas, and it was not till 1636 that he was checked and



MORO WOMAN AND CHILDREN.

This is one of the wives of Datu Grande, who lives near the south shore of Lake Lanao, Mindanao.

forced to acknowledge the sovereignty of Spain. Corcuera took from Qudrat eight large cannons, twenty-seven lantaka and one hundred muskets.

In 1649 this great man, for he was the greatest Sultan Magindanao ever had, again defied the Spaniards and became independent. The Spaniards now held Mindanao at intermittent intervals until it was ceded to the United States. In 1886 they made a campaign against Datu Utu of Sapacan, who resisted vigorously, but he was finally brought to terms.

The Spaniards made some campaigns against the Ranao Moros, and these expeditions generally started from Iligan.

The writer was stationed in the town of Iligan for five months during 1903 and 1904, and while there gained access, through his acquaintance with the Catholic priest of the town, Father Antonio Bartolome, to some of the church records relating to Spanish campaigns against the Moros of that region. Some of these were translated, and as they may be of interest, are presented herewith:

"On the 14th of November, 1886, an expedition was organized in this town to go into the interior of the island with the object of procuring data as to the geographical position of the lake called Lanao, which, according to rumor, is the center of the Moro county. This expedition was also to find the most practical road to said lake.

"In order that the expedition might be a success, and not too costly, the Governor of the District, General Emilio Terrero ordered that the road be prepared by degrees, and had a meeting with the most influential Datus.

"On the above date the expedition set forth under the command of the Governor, and there was with it the Commission sent by the Governor General, which was composed of Major Don Miguel G. Maldonado, the second secretary of the Governor General, the official interpreter of Moro dialects, Don Pedro Ortuoste, the third secretary of the Governor General as photographer, and Don Alfonso Ferrinat; also thirty or forty soldiers under Lieutenant Don Andres Aquilocho, and sixty men from Iligan under one Ramirez.

At the village of Bogsagat the expedition was detained two days by the opposition of one or two Datus who wished to collect a toll. Up to this time nothing of interest had happened, but at all stages of progress the Moros seemed excited and apparently showed disapproval of the Spaniards being in their country.

"To one of the Datus a gold headed cane was presented, but he took off the head for buttons and threw the stick away. In this manner these savages show their esteem for presents given by the authorities.

"The only satisfactory result of the expedition is the map of the lake, and the road to it, made by Don Miguel G. Maldonado, and this map ought to adorn the office of the Governor General and the Commander of the District."

"Father JUAN RUIZ.

"Iligan, December 30, 1886."

"On the 1st of December, 1890, at 8:00 o'clock in the morning, Moros gathered by Amay Pagpag, entered the barrio of Manticao and killed twenty-five Christians, capturing many women and children who were taken in church, it being Sunday and the hour of worship. They took 130 captives all told.

"The Moros were well armed with rifles, acquired no doubt from smugglers on the south coast of this island, and this is the reason why they consider themselves so confident and strong in attacking almost defenseless towns.

"Their first intention was to attack Iligan, but this town being more or less prepared for the attack, it was passed by. In going by Iligan they made it appear as though they were on a fray against the Montescos, a tribe of the interior.

"After passing Iligan, their guide, the Sultan of Parau, who had always lived near the coast, directed them against Manticao, knowing that the people living there were practically unarmed.

"Father JUAN RUIZ.

"ILIGAN, JANUARY 1, 1890."

* * *

"On the 15th August, 1891, arrived at this port the ship of the Royal Navy, *Marquis del Duero* conveying the *San Quintin*, *Cebu* and *Manila*, carrying aboard a force to operate at Lanao.

"At 7 in the morning they disembarked on the far side of the Linamon River. The force that landed was two columns, the first composed of 500 native troops under the immediate command of a captain of infantry, Don Guillermo Pintos, and the second of three hundred Spaniards, commanded by Señor Don Luis Huertas, as a reserve for the first.

"They immediately commenced to experience the inclemency of the weather, and after marching four days arrived at the pueblo (town) of Marahui. Both columns met many parties of Moros of the rancherias (settlements) of Marantao, Maol and Canayan, who did not offer a very strong resistance, as only eight dead were counted, but it is supposed that many more were wounded. At Marahui the opposition was no greater, the people living on the edge of the lake having retired into the interior. The principal cotta (fort) made a good resistance until the assault; they lost thirty-five killed, some wounded, much material captured and numbers of houses burned.

"On our side nineteen were wounded, among them Don Miguel Ruano, lieutenant of artillery. We also had five killed, including a Spanish artilleryman.

"As these two columns left the coast hurriedly with only four days rations, they were quickly followed up by another detachment of four hundred infantry under Lieutenant Colonel Don Alfonso Cortijo, which conducted a convoy with rations for the whole force which was to make expeditions from the rancheria of Balut as a base.

"These two sections of the force, however, did not come together as was intended owing to the fact that a guide, furnished by the Sultan of Balut, was instructed by that treacherous chief to keep them apart. For this piece of treachery the officer commanding the convoy ordered that Datu Alack, the guide, should be fined fifty pesos (\$25.00), but the colonel commanding, through timidity, not only revoked the order giving fifty pesos, but paid Alack more money, with the understanding that the Moros were not to molest any of the people of this locality.

"After the above expeditions, one was sent against the pueblo of Munay under command of Lieutenant Colonel Cortijo, who had with him a battery of artillery, commanded by Captain Don Adolfo Barzanotlano, also the militia of this town, and of Misamis.

"This force was sent to take a cotta, poorly defended, and to raze the pueblo. The command on the way built a fort at Liangan, and left there a garrison of sixty infantry and ten artillery. It then proceeded to Momungan, where another small fort was put up and called Weyler. Here I celebrated a campaign mass, blessed the fort, and hoisted the flag of Castilla, which was to remain under the charge of a special guard of our troops.

"Although many flags fly from small forts in this region, the Moros are still at large and very rebellious, and make it dangerous for one to be in this section.

"The results of all these expeditions have actually been nothing which an observer can see. The Moros are still in rebellion and have not been made to feel the sting of a real war.

"As one who has some little knowledge of these people, it is my opinion that they will continue to be aggressive and molest us in numbers more or less large.

"Father JUAN RUIZ.

"ILIGAN, October 13, 1891."

"On the 15th December, 1892, several rancherias of the lake region, among them those of Uato and Rororajos, making in all a large party of Moros, sailed forth to attack the fort at Momungan.

"The soldiers learning of the approach of the Moros left the fort to meet them under Major Don Nicolas Soro. A fight occurred, in which a servant of the Major was killed, and several of our soldiers were wounded, the Moros leaving seven dead on the field. From subsequent reports it was learned that eighty-two Moros in all were killed.

"Major Soro took the seven dead Moros to Momungan and buried them in a plot which he laid out as a Moro cemetery. He wrote to the relatives of the dead so that they might, if they desired, come and pray at the graves.

Father CIPRIANO LIZARRAGA.

"ILIGAN, December 27, 1892."

* * *

"On the 9th July, 1894, at a place called Calanajan, between the fort at Momungan and Pantar, about two hundred Moros surprised a column of two hundred men under Captain Don Pedro Salaron, killing the Captain and seventeen men, and wounding fifty-five.

"The Moros carried off fifty-one rifles, and left twenty of their own dead on the field.

"On the 24th, seeing that they had done so well on the 9th, about a thousand Moros prepared an ambush near the shores of the Lake of Calanajan, and waited for the Seventy-fourth Regiment which was on its way from Caba-saran to Momungan, but the lieutenant colonel commanding the regiment having been informed that the Moros were waiting at the above lake, just before reaching there sent out scouts to locate them.

"They were discovered lying in wait, and the regiment surprised them by coming from another direction. Volleys were poured into them, and at this juncture the Seventy-first and Seventy-third Regiments arrived on the field from Momungan, surrounding them completely. The Moros now saw that they were lost, and many jumped into the lake, where they were killed.

"Our losses were two soldiers killed, and the lieutenant colonel, Don Pedro del Real, of the Seventy-first Regiment, and a staff captain, wounded.



Map of that section of Mindanao showing the country of the Moros, and incidentally that part of the island and adjacent waters travelled over by the undersigned.

This map was made for the purpose of a study on the Moros of Mindanao.

The second sinuous line with the little hachures at the base of the sea shore is for the purpose of showing how the mountains slope, and for indicating the numerous water courses.

Red ink is used to show the names of the different tribes and the country occupied by them.

C. Smith
1898

Scale of miles, 0 1 2 3 4

"The Moros lost about 500, as over 200 dead were found on the field. From the killed it is estimated that about 500 would be the loss.

"Father CIPRIANO LIZARRAGA.

"ILIGAN, August 1, 1894."

* * *

Officers of the army who have served at Camp Overton or Camp Marahui, Mindanao, know Tiradores Hill (Sharpshooter's Hill) between those two posts, and will recognize that the last of the foregoing narratives is a description of the one big fight the Spaniards had with the Moros in northern Mindanao in recent years, and of which the people of Iligan always tell.

To the knowledge of the writer there is no lake near Tiradores Hill, but at its foot is a creek which runs through a very low country that in the rainy season could overflow and easily become a lagoon or lake, and the Lake of Calan-ajan, spoken of in the narrative, is most likely the above stream overflowed.

The Moro is frugal and temperate, his main food being rice, which he cultivates and buys from Chinese merchants in the towns bordering his country. Tropical fruits and fish (the Moro is a great water man) are also articles of diet. He never uses lard, grease, or tallow, and abhors pork, which the Koran teaches is unclean.

The abnormal prejudice against pork may be shown by the fact when American troops first went to Mindanao, considerable trouble was experienced with the Datus who ran the pack trains from the coast stations to supply the posts in the interior. Bacon, a very important component of the soldier's ration, was the one article that they absolutely refused to allow their henchmen to handle. So averse were they to packing bacon that the army pack trains were used for this, Moros carrying other provisions.

All intoxicants are shunned by them, this being a precept of the Koran. We doubt very much if a drunken Moro has ever been seen by a Christian.

They are a very filthy people as regards the person and around their houses, being conspicuous in the use of the

betel nut, which stains their teeth and gives them a most savage appearance.

Every Datu, Sultan, Pandita, and person of prominence, as well as the common people, use this narcotic in a most general and prominent manner. The people of rank or importance have their buyo (betel) bearers who attend them, carrying a brass tray with small boxes of the same material containing the nut, lime, etc., required for the "chew."

A good idea of their dress may be gotten from the photographs in this article, but we may add that brilliant colors are the most prevalent in their attire.

The Moro is fanatical and brave in war, and if well armed would make a foe not to be despised. He is by far the most martial of all the Philippine tribes, and lives in a country abounding in swift running streams, swamps, forests, jungle, and high and precipitous mountains, to say nothing of bad weather conditions and insect pests, which makes it a hard land to campaign in.

The country is so close, and crowded with vegetation, that it is almost impossible to get over it except by the trails, and these the Moro is cute enough to fortify or entrench at their most dangerous places, generally behind a mucky swamp or around a bend in the deep jungle or high cane grass, where troops are apt to run on them suddenly and be surprised.

Those who do not know the Moro or his country should be sparing in their criticism of an officer who with his party falls into an ambushade. The Apache Indian in the old days of Arizona was not so difficult to come up with and fight as is the Mohammedan fanatic of the Philippines.

In concluding this paper, the writer wishes to state that he has quoted very freely from the works of Dr. Saleeby; and he has also taken extracts from the writings of others whose knowledge of the Moro is entitled to respect. To these gentlemen, and to Dr. Hubert Grieger, U. S. Army, from whom the photographs that illustrate this article were obtained, our most sincere thanks are tendered.

THE DIAMOND HITCH.

BY JNO. W. PULLMAN, COLONEL AND A. Q. M. GENERAL, U. S. ARMY.

To the Editor:

IN your July number, under the article, "Pack Trains and Packing," you ask the question, "Are we ready to do away with the expert packer? The JOURNAL most emphatically says, No!"

In this stand you will be abundantly, if not unanimously sustained, by every cavalry officer and by every other officer who has ever had to cut loose from his wagons and depend on his pack animals. There can be no argument on that point.

But if you want fairly to present existing conditions as they have come to many, you should put the question this way: "Has the time come when we *have* to seek some way to *replace* the skilled packer and the diamond hitch?" By skilled packer is meant the professional civilian packer, proficient in all the details of setting up and fitting the aparejo and the use of the diamond hitch in securing miscellaneous cargo.

This question came before the General Staff, War Department, three years ago and came, it is understood, in a serious way, the result of complaints and of embarrassing and, at times, costly experiences during the Spanish War and campaigns in the Philippines. The question appeared to be of such gravity as to demand earnest attention at the hands of the War Department, and it came to the Quartermaster General's office for recommendation.

Prominent commanders had been hampered by their inability to find and employ men with a practical knowledge of the lash rope on the aparejo. Such skill was scarce, in fact could not be supplied.

These conditions would occur again should a body of expert *aparejo* packers suddenly be required. The scarcity of such men would be felt more and more as the years rolled by. In the western States, territories and countries contiguous—their birthplace—the breed of packers, so plentiful thirty to forty years ago, is dying out because their business is dying out. Wagon roads, steam boats and railroads have gradually curtailed and, at the present time, has practically killed the commercial pack train business and the large numbers of stalwart, hardy men, who followed packing as a living have, of necessity, sought other employment and the knowledge of their trade is being forgotten. There is no demand to keep the breed alive.

Armies in the field at war can never get away from the absolute need of pack animal transportation in some shape. The demands for such means of transportation in war are many and at times the necessity, vital. To-day we have on hand a moderate stock of *aparejos* and by hard drumming throughout the country we *might* scare up a few score of skilled packers, but after to-day, ten, twenty, thirty years from now—what? If preparedness is wisdom we have to look into the future.

The undersigned is an *aparejo* crank from necessity, training and experience. His boyhood was spent in the *aparejo* packing business and he followed it for a living in the sixties, in the Northwest. In the cavalry he had eighty per cent. of his troop trained in the packer's art and skilled in the use of the diamond hitch. How many enlisted men know this business to-day?

There is no device yet produced which will protect the pack animal's body from bruising and injury as well as the *aparejo* does. We have got to have it. Now then, how are we going to provide our future armies in the field with skilled *aparejo* packers? Two ways immediately present themselves.

The first is, as we cannot depend with any degree of certainty upon finding such men in sufficient numbers, to *train them*. Establish a packer's school, say at Fort Riley, and turn out year by year trained packers

But see the objection to this method. We would have to pay the student packers and their instructors wages. After we had trained and graduated them what would we do with them? A special appropriation by congress would be necessary, year after year, to meet the expenses of the school. It is much doubted if we could obtain such appropriations.

The second method presenting itself is, to *teach* a certain number of *enlisted men*, in *every organization* of the army, the packer's art. To do this, all that is necessary is to incorporate an *aparejo-diamond-hitch-drill* manual in the drill regulations of *every arm*. The equipment required would be only about four complete sets of *aparejo* rigging at each post. To day, the instructors could easily be found for the start, from among our civilian packers and, after that, the drilled men could act as instructors in each organization year after year.

To make this system a real practical success, a skilled pack master should be employed by the quartermaster's department, in each military department, inspecting, controlling and regulating the pack drill in his department. Twenty per cent. of the strength of each organization should be taught and made thoroughly proficient in packing. By this means we would always have a trained body of packers and be independent in that line.

This method is simple, plain and entirely practical and the expense would be trifling. Can it be done and will it be done? I doubt it. The General Staff would have to take the initiative. Do they or will they consider the question of sufficient gravity to take it up?

When the question, asked above, came up three years ago, as related, it was apparently answered in the affirmative *at that time*, and the undersigned was designated by the Quartermaster General to devise ways and means to provide a remedy. After much thought, labor and experiment the so called Pullman Pack Outfit resulted. It was no hap-hazard production, no mere whim or desire for innovation, but the result of a conscientious effort to fulfill an ordered duty. There appeared to be a necessity and no escape from the need of meeting it.

The sole idea was, can the aparejo and its good principles be maintained and the necessity for ropes and skilled packers, for military packing only, be done away with? Can something be brought forward to carry on pack animals, rations, ammunition and ordinary military field impedimenta, which the ordinary laborer or soldier can handle and use without special previous training? The writer is positive, from long practical experience, that the combination of the good points of the aparejo, the cross tree, the Indian method of swinging loads to the raw hide, high treed saddle and the pannier system, as shown in the Pullman Pack, fills the bill as near as may be. Of course some experimental trials have brought forth some criticisms and exposed defects, but none that, so far as shown or reported to me, are of such a nature that they cannot, in whole or part be remedied, or remedied enough anyway, to meet the necessity detailed above for a simple system for field military packing purposes.

The complete plan was, in addition to the saddle and panniers, to have the permanent steel ribbing and the setting up of the aparejos done at the aparejo factory. This done, a little daily adjusting of the hay filling of the aparejo, to meet conformation and "Bunches," (method shown in Pack Manual) is all the skill required. Of course higher authority would have to step in and have the supply departments coordinate and have all packages carrying supplies made of a uniform size and weight to snugly fit the sized pannier adopted.

If it is granted that we have to have something, it is open to the service for some one to devise and present something better than the Pullman Pack.

The simple problem is, if we can not get packers what are we going to do? In the issue of a battle or the success of a campaign we cannot consider expense. Panniers and packs may injure animals sides, wagons be broken and destroyed, railroads burnt up, men and animals killed, but we have got to go on, we have got to "get there."

Let us get the packers, if we can, and stick to the diamond hitch. If not, let us think what shall be done. You have opened up a subject of special interest to the service at large and peculiarly to the cavalry arm, to whose flying columns a pack train is indispensable. Let critics and designers get busy and suggest something.

FROM OUTING.

THE following extract is taken from an article in the June, 1906, *Outing* by Mr. Dan Beard. The article is entitled, "How to Pack a Pack Horse," and it serves to show that the army is not the only place where pack horses are used nor are army officers and soldiers the only ones interested in the question of pack transportation.

"In a previous number of this magazine, I told how to pack and unpack one's duffle for wilderness travel. It is now incumbent upon me to tell how to secure the dunnage on a pack animal's back.

"In the first place the pack animal should be blindfolded. If it is never led nor forced to move while blindfolded it soon learns to stand perfectly still as long as the bandage is over its eyes.

"We will suppose you have the pack saddle, lash-rope, cinch, aparejo, and all the needful accoutrements of a pack animal. The aparejo, by the way, is a leather or canvas bag stretched over a light springy framework of willow and stuffed with straw. It must be stiff at the edges and corners where the pull comes."

Various illustrations are used so as to show the complete method of tying the load. Both methods of with and without top load are described. Then follow directions of how to throw the sling rope for mountain pack saddle for side or top pack. Directions are also given of how to throw the North Rocky Mountain Diamond.

While the article is quite short it nevertheless gives the directions in ample language. Thirty small illustrations accompany the article.

The *JOURNAL* trusts that Colonel Pullman's note of warning will be heeded and interest taken by our officers in this subject. We are not particularly worried over the diamond hitch. We believe ordinarily intelligent men can be taught

how to throw the diamond hitch in a very short time. But what is required are men that know how to rig up the aparejo, and this knowledge can be gained only by experience. And so we stated in our last issue that we were not ready to do away with the expert packer. We can never do away with him unless we wish to do away with pack transportation altogether. So means must be taken to secure his services in the future. Throwing the diamond hitch is not a sure mark of the expert.

Mr. Daly, chief packer, has been at work during the summer experimenting with a device that will make the diamond hitch a mechanical contrivance. We had hoped to have photographs of this device for this issue, but it was not completed in time to secure them. It is needless to say that all mechanical devices will fail as far as utility is concerned when compared with the sling rope. But things must be done, as Colonel Pullman intimates, and interest should not flag in this subject which is of such vital importance to the cavalry.

MOOT COURTS.

The following is given to show the character of some of the work done at the Infantry and Cavalry School, Fort Leavenworth, Kansas, under the direction of the Law Department.

The student officers were allowed to get information from any source they could, except from the officers on duty with the department, but the papers submitted must be their own conclusions as derived from their study of the subject. Two hours were allotted for each exercise, though it was found that much more time was taken by the officers in the preparation of their papers. Due to this fact the system of instruction has been somewhat changed and means have been adopted to prevent student officers from spending so much time on the preparation of similiar papers.

The answers of First Lieutenant E. A. Kreger, Twentieth Infantry, follow the exercise. They are given to show the class of work that is being done by the student officers of the school. Lieutenant Kreger's answers are much fuller than was intended by the Department, and papers of far shorter length received as high a mark as did his. However, anyone interested in the subject will be able from reading his answers to ascertain the approved solution to the questions presented.

EXERCISE NO. 3.

I. The following charges have been preferred, and a court martial composed of officers of the First Infantry convened for the trial of the accused. The order convening the court is dated July 1, 1908.

Charge: Embezzlement, in violation of the Sixtieth Article of War.

Specification: In that Second Lieutenant Henry Stiles, First United States Infantry, while serving as captain and

commissary of the Fortieth Regiment, New York National Guard, a militia regiment duly mustered into the service of the United States, and having in his official possession as commissary of the regiment, one hundred dollars (\$100.00), money of the United States, furnished and intended for the military service thereof, did fraudulently, unlawfully and feloniously convert to his own use and did embezzle the same.

This at Albany, N. Y., on the 30th day of June, 1906.

The Fortieth Regiment, New York National Guard, was mustered into the service of the United States, June 1, 1906, and mustered out (the accused included) nine months later. The day following the muster out the accused was commissioned Second Lieutenant of the First United States Infantry.

Based upon the above statement of facts the accused makes three pleas in bar of trial by the court-martial: what are they and what, in your opinion, should have been the action of the court in each case? Give reasons.

II. A soldier, Frederick Skow, Company M, Twentieth Infantry, deserted in the Philippines in 1900, during a time of war; he subsequently came into the hands of the military authorities but was not tried for some time, he claiming that his absence was due to the fact that he was a prisoner in the hands of the enemy; he was finally tried for desertion, joining the enemy, etc.

(a) State when the Statute of Limitation (103d Article) began to operate in his favor and when it could have been pleaded as an absolute bar of trial.

(b) Had he deserted in time of peace and not in face of the enemy when would the Statute have begun to operate in his favor as to the desertion?

III. Supposing Skow had been discharged from the service under the misapprehension that he had been a bonafide prisoner of war, could he subsequently have been tried by court-martial after the real facts had become known? In other words would the 48th Article of War operate to continue his liability after his separation from the service?

IV. On a military reservation where the jurisdiction of the United States is exclusive, the following facts occurred :

Contrary to law the cattle of a ranchman by the name of Boyle were grazing at large and broke down the reservation fence where the troops had a garden; they destroyed a great deal of property before the gardner, Private Jones, discovered them. He drove them out but in doing so, and while still on the reservation, threw a stone breaking off the horn of a valuable cow, thereby causing her death. Boyle coming upon the scene at that time assaulted and severely injured Private Jones, who was rescued by his comrades, the latter seizing Boyle and taking him to the commanding officer; he upheld the men, claiming that they acted under his orders.

(a) Can the commanding officer arrest or detain Boyle? If so, how long can he hold him and what must ultimately be done with the prisoner?

(b) Can Boyle be prosecuted criminally? If so, in what courts, by whom and for what?

(c) Can Boyle be prosecuted civilly? If so, in what courts, by whom and for what?

(d) Can Boyle prosecute anyone who has taken part in the affair? If so, whom, in what courts and for what?

EXERCISE NO. 3.

I. To the charge and specification, under the conditions set forth, the accused may make the following pleas in bar of trial:

1. That the court is without jurisdiction to try him for the reason that the composition of the court is in violation of the 77th Article of War.

The court, composed as it is of officers of the regular establishment, is without jurisdiction over the person of the accused, as the 77th Article of War provides that officers of the regular army shall not be competent to sit on courts-martial to try officers or soldiers of other forces, except as provided in Article 78. The exception provided in Article 78 does not reach the case at bar, and thus it is left within the rule laid down in the 77th Article. Though the accused

is at present an officer of the regular establishment, he did not belong to the regular service at the time the alleged offense was committed. At the time of the commission of the offense, or at any time thereafter within the period specified in the 103d Article of War, the statute of limitations, and while the accused was still serving as a volunteer or a militiaman duly mustered into the service of the United States, though amenable to trial, the accused could not legally be held to answer to a court-martial composed of regular officers. This doctrine, though directly opposite to the views of the War Department, was laid down in the case of Deming vs. McClaughry, by the Circuit Court of Appeals (113 Fed. Rep. 639), and affirmed by the Supreme Court of the United States (186 U. S. Sup. Ct. Rep. 49). The gist of the decision is that it is plain that Congress intended to place volunteers and all other persons in the temporary service upon the same basis, for purposes of trial, as the militia; that officers of the regular army are incompetent, under the 77th Article of War, to try officers or soldiers of the volunteer forces raised under the Acts of April 22d, 1898, and March 2, 1899; that no officer is authorized but that every officer is forbidden to constitute of officers of the regular army a court-martial to try a volunteer; and that the accused cannot, by any act of his, confer upon a court improperly constituted the jurisdiction to try him. The amenability of the accused to trial is based upon his status at the time the offense was committed. At that time this court could not have tried him. His subsequent entry into the regular service cannot serve to create a jurisdiction that did not exist at the time the offense was committed. (Par. 1927 Dig. Opin. J. A. G.). The law under which Lieutenant Stiles performed his volunteer service is the law referred to in the decisions above. In spite of his entry into the regular service, the accused is entitled, as to this offense, to the benefit of any plea growing out his status as an officer of "other forces" at the time the offense was committed.

The court would, for the reasons stated, properly sustain this plea.

2. That the accused cannot be held to answer for the offense as charged, for the reason that trial is barred by the statute of limitations, the 103d Article of War.

The offense as charged, was committed on the 30th day of June, 1906. The order convening the court is dated July 1, 1908, more than two years after the offense, as charged, was committed. The charges could not have been referred for trial before the convening order for the court was issued. There is no allegation that the accused had absented himself so that "some other manifest impediment" to trial had existed, to prevent the statute of limitations from running. In fact the conditions as they appear, the service of the accused, for some months after the offense is said to have been committed, in the volunteer establishment, his muster-out from that service, his appointment to the regular service within the short space of one month, and his service in the regular army since then, preclude any probability if not any possibility of the existence of any cause that would prevent the statute from operating in favor of the accused. It is the duty of the government to prosecute an alleged offender within a reasonable, that is within the statutory time. Failing to do this the statute forbids any criminal proceedings, when the accused pleads the limitation. It has been expressly held that the statute limits the liability of the accused to trial after discharge, imposed by the last clause of Article 60. (Davis page 536.) The case comes squarely within the provisions of the first clause of the 103d Article of War, and within the authoritative interpretations of the article.

The court will, therefore, properly sustain this plea.

3. That the court is without jurisdiction to try the accused for the offense as alleged, for the reason that when the accused was mustered out of the volunteer service he became a civilian; that thereafter he ceased to be amenable to military jurisdiction; and that the concluding clause of the 60th Article of War under which it is sought to hold the accused is unconstitutional. The concluding clause of the 60th Article of War seeks to make individuals, who, by reason of their separation from the military service, have become

civilians, amenable for trial by court-martial. This is a deprivation of the constitutional right of civilians to trial by jury. The provision was enacted as a war measure, at a time when civil rights could not be as jealously guarded as in ordinary times; at a time when the safety of the nation demanded energetic and sometimes drastic measures. Even then the provision was relied upon as giving jurisdiction in only a very few cases, and since the Civil War there appears to be no case in which the provision has been invoked. If the accused had ceased, during the time intervening between his volunteer service and his entry into regular service, to be triable by a court martial, his subsequent entry into the regular service cannot operate to revive a jurisdiction once lapsed. (Par. 1027, Dig. Opin. J. A. G.). The case of Deming vs McClaughry, previously cited, bears upon the same point, in that it was held in that case that the accused could not by any act or acquiescence on his part confer jurisdiction upon a tribunal that but for such act would be without jurisdiction. Though not exactly in point, G. O. 157, W. D., 1904, points in the same direction.

I believe that the court would be justified in not sustaining this plea, not because it is wholly without merit, but because the constitutionality of the part of the article in question has never been passed upon judicially, though it has been questioned, and because the sustaining of the other two pleas will terminate the trial in any event for the time being until the proceedings thus far can have been forwarded to the reviewing authority for his action thereon. However, I cannot escape the conclusion that a civil court in passing upon the question might or probably would hold that the plea should probably have been sustained.

Note: The accused might possibly feel justified in making the plea of constructive pardon, on the ground that his appointment to the regular service after the commission of the alleged offense was in effect a pardon; or that the discharge from the volunteer service, being a formal waiver of military jurisdiction over him, operated in the same way. As to the first proposition, the data is not sufficient. Circumstances might arise in which an appointment would

operate as a constructive pardon, but more, I think, would have to appear than is here of record to make the plea good. The second proposition is bound up with the question of the constitutionality of the 60th Article of War, and the decision of the court on that plea would bring about a like decision on a plea of the kind suggested. I do not believe therefore, that the accused would benefit by raising the question in the last form.

Any one of the pleas being allowed by the court, the proceedings are, for the time at least, terminated, and the court adjourns, the record of its action being forthwith transmitted to the reviewing authority.

II. (a) The statute of limitation began to run in favor of Private Skow when he came into the hands of the military authorities again after his desertion. The desertion being in time of war and in the face of the enemy, the limitation in the Act of April 11, 1890, the latter half of the 103d Article of War, is superseded by the general limitation which is contained in the first clause of the Article. (Davis, p. 113).

The statute would be an absolute bar to trial when two years had elapsed during which the accused could have been brought to trial, that is two years* after his again coming into the hands of the military authorities, provided of course he did not again absent himself, and that in the mean time no "other manifest impediment," as provided in the 103d Article of War, prevented the exercise of the military jurisdiction.

Note: I take it that the question as to the statute of limitations is confined to the case as stated, where he subsequently came into the hands of the military authorities. Had he not come within military jurisdiction again after deserting in time of war and in the face of the enemy, an entirely different question arises. The Judge Advocate General, in the case of a private of the Ninth Infantry who deserted in China in November, 1900, recently held that as a state of war existed at the time of the desertion the deserter

*The two years are computed, not to the date of arraignment, but to the "issuing of the order for the trial."

was not entitled to the benefit of the statute of limitations as provided in the 103d Article of War. (Army and Navy Journal, March 25, 1905, p. 799).

(b) Had Skow deserted in time of peace, and never again come into the hands of the military authorities, the statute would have begun to run in his favor at the expiration of the term of enlistment in which he was serving, unless he was absent from the United States at the time of such expiration, and in that case it would begin to run in his favor as soon after the expiration of his current term of enlistment as he ceased to absent himself from the United States. Just what interpretation is to be put upon the expression "from the United States" in view of our territorial accessions I can find no adjudication concerning, but it would seem that being in our insular possession would have to be held to be within the United States, as the accused is as fully within our jurisdiction in the insular possessions as he would be at home.

III. After discharge Skow was no longer amenable to trial by court-martial, and the 48th Article of War, cannot serve to continue the amenability to trial which existed prior to his discharge but which was terminated by the discharge. (Par. 68, Dig. Opin J. A. G.; Davis, p. 431; G. O. 157, W. D. 1904).

IV. (a) Paragraphs 519 and 521, Digest of Opinions, Judge Advocate General, seem to be directly in point on this question. Paragraph 521 holds that in case of a crime or offense against the United States committed by a civilian on a reservation under the exclusive jurisdiction of the United States, the commanding officer is authorized to arrest the offender and cause him to be brought before a United States Commissioner or other official specified in Sec. 1014, R. S. In point of fact the actual arrest of Boyle was carried out by the enlisted men who carried Boyle before the post commander. They took him in charge while he was actually engaged in a breach of the peace. The post commander, in upholding the men and claiming that they acted under his orders, makes the arrest his own act — an act that is authorized as per the authority cited. The de-

operate as a constructive pardon, but more, I think, would have to appear than is here of record to make the plea good. The second proposition is bound up with the question of the constitutionality of the 60th Article of War, and the decision of the court on that plea would bring about a like decision on a plea of the kind suggested. I do not believe therefore, that the accused would benefit by raising the question in the last form.

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tention of Boyle will be dependent, to some extent upon circumstances. The post commander cannot properly hold Boyle and notify a commissioner to send for him, but should himself take affirmative action with a view to turning Boyle over to the commissioner or other official specified in Sec. 1014, R. S. "Should no such official be accessible at the time, the post commander may detain Boyle in the guard house, "but only for such interval as may be necessary." An information should be filed by Private Jones with the official before whom Boyle is taken. The post commander should, I think, see to it that this is promptly done. The commissioner or other official will thereupon issue a warrant for Boyle, under which the civil authorities will then hold him.

(b) Boyle may be prosecuted criminally in the Federal Courts for assaulting and beating Private Jones. The offense being one over which the district and circuit court have concurrent jurisdiction, the trial could be had in either one, but would in all probability actually be heard by the district court. The prosecution would be in the name of the United States, and would be conducted by the United States District Attorney, and in the district within which the offense was committed.

The statement of the case sets forth that the cattle were grazing at large contrary to law. If, at the time that the State in question ceded to the United States the exclusive jurisdiction over the reservation, there was in force in that State a law making it a criminal offense to permit cattle to run at large, the provisions of Sec. 2, Chap. 576, Act of Congress, approved July 7, 1898, would apply, provided the statutes of the United States did not provide a penalty for the offense. If the conditions are such as to make the provisions of the act referred to applicable, then Boyle can be prosecuted in the Federal Courts, in the name of the United States, and by the United States District Attorney for this offense as well. The machinery of the law would be set in motion in the same way, that is by information filed before a commissioner or other proper official, by one who was personally cognizant of the commission of the offense.

(c). Boyle has by his action subjected himself to being prosecuted civilly in the following manner:

(1) Jones vs. Boyle, an action in tort, for personal injuries: If Jones and Boyle are both citizens of the same State this action will have to be brought in the State courts. If Jones and Boyle are citizens of different States, and the matter in dispute, that is the amount of damages asked, is less than two thousand dollars, exclusive of interest and costs, the action would also have to be brought in the State courts, the case being legally cognizable in the courts of that State in which legal service of notice can be had. If Jones and Boyle are citizens of different States, and the amount of damages asked, exclusive of interest and costs, exceeds two thousand dollars, the action may be brought in the Circuit Court of the United States, in the district of the residence of either the plaintiff or the defendant. In the latter case the action could also be brought in the courts of the State in which legal service of notice can be secured, but it would then be subject to removal to the Federal Circuit Court, though legally triable by the State Court if the right to removal is not insisted upon. (Hughes' Federal Procedure, paragraphs 92 and 113).

(2) The United States vs. Boyle, an action for damages growing out of the destruction of the reservation fence, and for any damages to the realty, both being the property of the United States. In this case, the United States being the plaintiff, the Federal Circuit Court is the proper tribunal, and the district attorney would appear for the government. (Hughes' Federal Procedure, paragraph 92).

(3) There still remains the cause of action growing out of the damages done by the cattle to the post garden. This phase of the question presents some difficulties. In discussing this point with an attorney in the City of Leavenworth recently, I was advised that the firm of which he is a member had at one time been concerned in an action brought in the interest of the post exchange. The attorney was unable to find his brief in the case at the time, but stated that he was of the opinion that they had brought the action in the name of the United States. If the action could be brought

in the name of the United States for the benefit of the post exchange. I can see no reason against bringing the action against Boyle in this case in the name of the United States; as a recovery here would accrue to the benefit of the enlisted men in the army in the same way that a recovery in the case mentioned must have accrued. If this theory is correct the Federal Circuit Court would be the proper tribunal, but I think that the district attorney would not necessarily appear for the plaintiff, though he might properly do so. I have been unable to find any direct statutory provision on the subject, nor have I been able to find any parallel case of record, but in view of the fact that the United States furnishes the ground, that the post garden is an institution provided for by regulation for the benefit of men in the United States service, and that the regulations provide for the application of the proceeds and products derived therefrom, I can see no good reason why the action should not be brought in the name of the United States.

If the action cannot be brought in the name of the United States, who can be made the plaintiff of record? There is no one person who is the real party in interest, nor is the body of enlisted men who profit by the post garden a corporation or a partnership. Pomeroy in his Remedies and Remedial Rights lays down the doctrine that where the issue is one of common or general interest to many persons, or when the parties are very numerous and it may be impracticable to bring them all before the court as parties plaintiff or defendant, one or more may sue or defend for the whole number who are thus interested. The enlisted men of the post are the real parties in interest here, and their number would seem to make the doctrine applicable. Under this view the action might be brought in the name of one or more of the men for the benefit of all, or possibly by the officer in charge of the post garden for the benefit of the interested enlisted men. But the statutory provisions relating to the subject are the main if not the sole basis of this kind of jurisdiction, and the question would therefore, be dependent upon the statutory provisions in force in the State in which the reservation was located, for unless the

amount of the damages reached the sum of \$2,000.00, exclusive of interest and costs, the case, if brought in this manner, would have to go before a State court and thus be subject to the State statutes.

(d) Boyle may bring an action if he sees fit to do so, with very little ground of hope for a recovery, as follows:

(1) Boyle vs. Jones, an action for damages growing out of the death of a cow. As the cow could hardly be worth \$2,000.00, the case would have to be brought in the State courts in the jurisdiction where he could secure legal service of notice upon Jones. The question of recovery would be one for the jury. If they could be convinced that Jones used more force than was necessary or than would have been used by a man of ordinary prudence and forethought under the circumstances, a recovery might be had, otherwise not.

(2) Boyle vs. the Post Commander, as a private individual, for damages for false imprisonment, if he is of the opinion that the post commander acted without warrant of law in causing the arrest or detention. The same action would lie against any other person concerned in the arrest and detention. The court in which the action would have to be commenced would be determined according to the principles discussed in c (1) of this paper.

(3) If the reservation is located in one of those States whose statutes provide for criminal prosecution for what is commonly known as cruelty to animals, or criminal prosecution for offenses cognate to the common law crime of malicious mischief, and such law was in force at the time of the cession of exclusive jurisdiction to the Federal Government, and the circumstances connected with the act were such as to bring it within the definition of these offenses, then it would seem that Boyle might by filing the proper information secure the criminal prosecution of Jones in the federal courts, under the blanket provisions of Sec. 2, chap. 576, Act of Congress approved July 7, 1898, provided, of course, there were no federal statute covering the case.

INFANTRY AND CAVALRY SCHOOL PROBLEM.*

DEPARTMENT OF MILITARY ART, INFANTRY
AND CAVALRY SCHOOL.

Course in Organisation, 1906-7.

PROBLEM 2.

Value of subject, four; that of each answer is shown by the number on the left of the page.

Time, four hours.

Give paper same heading as problem.

Write answers to requirements only, each opposite to its serial number placed at the left of the marginal line, leaving an interval of not less than one line between consecutive answers.

Place your number in the upper right hand corner of each separate sheet.

Accuracy, neatness, and compliance with the above instructions will be given a value not to exceed three per cent. in marking the paper.

Suppose Congress decides to maintain a force of regular army reserves sufficient to fill up the present cavalry organizations to war strength and to make the number of enlisted men in the infantry six times as strong as the cavalry; field artillery and special troops to be provided for in the proportion given in F. S. R. for the organization of a division.

Required:

1. Make a table showing how the mobile forces of the United States would be organized in case the regular army

*This problem is one given the infantry and cavalry class in this year's course in the subject of Organization. Approved solution will be given in the next issue.

with all these reserves should be called out to serve in one body.

Table to show distribution of regiments in brigades, brigades in divisions, and divisions in corps; also distribution of the various units of the special troops.

2. Give number of enlisted men of each arm and of each class of special troops, omitting the troops of the medical service.

APPROVED SOLUTION TO PROBLEM IN APRIL (1906) JOURNAL.

(SEE MAP, PAGE 334.)

DEPARTMENT OF MILITARY ART, INFANTRY AND CAVALRY
SCHOOL.

Course in Security and Information, 1905-'06.

MAP PROBLEM NUMBER 2. OUTPOSTS.

First Requirement.

From the top of Bellevue Hill Lieutenant Colonel A can see the following important military features: The country to the front is open, no timber except the Beekman and Hinesburg woods about a mile to the south. The point of view is on a ridge extending to the southwest, the ground sloping some five or six degrees immediately in front, and then more gently to the Onion River, which is about six hundred yards to the south and flows in a northeasterly direction. This stream is apparently everywhere passable, but a considerable obstacle to all arms of the service. The only bridges in sight are Fay's, about five hundred yards to the south, and that of the railroad, eleven hundred yards to the southwest.

To the south of the river the ground rises for about half a mile to a ridge running northeast and southwest, and con-

taining Prospect and Birch hills. Beyond this ridge there appears to be a valley, and beyond this, at a distance of about two miles, the ground again rises into view, being open and hilly.

The towns in sight are Addison, about one half mile to the southeast, Hinesburg, about one mile south, Youngtown, a little less than a mile and a quarter south, Charlotte, about a mile and a half to the southeast, and Vinton, about two and a half miles to the southeast. All are small towns and of little military importance.

A good road extends to the south through Hinesburg and Vinton, and another extends along the south side of the Onion River, while one runs in a southeasterly direction from Addison. A railroad crosses the Onion River from the northwest at the bridge above mentioned and thence runs northeast, south of and parallel to the river. A branch line leaves it at Addison and runs toward the southeast.

Aside from the obstacle of the Onion River, the country is everywhere passable and generally favorable for the action of all arms. There is a general lack of cover, except that to be derived from the folds of the ground.

There is a good field of fire to the south from Bellevue Hill, and also one north from Prospect Hill.

Second Requirement.

Substance of Lieutenant Colonel A's outpost orders:

The enemy's cavalry, strength about one squadron, engaged a squadron of our cavalry twenty miles southeast of Vinton yesterday. The main Blue force is encamped at Spencer.

Major X will establish an outpost with Company A, and the First Platoon of Company B and a squad of twelve cavalrymen. The outpost is to be relieved tomorrow morning.

The line of observation will extend from Gravel Hill to Hinesburg Woods. Patrols will be pushed to the southeast via Vinton and Charlotte. In case of attack the line of observation will be held. The main body of the detachment will provide for the observation of the road west of the river.

The detachment will camp in Swanton Woods, two hundred and fifty yards west of Bellevue Hill, and will be prepared to occupy a defensive position near the head of Cedar Creek.

Reports will reach me with the main body.

Third Requirement.

Having assembled the officers of the companies, Major X gives the following instructions:

The enemy's cavalry, strength about one squadron, engaged a squadron of our cavalry twenty miles southeast of Vinton yesterday.

The main Blue force is encamped at Spencer.

Our main body will encamp in Swanton Woods.

The First Platoon, Company B, under Lieutenant B, will form the right support, which, posted at the junction of the railroad and Bolton-Addison road, will hold the right section of the line, extending from the Onion River, exclusive, to the north spur of Birch Hill inclusive.

The First Platoon, Company A, under Captain C, will form the center support, which, posted at the junction of the railroad and the Swanton-Hinesburg road, will hold the center section of the line extending from the north spur of Birch Hill, exclusive, to the Jones' farm, inclusive.

The Second Platoon, Company A, under Lieutenant D, will form the left support, which, posted at Addison, will hold the left section of the line, extending from the Jones' farm, exclusive, to Section House 1, exclusive.

The twelve troopers will be under my orders, taking post with the center support. Sergeant E, with five troopers, will reconnoiter the Swanton-Vinton road three miles beyond the latter point; and Corporal F, with two troopers, will push out along the Addison-Charlotte road for a distance of about three miles beyond the latter point; both returning at dusk.

In case of attack, the line Gravel Hill-Prospect Hill-Hinesburg Woods will be held.

Reports will reach me with the center support.

Fourth Requirement. (See map.)

(As the cost of producing a map with the approved positions of sentry squads and pickets marked thereon in black and red, is too great to warrant its production at this time, the positions are described for the fourth requirement. From this description the reader can place the troops himself.)

One sentry squad is at Bolton. This is made a picket at night, remaining in practically the same position. This picket has two patrols. One down the road southwest to where the road runs off the map; the other, down the southeast road to some 200 yards below Hunting Lodge.

One sentry squad is at the cross trails in the Hinesburg Woods, just below the letters R G. of the word HINESBURG. At night this is made a picket, and thrown forward about 150 yards to the next cross trails. This picket has two patrols. One west to meet the patrol below Hunting Lodge (mentioned above); the other goes to the east of picket position for some 400 yards and then returns, making a small loop. Two sentries are thrown forward from the picket to where the trail strikes the Fielding-Hinesburg road.

One sentry squad is at top of Prospect Hill. At night it is made a picket and moved to Quarry. This picket has two patrols. One south along road to below Hinesburg, connecting with patrol from the picket next on the west; the other, east to Jones. One sentry squad is put in Hinesburg.

One sentry squad is near south end of road cut, Addison Charlotte road, out about 200 yards northwest of Booth's Mill. At night it is made a picket and thrown forward on the road to within 100 yards of Booth's Mill. Two sentries are at Booth's Mill. This picket has two patrols. One west to Jones; the other, north along the west bank of Sucker Branch to Section House No. 1.

Fifth Requirement.

DAY POSITIONS.

Right Support: First Platoon, Company B; one First Lieutenant and sixty three men. Furnishing: Sentry squad No. 1—one Sergeant and seven men; Sentry squad No. 2—one Corporal and seven men.

Center Support: First Platoon, Company A; one Captain, one Second Lieutenant and sixty-three men; and one Cavalry squad—one Sergeant, one Corporal, and ten men—furnishing: One Sentry squad—one Sergeant and seven men.

Left Support: Second Platoon, Company A; one First Lieutenant and sixty-two men. Furnishing: One Sentry squad—one Sergeant and seven men.

NIGHT POSITIONS.

Right Support: First Platoon, Company B. Furnishing: Picket No. 1—one Sergeant commanding, three noncommissioned officers and twenty-four men (picket sentinel, three; patrol, nine; patrolling post, twelve.) Picket No. 2—one Sergeant commanding, three noncommissioned officers and twenty-four men (picket sentinel, three; road sentinel, three; two patrols, eighteen.)

Center Support: One platoon, Company A. Furnishing: One picket—one Sergeant commanding, five noncommissioned officers and thirty-five men (picket sentinel, three; two patrols, eighteen; Sentry squad, fourteen.)

Left Support: Second Platoon, Company A. Furnishing: One picket—one Sergeant, three noncommissioned officers and twenty-seven men.

Sixth Requirement.

The cavalry will be posted with the center support, under the immediate orders of the outpost Commander. A patrol of six men will reconnoiter the Swanton-Vinton road for a distance of three miles beyond the latter point, and patrol of three men will be pushed out on the Addison-Charlotte road a like distance beyond Charlotte. Three troopers will remain at the center support. Both patrols will return at dusk. The cavalry will be permitted to rest during the night, and be sent out at daylight again in the same manner as before. The duties of these patrols while out will be to watch for and report indications of the enemy, and to obtain any information that they can as to the movements of our advanced cavalry.

PRIZE PROBLEM NO. 3.

(SEE MAP OPPOSITE.)

Situation.

On October 1, 1906, a troop of cavalry, constituting the advance cavalry of an important convoy of a western force (Blue), is ordered to reconnoiter through Charlotte and check or delay any eastern force (Red) that may be marching on Fay's Bridge. The advance guard of the escort is expected to reach the bridge at 1:30 P. M. At noon when the leading element of his troop reaches Swanton, the commander of the western troop learns that a battalion of eastern infantry is approaching Charlotte from the east and is at that time one-half mile from the town.

Required.

1. The troop commander's estimate of the situation.
2. A statement of the dispositions he makes.

PISTOL VERSUS SABER.

BY CAPTAIN M. C. BUTLER, SEVENTH CAVALRY.

FROM my experience as a troop commander, I am convinced that, in order to attain that proficiency in time of war to which we are striving to bring the cavalryman, there is a handicap of too many arms. This is especially true in the time allotted in the enlistment. The question naturally arises, which of these three arms can we best dispense with in time of war. It seems to me that the uses of the saber should be confined to garrison duty (parades, etc.), and riot duty. It is very doubtful to my mind whether the benefit we derive from the saber in battle repays us for the trouble in taking care of it. Of course nothing but the test of war will decide the question of the pistol versus the saber; and I can only give my ideas formed from my experience in instructing men in the use of both arms.

I realize the good use that a proper saber may be put to as a reserve power, but I confess that I can never become reconciled to the present saber under any circumstances. Let any officer attempt to instruct his men in the fencing exercises, mounted and dismounted, with the present saber and he will be convinced of the tremendous waste of time that could be profitably employed otherwise. I have heard it said that we will get another saber and scabbard. I have also heard it said that the judgment day is coming.

In advocating the advisability of leaving the saber behind in time of war I assume that the cavalry soldier is properly instructed in the use of the pistol mounted, which is certainly not the case now. How could he be with a limited amount of instruction once a year? And yet we have had cases in our Civil War where men, and great numbers of them, have entered the Confederate service without any

preliminary instruction whatsoever in the use of fire arms from horseback; these men were put into service almost immediately and were soon taught the importance of a judicious expenditure of ammunition and effective use of the pistol in their charges, etc. Stern necessity is a tremendous impetus for a man to at least attempt to do the right thing at the right time. Constant practice under such circumstances will make a man an expert. Such were Forrest's men, very few of whom, if any, had sabers, and these men learned from constant practice to render a good account of the pistol mounted. The cavalry on both sides in Virginia made many spectacular charges with the saber, but I am not aware of any tremendous havoc having been created on either side by that weapon alone. The cavalymen of Virginia were taught to rely almost entirely upon the saber in charges; they would have accomplished the same results as Forrest's men had they been forced to rely on the pistol in the charge. The battle of Trevilian Station, probably the most severe cavalry fight of the war, was fought almost entirely with fire arms, the saber cut very little figure. In the article in the July number of the JOURNAL by the cavalry board, mention is made, "The saber thus used was often not sharpened." This will be the case in an active campaign; either the troopers will be too worn out to keep their sabers sharpened or there will be no facilities at hand for that purpose. It is a question whether the cavalryman will take the trouble to keep a keen edge on his saber.

I do not think it is impossible to make men withhold their fire until the collision. When a man once realizes that his life is seriously at stake, and one charge will bring him to that realization, he will surely see the great necessity of making the best use of his ammunition. A charge will usually be resorted to when there is apparently some advantage to be gained.

Suppose that it is made with the saber—the result is, the enemy thrown into confusion and some damage inflicted—the feeling of self preservation in the face of danger is so strong that the party attacked at once becomes a mass of dodging energy and the man with the saber soon realizes

that it is not such an easy matter to reach as many as he would like. A small percentage, I venture to say, would be put "hors de combat" and the remaining large percentage would be ready to fight you again another day. Suppose the same charge is made with the 45 caliber pistol, and the soldier is armed with another pistol in place of the saber as a reserve, the party attacked will experience some difficulty in dodging the bullets at close quarters, and the percentage of men and horses put "hors de combat" will be much greater. Every hit with so large a bullet will require the serious attention of a surgeon.

As to whether the use of the pistol is incompatible with shock action, the test of battle alone, will prove it. In the hands of experts the pistol, I should think, could be used effectively in shock action. In considering the charge in close order the question of proper management of horses, and consequently, good biting, enters. I hope we will not have to wait until judgment day before the excellent recommendations of the cavalry board in this respect are adopted.

The results obtained with the carbine mounted, mentioned by Lieutenant Colonel Parker,* are certainly surprising and is an argument in favor of the use of the carbine instead of the saber as a reserve weapon for the pistol. There should be more instruction in the use of the carbine mounted. The table in the same article showing the results of pistol and saber is interesting. To my mind the damage inflicted by the pistol, the 38 caliber, if you please, and represented by 70.5 per cent., is greater than that inflicted by the saber as represented by 94.5 per cent.

How much greater would be the damage created by the 45. cal? With practice the percentages of the pistol would be greater as the men became more expert as shots and in management of their horses.

The damage to horses with the 45 cal. would be considerable and it is doubtful if such would be the case with the saber. The saber percentage would be lowered in actual battle from the fact that many of the blows would be parried or dodged. I very much doubt whether the pistol percent-

*See July, 1906, JOURNAL.

age would be lowered in near the same proportion, because the chances of dodging a bullet at such close range are remote to say the least. Once your opponent is five feet from you, you are harmless—not so with the pistol.

If I were asked in what my troop is most deficient, I should without hesitation say, the use of the pistol mounted. Every troop commander should be allowed to drill his troop as he sees fit every other month in the year, so as to enable him to instruct his men in what they are most deficient. Instead of this he is usually bound by orders directing that certain instructions be given. He is rarely if ever consulted as to what instruction is most needed in his troop. I am aware that a great many of our oldest cavalry officers cling to the saber as a prime factor in the charge. Doubtless some are influenced to a certain extent by sentiment—the saber has so long been a distinctive cavalry weapon that they are loath to part with it. I believe our boot to boot cavalry charges will not be of frequent occurrence in the future wars—certainly not so much so as has been in the past. I do not pretend to deny that there is a decided element of danger to one's own men when the pistol is used in the charge, but I believe that the training acquired by practice will overcome this to a great extent, if not entirely. The pistol will be soon emptied, but the extra pistol and the carbine will be sufficient as a reserve.

I hope that in the near future the 45 cal. pistol will be issued again. As regards the moral effect, it seems to me that the man with the pistol is favored. The mere consciousness that at a certain stage you are at the terrible disadvantage of not being able to strike back, to say nothing of a possible wound from a 45 cal. pistol, is enough to take the heart out of a man. In a *mêlée* it certainly is a question of your life or the other man's, and under the circumstances I should prefer to face the saber rather than the business end of the pistol.

In the absence even of an experience on the battlefield with either the pistol or saber, I am convinced that neither will be effective in the hand of a novice. I think everyone will agree that shooting is by far the most important part of

a soldier's education. If more target practice is allowed with rifle and pistol the results obtained will be most gratifying to all concerned. If we are to retain the saber for war let us have a lighter blade and a leather scabbard. But two arms are sufficient for any soldier to handle effectively in battle.



TEST OF AUTOMATIC PISTOLS.

From Supplement No. 57 of the *International Revue of the United Armies and Navies*, December, 1904,

TRANSLATED BY G. W. BIEGLER, FIRST LIEUTENANT TWELFTH CAVALRY,
DECEMBER, 1905.

DURING the spring and fall of 1903, and in the spring of 1904, there was conducted at Rosenburg a series of tests of automatic pistols, by a commission appointed for that purpose. As these tests may be looked upon as a step in the selection of a modern arm for the officers of the Swedish army, it should be of interest to follow the details of the trials as given in the "Artilleri Tidskrift."

During the tests the following pistols were investigated:

Two Parabellum Pistols.

Two Browning Pistols, No. 1, model 1900.

Two Colt-Browning pistols.

Two Mannlicher pistols.

Four Mannlicher-Carbine pistols.

One Hamilton pistol.

Two Browning pistols, No. 2, model 1903.

Two Frommer pistols.

For purposes of comparison there were also present the Swedish 7.5 mm. revolver, model '87 and the Russian 7.62 revolver, model '95.

DESCRIPTION OF THE ARMS.

The size and weight of the various arms will be found set forth in table No. 1.

The Parabellum pistol (Von-Borchard-Luger) has a caliber of 7.65 mm. The bolt is equipped with the so-called mechanical rear action. That is, the barrel itself takes part in the movement of the bolt. After the movement of the barrel ceases and the locking pin is liberated by a bolt, a knee or locking device is thrown up. After the empty shell is thrown out the knee drops back into position and the pistol is ready for use again.

The pistol has a separate magazine for eight cartridges which are shoved into the stock from below.

It is fitted with a double device for security. One locking device consists of a small slide on the left side which is managed by the thumb. By this means the pistol is kept in readiness for instant use, at the same time it is readily locked and perfectly secure. The second device is automatic and the lock is released by pressure of the hand on the stock when used.

After the last cartridge has been fired from the magazine the knee springs into position and remains thus so that one may see instantly that the pistol is empty.

The Browning pistol No. 1, model '00, has a caliber of 7.65 mm. and a so-called gas pressure mechanical action, a characteristic of which is that all of the mechanism of the piece, including the case itself, participates in the action in reloading. The magazine will hold seven cartridges and is loaded in the stock from below.

The safety device is a simple slide on the left side of the stock which is worked by the thumb by means of which the pistol is kept in readiness for instant use.

The Colt-Browning pistol has a caliber of 9.5 mm. the mechanical action being by means of a bolt. It looks very much like an enlarged Browning pistol. The magazine, which is shoved into the handle from below, holds seven cartridges. After the magazine is empty the pistol will still

work, the hammer snapping on an empty chamber. This is also the case with the Browning.

The Colt-Browning has an exposed hammer, the half cocking of which furnishes the only safety device.

The Mannlicher pistol has a calibre of 7.63 mm. and is operated by gas pressure. It is loaded with eight cartridges held in a clip similar to the Mauser device. When the last shot is fired the mechanism stands open so that one may see that the pistol is empty.

This pistol also has an outer hammer, but it cannot be half cocked. The safety device consists of a turning screw, manipulated by the thumb when the pistol is held in readiness.

The Mannlicher-Carbine pistol is much larger and stronger looking than either of the foregoing arms, while the calibre is about the same.

It has the familiar bolt action. Six cartridges are placed in a loading chamber. When the last shot is fired the mechanism stands open.

In case the exposed hammer fails to work, it can be cocked by means of a lever on the right side. The safety device consists of a fluted slide on the rear of the mechanism which is moved by the thumb.

The Hamilton pistol has a calibre of 6.5 mm. and gas pressure action. The magazine holding seven cartridges, is inserted in the handle from below. When the magazine is empty the hammer will usually snap on an empty chamber one time. The safety device consists of a slide on the right hand side, which, as a rule, requires both hands to work.

The Browning pistol No. 2, modle. '03, has a calibre of 9 mm. and a gas pressure action. It is loaded the same as the Browning pistol No. 1. When the last shot has been fired the lock stands open.

The safety device is a double one similar to that of the Parabellum pistol.

The Frommer pistol has a calibre of 8.00 mm. and the bolt action results in an unusual movement of the barrel during the loading. Ten cartridges fit in the chamber. When the pistol is empty it is indicated by the open breach.

There is an outer hammer and the safety device consists of a button on the left side. A movement of this button to the rear locks the arm. It can be unlocked by means of one thumb, but in order to secure it both hands are required.

All of the pistols which are loaded by means of a separate magazine can, in common, be loaded with an extra cartridge in the chamber.

THE FIRING TESTS.

Accuracy. In order to test the arms for their shooting ability for practical purposes, a series of from three to fifteen shots were fired from each one, using a rest consisting of a pile of sacks filled with shavings at ranges of ten, thirty, fifty and one hundred meters. The better shooting pistols were tested at 150 and 200 meters. In addition to this, scores were fired without a rest at ten and thirty meters.

A number of scores were also fired with a view of testing the difference in the shooting while using the firm or loose gripe. All the pistols showed that there was little difference in the work in this regard.

The result of the tests demonstrate that the automatic pistols shoot closer than the revolvers and have a greater range. Further, it is shown that the Parabellum pistol takes first place in this regard.

Of the great advantage and the difference in effectiveness between the unusually long bullet of the Frommer and the very short one of the Browning, it is hardly necessary to speak. Because of the lack of carrying power displayed by the revolver, it is plain that a greater initial velocity is of more value in the construction of a pistol than any particular form which the projectile may take. It is a correct principle of construction and one which increases the effectiveness of the single shot by an increase of the initial velocity through enlarging the calibre and slightly reducing the size of the bullet, the object being to secure the full benefit of the gas pressure. (See table No. 1.)

MEASUREMENT OF THE VELOCITY.

With a view to recording results the living power, ten meters from the muzzle, was measured by means of Boulonge's Chronograph. The Colt-Browning Pistol No. 2, took first place and the Hamilton pistol was the lowest in the list, with the Swedish revolver second to the bottom.

Test of the rapid firing qualities: The results are shown in table No. 2. It shows that the Parabellum and Browning pistols are undoubtedly the best of all with regard to the important demand of a rapid firing, single handed weapon.

Determining the effect of single shots: The results are shown in table No. 3. It is demonstrated that all of the pistols have a greater penetrating power than the Swedish revolver with its cased bullet; and that it even fell short of the penetration of the blunted bullet which was also used.

In order to test the weapons on a non-elastic target, a clay target was provided. It was determined during this test that the most effective weapon made a hole from three to four times as great as the bullet from the Swedish revolver.

It should also be noticed that the bullet with the flat head made a much larger hole than the pointed or oval bullet. This is true of the oval shaped bullets which form is supposed to increase the penetrating powers.

Firing in the Dark.—In order that a pistol be of value for self-defense in a hand to hand affair, deliberate aiming and sighting is impossible. For this purpose it is important that a pistol be constructed like a shot gun, which is readily directed against a target without first bringing the eyes on an actual line with the sights. In order to determine which of the weapons at hand came nearest filling these requirements, repeated tests were made during the twilight and half darkness of the evening. The firing was at figure targets at fifteen meters and it was not possible to see the sights during the firing. During the tests, which were made under almost actual field conditions, and the firing very rapid, the following averages were made:

Parabellum Pistol	23 per cent hits
Browning No. 1	11 per cent hits
Colt-Browning	32 per cent hits
Mannlicher	24 per cent hits
Mannlicher Carbine Pistol	18 per cent hits
Schwedish Pistol	10 per cent hits
Browning No. 2	40 per cent hits (X)
Frommer Pistol	30 per cent hits (X)

(X) When the Browning No. 2 was tested in 1903 it showed forty-per cent hits. When tested with the Frommer in 1904, the same pistol made forty two per cent. against thirty-two. The last figure was reduced for the purpose of equalization.

In this particular the Browning No. 2 showed its superiority over all the others. This is due in part to the fact that its advantageous form permits the firer to follow the sights quickly with the eyes, and in part because of the length of the pistol, which makes it a closer shooting weapon than the Browning No. 1.

Durability Test.—Over one thousand shots were fired with each pistol. With the Parabellum 1,430 shots were fired, 140 of which were fired one after another without cleaning. After the 800 shots had been fired the extractor broke and had to be replaced.

A great number of the shots fired with the Browning No. 1 were fired without cleaning the pistol. In all 1,420 shots were fired with this pistol.

A Colt-Browning was fired 1,550 times, a great many shots rapidly and without cleaning.

The Mannlicher pistol was fired 1,375 times. At one time, after it had been used for some time, the lock became stiff and finally refused to work at all.

A Browning No. 2 was fired 1,340 times. After 790 shots, 300 of which had been fired in rapid succession, the claw of the extractor broke. The shells were thrown out slowly by the gas pressure for a while, but it finally refused to fire altogether. After the extractor was replaced 540 shots were fired, 450 without pause. It was shown that the pivot of the safety device and the extractor interfered repeatedly and that small fragments of the bullets were scraped off during

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the firing and fell into the magazine, making its action heavy. The last shot, however, carried as well as the first one.

Altogether there were about 2,000 shots fired with each pistol tested. Fewer shots were fired from the Carbine, the Hamilton and the Frommer pistols. During the firing the following mechanical weaknesses were observed.

The Parabellum.—Very often, particularly during cold weather when the lubricant was heavy, the bolt would not move forward into position after a shot. If one failed to notice this fact the weapon would lock and both hands would be required to put it in working order again. This is an important weakness.

Browning No. 2.—In eight different instances a cartridge was projected in such a manner as to require its removal by hand before the pistol would work. Otherwise the mechanical action was perfect.

Colt-Browning.—In both styles of Colt-Browning it was found that the cartridges jammed frequently and the shells as well, delaying the action of the weapon in each instance.

The Mannlicher pistol jammed four times on empty shells and the magazine stuck several times, due to the accumulation of lead from the bullets falling into it.

The Carbine Pistol.—During the firing of 500 shots, while the action was almost perfect, it was found several times that the mechanism was not in the most perfect order.

The Browning No. 2 stuck three or four times because a shell or cartridge became twisted.

The Hamilton usually jammed on the last cartridge in the magazine.

The Frommer pistol failed more than thirty times in 390 trials from one cause or another.

Sand and Dust Test.—The pistols were cleaned, lubricated and the magazines loaded. Fine sand and dust were then shaken over them from all sides. The pistols were then fired until the magazines were empty and the following observations made:

The bolt of the Parabellum would not close and had to be pushed in place by hand.

The Browning No. 1 worked perfectly.

The bolt of the Mannlicher would not go forward to its place.

Some of the pistols were not subjected to this test.

While the Browning No. 1 stood this heavy test perfectly, the Colt-Browning and the Browning No. 2 showed up well also, as all the mechanism of the Browning pistols is well protected.

Dirt and rust test.—With the exception of the Hamilton and Frommer pistols, all the others were subjected to the following test: After having been fired a number of times the magazines were loaded and the pistols placed in a barrel. The barrel was placed in the open air one day and in a warm room the next, alternating for nine days. At the end of this period the magazines were emptied by firing. All the pistols work perfectly.

The condition of the ammunition is of greater importance to the automatic pistol than to any other arm, for a mis-fire is not only a disappointment, but might result very seriously to the user. This disadvantage is greater because of the delay in withdrawing the defective shell from an automatic pistol. It is a most serious disadvantage in the gas pressure system because both hands are required to remove the shell.

It is therefore fortunate that ammunition makers have reached the point where miss fires are rarely heard of. Among the many thousand shots fired during the tests, not one miss fire could be blamed to the ammunition. The failures to fire seemed to be due altogether to some weakness in the arm itself.

In order to determine if the ammunition was proof against climatic conditions, a package of cartridges was allowed to lay in the snow for more than a day and next removed to a warm room. This was repeated several days until the case fell to pieces, when the cartridges were fired. There was no noticeable difference.

To determine what the effect of uneven gas pressure would have on the mechanism, some of the bullets were driven far into the shells, and in other cases the end of the

bullets were cut off. There was no noticeable difference in the action of the pistols under these conditions. This test was conducted with the Parabellum, Colt-Browning and Browning No. 1 and 2.

JUDGING THE PISTOLS.

With the assumption that the automatic pistol shall replace the revolver and not the carbine, (which from a ballistic standpoint is much superior to the pistol, whether it be equipped with a shoulder butt or not), we can form from the test the following opinions:

The Browning No. 1 is a pleasing weapon. Because of its advantageous form, its length and slight weight, it will crowd out the older pocket revolvers. For uses during war this pistol, as well as the Mannlicher and Hamilton, cannot be considered seriously. The operation of these pistols for single shots, the lack of rapidity, together with several other weaknesses, were much more pronounced in these than in any of the other models tested.

On the ground of lack of rapidity the Colt-Browning, the Carbine and the Frommer pistols are also no better equipped to replace the revolver. The first and last named arms are uncertain in their action. The Frommer and Carbine pistols are large and heavy to handle without any improvement in execution to compensate for the same.

There remains, therefore, but two weapons between which a choice must be made, the Parabellum and the Browning No. 2. Both stand equal from point of rapidity of action, measuring up to the revolver. The Parabellum is somewhat better as a target pistol, but the mechanism did not work as well during the tests as that of the Browning. The Browning has, moreover, a greater reach than any of the others except the Colt-Browning, has a much more favorable form, is more readily carried in a holster and is a much better shooting arm for field work. On these grounds and because the pistol gave satisfaction in other ways, the commission is of the opinion that the Browning No. 2 is the best service pistol for all conditions.

However, there are several mechanical changes to be suggested in the pistol, which it is thought can be made without great trouble. The following improvements are suggested.

The dark rounded barrel of the pistol, especially in bad light, cannot be readily followed by the eye of the firer in sighting. It is recommended that a small ridged arch, similar to that on the shot gun, be run from the breech to the muzzle.

The safety lock and extractor must be secured in a better manner, so that they do not fly out whenever the pistol is fired. The two sharp edges projecting from the rear of the butt, might cause discomfort and should be rounded off. The side pieces should be of tougher material.

Finally the projectile must be reduced or flattened in front similar to the Prussian cartridge, even though the penetrating power be reduced somewhat in order to increase its stopping power. If the pistol is to fill the requirements of self-defense in the hands of troops these alterations should be made.

However desirous it may be to keep the personal arm of the officers and noncommissioned officers up to the modern standard, it is not yet of sufficient interest to the government to warrant to adoption of an entirely new arm, so long as the old service revolver continues to fill so many of the requirements. It is, however, not more than proper that the government should give those who desire it, the opportunity of securing a more modern arm than the one we now have. Many good reasons exist for the government making it possible and convenient to exchange the old for a new model.

As the knowledge of the antiquated style of the present revolver becomes known among the officers it is more difficult to maintain an interest in pistol practice. With an arm that after a dozen shots becomes foul and inaccurate in its work, interest is bound to lag which works to the detriment of the service.

It is thought that the introduction of automatic pistols might be brought about by allowing the officers to exchange the old for the new model, if they so desired. Such an

arrangement would cause no increased expense, as all of the newly appointed officers would secure the automatic arm, and such others as desired to change for the new. In this manner the wishes of the individual for an improved arm would be met and the interests of the government furthered by an increased interest in pistol practice among the officers.

In closing the above interesting investigation of the Swedish army some of the recent changes in other armies in regard to the automatic pistol, so far as announced, are given.

OFFICIALLY ANNOUNCED.

In Belgium the 7.65 mm. automatic Browning repeater pistol is manufactured under direction of the government at the arsenal near Luttich for issue to officers.

Switzerland is having the 7.65 mm. automatic Parabelum (Borchard-Luger, 1900 system) manufactured in the factory of L. Lowe in Berlin, for use by all mounted troops.

In Germany the Parabellum pistol is being manufactured for use of officers. The results of the tests of the 7.63 Mauser, still being used to some extent, have not been announced.

Bulgaria has adopted the Parabellum 1903 (German origin) for use of the officers of all arms.

In America the Parabellum and Colt are being tested with the choice still unmade. The latest reports favor the Colt.

In Austria tests have been carried on with the following styles for several years: Dormas system; Ritter system of Mannlicher, model of 1894; G. Roth system M. T., revolver made by the government at Steyr; Ritter system of Mannlicher, model of 1902; Luger-Borchard system; Leopold Gasser clip loading revolver, and the new model repeater pistol system of G. Roth.

In Italy an automatic pistol made at Parma is being tested. Details are not available.

If the pistol is to be used in earnest as a defensive arm in close contact it is important to the cavalry that it should be a pistol which can be used mounted as well as under other circumstances.

TABLE No. 1.
Size, Weight, Etc.

Name.	ARMS.			CART'GE.			PROJECTILE.		
	Caliber mm.	Weight kg.	Length cm.	Weight gm.	Length mm.	Weight g.	Length mm.	V. 10 m.	Driving force at the muzzle mk.
Parabellum	7.65	0.885	23.7	10.1	30.	6.0	14.7	333	34
Browning No. 1, M. 1900	7.65	0.625	16.3	7.7	25.	4.6	11.7	289	19
Colt-Browning	9.50	1.000	23.0	13.3	32.	8.3	14.8	295	37
Mannlicher	7.63	0.830	23.0	9.0	28.	5.6	14.0	270	21
Mannlicher Carbine	7.65	0.990	27.0	11.0	35.	5.6	14.0	341	33
Hamilton	6.50	1.200	27.0	77.1	30.	4.1	14.0	228	11
Russian Revolver, M. '95	7.65	0.800	24.0	11.7	39.	7.0	15.9	20	26
Schwedisch Revolver, M. '87	7.50	0.800	24.0	11.0	35.	6.7	16.4	223	17
Browning No. 2, M. 1903	9.00	0.960	20.0	11.3	28.	7.1	13.0	318	37
Frommer	8.00	1.050	27.5	10.6	31.	7.4	16.9	278	34

1. With hammer cocked 28.5 cm.
2. This record was taken from another table.

TABLE No. 2.
Rapidly of Fire.

Names of the pistol.	No. of cartridges held in the magazine or chamber.	Time necessary to fill magazine.	Time required to empty magazine or chamber.	Time required to take pistol from holster, unlock and fire one shot.	Time required to take pistol from holster and fire eight shots.	D. 50 at 10 meters cm.
Parabellum	8	21"	11"	3.1"	10.5"	12
Browning No. 1, M. '00	7	23"	10"	4.1"	11.2"	19
Colt-Browning	7	17"	9"	3.4"	11.8"	11
Mannlicher	8	Chamber	10"	4.7"	14.2"	11
Mannlicher Carbine	6	"	9"	3.3"	8.7"	13
Schwedisch Revolver M. '87	6	25"	31"	3"	10.3"	16
Browning No. 2 M. '03	7	17"	9"	3.1"	10.5"	14
Frommer	10	Chamber	14"	4"	15"	19

Hamilton pistol jammed and was not tested.

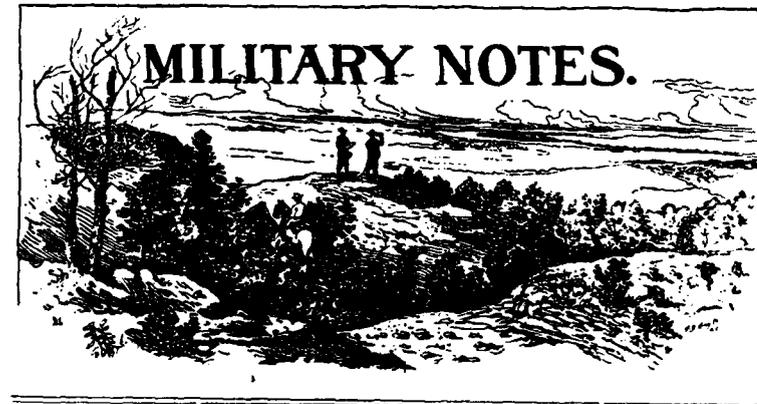
TABLE NO. 3.
Results of Single Shots.

Name of Pistol.	Shape of cartridge bullet. Average penetrated at 10 meters.	Number of pieces of dry pine boards penetrated. Each 2.8 c. m. thick. Average at 10 meters.	Average at 50 meters.	Clay plates 9 c. m. thick, firing at 8 meters, average diameter of hole shown. 1
Parabellum	with Oval head.	5.4 pieces.	4.6 pieces.	8.1 c. m.
Parabellum	with Flat head.	.....	.....	9.7 c. m.
Browning No. 1	with Oval head.	3.8 pieces.	2.7 pieces.	7.4 c. m.
Browning No. 1	with Flat head.	.....	.....	7.7 c. m. 2)
Colt-Browning	with Oval head.	4.5 pieces.	3.8 pieces.	8.5 c. m.
Colt-Browning	with Flat head.	.....	.....	9.1 c. m. 2)
Mannlicher	with Oval head.	3.4 pieces.	3.0 pieces.	7.0 c. m.
Mannlicher Carbine	with Oval head.	5.0 pieces.	4.0 pieces.	8.7 c. m.
Hamilton	with Oval head.	2.8 pieces.	2.5 pieces.	.....
Russian Rev., m '95	with Flat head.	4.5 pieces.	.....	.....
Browning No. 2	with Oval head.	4.9 pieces.	4.6 pieces.	8.2 c. m. 3)
Browning No. 2	with Flat head.	3.3 pieces.	.....	8.6 10.5 c. m.
Frommer	with Oval head.	5.2 pieces.	5.2 pieces.	.....
Schwedisch Revolver	with Oval point.	2.5 pieces.	1.6 pieces.	5.1 c. m.

1. Clay plates were placed behind one another with a slight space between. The record shows the average of at least three shots for each plate.

2. The head of the bullet was filed off until the diameter of the same was $\frac{3}{4}$ mm.

3. The lowest records were made by flattened bullets, the nose of which showed a diameter of 4 mm. The higher records were made by bullets, the heads of which had a diameter of 6 mm. In the last case a tie resulted, as none showed more than a slight mark on the surface of the rear plate.



"A LESSON IN PICTURE" CONTINUED.

FORT ROBINSON, NEB., July 9, 1906.

To the Editor of The Cavalry Journal:

I HAVE read with some interest the different modes proposed of holding the double rein, with the reasons for each method, and have received the cards sent out by the JOURNAL showing different means of obtaining the same end in view, simplicity and the easiest way to enable the rider, especially in our case, the enlisted man, to have and to keep perfect control of the animal which carries him and his equipment complete. Of all the ways suggested, I have come to the conclusion that the "French Cavalry (Anderson) Method" is the best one proposed and the one we should adopt slightly modified.

Figures 2 and 4. in Captain Henry's article, in the July issue of the JOURNAL, 1906, are modifications of Figure 3, and in my opinion not as good, because the reins are not as free, and not subject to as perfect control as shown in Figure 3.

For many years I have used the double rein in the manner known as the "French Cavalry Method," with this modification, viz: the curb reins instead of coming over the forefinger on top of the snaffle rein, comes over the second finger, having naturally assumed it as being the easiest and simplest way to hold the reins, feeling that I had perfect control. By simply moving the wrist the hand was ready at any time for the use of each rein, bit or bridoon; the hand was not cramped and no need to watch and see if you were on the proper rein. Turning the wrist toward the body you knew the bridoon was in use; turning the wrist outward you felt the pressure of the curb.

My views are my own, and probably will meet with objections from some, perhaps from many, yet I offer them as a help in deciding upon the selection of the method to be adopted.

Years of experience should count for something it is presumed. I add my mite to the discussion. I believe there is no better method than the one suggested, and hope it may receive consideration. No mistakes will be made, and teaching the men under new conditions, with double reins, this method will prove the easiest and give the best results. We must avoid any system that borders on a complex method. The simplest, if effective, is the best, and in my opinion, the method proposed will prove, if tried, to be the best. At any rate it is far better, less complex and better suited, in my opinion, than any method so far advanced.

With the reins held as advocated, the position of the bridle hand is the same as now prescribed, which is another good reason for adopting this method.

J. A. AUGUR,
Colonel Tenth Cavalry.

We are particularly glad to see this subject, which has been brought to the attention of the readers of the JOURNAL during the past year, has now received the attention of the

War Department. Attention of all officers is called to G. O. 146, W. D., August 16, 1906.

The JOURNAL sees no reason for changing its views as expressed in the January issue of this year. In other words we still adhere to the belief in the English method, the one explained in "A Lesson in Picture." This, however, does not prevent us from obeying the spirit of G. O. 146, and we are now riding with the Anderson hand, the one described in the order.

Our objection to this hand is that as long as the scientific principle is to be uppermost, the really scientific one, the Le Bon method, should have been adopted. For this is the one that gives the separate play of the two sets of reins to the greatest advantage. However, we have found that this method so fills our hand with reins that we feel as though we had a ball of mud in our grasp. And for a hard mouthed horse the hand is weak.

The reason for the JOURNAL'S belief in the English method is that the officers at Riley, where the double rein has been quite extensively tried, tell us it is far the simplest for the enlisted men to learn. It would seem, as Captain Henry stated in the last issue of the JOURNAL, that the soldier can be taught any method with equal ease. But such was not found to be the case. And ease of instruction should be considered carefully before we give ourselves up thoroughly to the scientific methods.

However, we are glad the subject is attracting such attention and we hope the War Department will have no objection to furnishing the JOURNAL with the reports that are due on December 31, 1906, under G. O. 146.

We are sorry to state that a mistake of transposition in the July issue of the JOURNAL gave the wrong names to two of the hands described by Captain Henry. To obviate this misunderstanding all four of the hands described by him were printed on a single sheet, properly named, and sent to every mounted organization in the service, as was done with the "Lesson in Picture." The plate given as Figure 4, page 148, July 1906, JOURNAL, should be placed on page 147, and

the plate on 147 should be placed on page 148. In other words, Figure 4, page 148 is the Anderson hand, and the one tentatively adopted by the War Department.

We again print it for the benefit of the service as the cut is much plainer than those in G. O. 146.



FRENCH CAVALRY (ANDERSON) METHOD.

COUNTY FAIR CAVALRY.

BY CARLE A. WOODRUFF, BRIGADIER GENERAL U. S. A., RETIRED.

I HAVE read with much interest the little article, "County Fair Cavalry," in the April issue of the JOURNAL; it carries me back a period of over twenty years when I had a like experience, and I can almost believe that Sergeant Coogan, served with me in old Light Battery F, Second Artillery, (now Fourth Battery Field Artillery).

In September, 1885, I was ordered by the Department Commander to take my battery from Fort Leavenworth, Kan., to St. Joseph, Mo., to take part in the fair then being held in that city. A train of cars was furnished and in a few hours we were landed in the city above mentioned.

Imagine my surprise on pulling into the depot at St. Joseph, to have the cars flooded with large red hand bills, of which the enclosed is a copy. I did not relish being one of the "special attractions," but I became used to it during the ten years that I remained in Kansas as a light battery commander. My lieutenants on the occasion of this St. Joseph trip were G. F. E. Harrison, now Lieutenant Colonel Artillery Corps; Lotus Niles, now Major Artillery Corps, and attached, Arthur Williams, now Lieutenant Colonel Fifteenth Infantry. My men, like the County Fair Cavalry, ate their meals sitting on the grass near the battery kitchen shack, and because the polite country people walked all over them, painted on a large board the words, "Wait and see the soldiers eat hay," which they displayed at the sounding of mess call each day. I made many County Fair trips during the years, 1885 to 1894, and though at the time I did not much relish them, I look back now upon that period as the happiest ten years of my life.

The Greatest of all
A T T R A C T I O N S



BATTERY F,
2d Light Artillery, U. S. A.,

from Fort Leavenworth
will arrive on the Exposition Grounds to-day,
Thursday, September 3d, at 5:00 o'clock, P. M.

To-morrow, Friday, the Battery will go through a regular course
of Field Exercises, Firing, Etc.

This Battery is fully equipped, consisting of 6 pieces of Artillery,
75 horses, with a full compliment of men, and requires a train of

12— C A R S —12

To transport it from Fort Leavenworth.

The maneuvering and firing will occur immediately in front of the
Grand Stand, which seats 10,000 people, so all can have a full view.

R E M E M B E R

This Battery is brought here by the managers of the Exposition,
and can only be seen on the Grounds during Friday. It is a
sight to be seen only once in a lifetime.

CHAS. F. ERNST,
Secretary.

DEPARTMENT OF SIGNAL ENGINEERING,
THE U. S. SIGNAL SCHOOL, JUNE, 1906.

EXTRACT FROM LECTURE ON "FIELD LINES OF INFORMATION" BY
MAJOR GEORGE O. SQUIER, SIGNAL CORPS.

MILITARY lines of information may be conveniently
divided into two classes, as follows:

1. Tactical lines.
2. Strategical lines.

It is the former only which need concern us seriously at
present, since in any great war conducted in a territory in-
habited by civilized people, the problem of constructing per-
manent or semi-permanent lines to follow the larger units of
a moving army is one which is easily met by utilizing and
adapting commercial lines already at hand, through the ser-
vice of either regular signal troops, volunteer signal troops,
or by civilian contract labor.

Tactical lines of information, by definition, refer to lines
constructed and operated in the presence of the enemy.
Here is the task to which the signal officer must devote his
closest attention.

In the construction of tactical lines of information the
prime requisites are:

- (a) Certainty of operation.
- (b) Extreme mobility.

If we are to succeed in war the Signal Corps must con-
struct field lines which are so reliable and certain in action as
to inspire and insure the complete confidence of the line of
the army which is to depend upon them. The equipment
must also be so mobile as to provide a field telegraph station
by the side of the commander wherever he may be required
to go in the exercise of his duties. This simply means that
we must abandon the present cumbersome lance trucks and
use a pliable, well insulated wire of great tensile strength,
paid out directly on the ground.

Professor Morse originally elevated his wires on poles be-
cause commercial insulated wire had not been invented, and

because he used for the operation of his instruments a low potential battery.

From an engineering standpoint this problem of delivering at the extremity of a transmission line, of any length required in war, the minute fraction of a horse-power of electrical energy necessary to operate the present field buzzer is not difficult. In fact, hundreds of horse-power are transmitted daily in the operation of electric street railways by insulated trolley wires placed even beneath the surface of the earth. A few years ago these trolley wires were also elevated on poles. It is simply a matter of relative insulation and potential.

From a military standpoint the immense advantages to be gained in dispensing with the materiel and personnel for pole construction of whatever sort must be apparent. In fact, the commanding officer at present unconsciously pictures to himself, when considering field lines, the comparatively complicated equipment which was used in the Civil War and known as the "Flying Field Telegraph Train." When he learns that one single, substantial field wire wagon which automatically pays out and reels up a strong, insulated steel wire at any gait up to a fast trot, and which is operated by a personnel every man of which is mounted either on a horse or the wagon and which furnishes him with reliable telegraphic or telephonic communication wherever he chooses to go with his command, he will positively demand this service for all of his field operations.

He learns that his field wire is automatically maintained without specific orders, on the same principle that a railroad track is maintained by the use of section bosses. He learns that the wire trailing behind his command is placed in a concealed position by mounted men equipped with light pikes for this work, who also keep up with his command. In fact, he learns that the enemy's raiding cavalry attempting to cut his lines, no longer finds them conspicuously on poles inviting destruction.

The tactical field-wire train in use at the U. S. Signal School has been reorgangized as follows:

Capacity of train, sixty miles of field wire.

Four (4) sections of fifteen miles each (one day's march of a division).

Each section consists of but one wire wagon, with equipment for four buzzer stations, complete; total capacity of train, sixteen buzzer stations.

Personnel of each section, twelve men. Of these men all are mounted but two; these latter ride on the wagon.

Total personnel of train, fifty men.

Each individual man, although permanently assigned to a section and having certain definite duties and responsibilities therein, is trained to fill any position in his section.

The above field-wire equipment is supplemented by a buzzer-wire and visual equipment for each section, for use when required for lines subsidiary to the main lines. The buzzer wire is a light steel wire weighing about five pounds to the half-mile coil, and can be easily paid out or reeled up by a mounted man at a trot.

RIFLE ON HORSEBACK.

AS many readers of the JOURNAL are still considering the subject of carrying the rifle and how the saddle should be packed, we reprint the article as headed above, which appeared in the last JOURNAL from Major J. G. Galbraith. Two corrections are made in the print as follows: The expression "pack saddle" should read packed saddle, and the "blanket bag" should read barrack bag.

Major Galbraith has added in a late letter to us the following:

I have no opportunity to experiment with the new rifle. I have a notion that the attachment in front of the pommel could be designed by a mechanical expert in such a fashion that the rifle could be clamped in any position at almost any angle. There is a shoulder in front of the pommel which would afford a secure base for the attachment which might

be of a ball and socket or of a swivel pattern. I think we try to carry too many things on the packed saddle; but the rifle has to be carried somehow.

I have no great amount of confidence in the following, but I have not yet seen any unassailable solution of the Rhodes problem. ("Cavalry Equipment," the JOURNAL, April, 1906.)

"I have known of a troop of cavalry carrying the carbine balanced on the pommel through an Indian campaign of several months; and I have seen frontiersmen carry a long tom in some such way.

The following is a mere suggestion:

Rifle balanced on pommel, held by a steel grip or frog, butt to the left and depressed until muzzle is elevated to an angle of about 45 degrees; axis of barrel perpendicular to axis of horse.

Lariat fastened to the near pommel ring. Canteen fastened to the off pommel ring. Saber suspended from near cantle ring by means of a loop (as is done in the French cavalry).

Nosebag suspended from the off cantle ring. Tin cup in nosebag or on canteen strap. An extra bandolier of ammunition may be carried in the nosebag.

Overcoat, or slicker, or cape, or poncho, or blanket, carried on cantle with shelter half.

Shelter pole and pins may be carried in nosebag or packed with cantle roll.

Weights in saddle bag distributed so as to balance the packed saddle.

Half ration of grain may be carried in nosebag.

Haversack to be carried by trooper when cut loose from transportation. Also useful for dismounted service and travel by rail. Ordinarily on marches the haversack (and barrack bag) with spare clothing, etc., will be carried on wagons or pack animals."

J. G. GALBRAITH,
Major of Cavalry.

CAVALRY AND MOUNTED INFANTRY.

LIEUTENANT-GENERAL SIR JOHN FRENCH presided, on the 22d inst., at the Royal United Service Institution, when Brigadier-General E. C. Bethune read a paper on "The Uses of Cavalry and Mounted Infantry in Modern Warfare." The lecturer said unfortunately no campaigns of late had thrown very much light on the question of the utility of cavalry in war under modern conditions, but a careful study of them would show that many opportunities were missed for cavalry action which, if taken full advantage of, might have had far-reaching results. There was not sufficient cavalry in our army, and therefore it must be supplemented by mounted infantry. In his opinion mounted infantry should be a source of strength to the cavalry, rendering a combination of the two with horse artillery an independent fighting force. The duties of cavalry were four fold — to cover the front and flanks of the army with an impenetrable screen; their scouting must be energetic and bold even to rashness. Secondly, they must have such cohesion and discipline that on occasion they would be able to make use of shock tactics if the opportunity presented itself. Thirdly, there should be sufficient cavalry to operate in large bodies wide on the flanks, to threaten the flanks and rear of the enemy. Fourthly, there must be cavalry fresh and ready to pursue the enemy if defeated. There must be sufficient cavalry, under an independent leader, to carry out those duties, the screening duties of the main army being carried out by a force specially detailed, and the remainder forming part of the mobile troops, whose duties would be to threaten the enemy's flanks and rear and force their way through the opposing cavalry, and so discover the secrets that lay behind. Cavalry leaders must be good horsemen, have a quick eye for country, and be confident in themselves and their troops. They must be thinkers, and know the strategical work that lay before the hostile army as well as before their own. The cavalry soldier must be taught, and must thoroughly believe, that he was most effective when on

his horse and armed with the *arme blanche*. Whether the lance or sword was to be the principal weapon of shock action was a question that could only be decided by actual experience in war. Personally, he thought that the lance was far superior to the sword, both in its moral effect and actual effect. Its only drawback, of course, was that for dismounted work it was in the way. The training of the mounted infantryman should be the same as that of the infantry, but he must be taught to ride, look after his horse, and perform scouting duties. The uses of mounted infantry were threefold; to form a mobile reserve for the main army, to supplement and support the independent cavalry, and to be able to take over the screening duties at a pinch. The mounted infantry soldier had a complete knowledge of infantry fighting; what he needed to practice was to get a more extended view of the military situation. The *role* of cavalry was, in his opinion, enormously strengthened by the support which it would get from the mounted infantry on wide operations, and working in conjunction with it we should have an incalculable advantage over the cavalry of any other nation.

In the discussion that followed, Major General Sir Edward Hutton said there are those who believe that shock tactics on the field of battle are no longer possible for cavalry. To such he would ask whether the lessons taught during the following wars were not of some special significance—wars fought under modern conditions, with breech-loading weapons and machine-guns: The Zulu War of 1879, at Isandhlwana, Kambula, Ginginhlovo, and Ulundi; the Afghan War of 1878–9, at Ahmed Kehl; and the Soudan Campaigns of 1884–85, at El Teb, Tamai, Abou Klea, and El Gubat. Could it be denied that a resolute, well-equipped cavalry was futile for shock purposes on a modern field of battle, in spite of the knowledge and experience that even savages with spears and shields had broken squares unshaken by a long drawn out preliminary fight, untouched by shrapnel or by rifle fire? In the Russo-Japanese War the bayonet charge had been repeatedly resorted to, and hand-to-hand fighting had, as in the days of old Brown Bess, upon numerous occasions decided the final issue of a fight. He

thought it was not unreasonable to argue that the sudden onslaught of a well-led body of horsemen upon artillery or infantry, worn out with a long drawn fight, and exhausted by losses, would prove decisive. If the Russian cavalry effected little in the late war, it was, he thought, because it was ill equipped, ill trained, and badly led. If the Japanese cavalry failed it was from want of numbers, absence of machine-guns and horse artillery, and ineptitude of horsemen. He was one of those who deprecated the present tendency of making our cavalry rely mainly upon their fire power, and to trust to dismounted action for their success in the field of battle. Initiative and enterprise must now, as ever, be the life and soul of a sound cavalry. This cannot be attained by impressing the cavalry soldier with the fact that he is useless for offensive purposes unless on his feet. He ventured to express the hope that the near future would see an expansion of cavalry by the increase from three to four squadrons per regiment, but without increase of horses (each squadron being thus dismounted for three months in the year, during which it would do musketry, foot drill and take its furlough), and that a cavalry school of tactics and strategy may ere long be established. He believed that the important part to be played by mounted troops in modern war had yet to be realised. The first great leader of cavalry who was given the means and had the opportunity of combining "shock" with "fire power" in right proportions, would do little less than revolutionise existing theories of war.

General French said that the value of cavalry, trained as it now was, could not be doubted, and he held such a high opinion of the value of mounted infantry that every mounted infantryman in the Aldershot Army Corps was mobilized once a year to the number of about 3,000. The lecturer had had a great experience of cavalry, infantry, and mounted infantry, and no better answer could be given to the false theories and ideas which had been so freely expressed in the past than in the skillful, temperate, sound, and soldierlike manner in which he had dealt with the whole question. It had given him great pleasure to find that the lecturer gave

such prominence to the study of the higher art of war by cavalry soldiers. They must, the lecturer had said, be able to read the symptoms which revealed themselves of the hostile movements, visible or semi-visible in the fog of war; they must be students and thinkers, and, in fact, strategists of the highest order. But he would go one further, and say that both cavalry and mounted infantry in the exercise of the most brilliant rôle which could fall to the soldier's lot must also be tacticians. When the enemy's cavalry had been overthrown and was prevented from interfering with their enterprises a vast field was opened to them, but to know how to turn their opportunities to the best account they must thoroughly understand the combined action of the three arms on the field of battle. Particularly as regarded mounted infantry the lecturer had assigned to them as their first duty the formation of a mobile reserve for the general officer in chief command, who could apply them quickly at any given spot during the fight. That was no doubt their chief and principal use, and it was unnecessary to lay stress on the necessity for the leader of such a force being possessed of high tactical efficiency.—*Broad Arrow*.

UNITED SERVICE CLUB.

SIMLA, INDIA, August 8, 1906.

The Editor U. S. Cavalry Journal:

DEAR SIR:—I note in the July issue of the United States Cavalry Association JOURNAL an article on the Pieper Aiming Device, used by the U. S. Ordnance Department.

I consider this a most interesting invention, and though perhaps small and simple of its kind, is highly scientific. I would be very glad to obtain one and write to ask if you will kindly forward me the name of some store or manufacturing house where I could buy one, also the price if you happen to know it, so that I may forward cash with order.

Hoping you will excuse my troubling you, I remain,
Very faithfully yours,

KENNEDY BERESFORD,
Major, Royal Irish Rifles.

ATHLETICS AT MANEUVER CAMPS.

HEADQUARTERS PROVISIONAL DIVISION,
CAMP OF INSTRUCTION NEAR FORT D. A. RUSSEL, WY.

CIRCULAR,)
No. 13.)

August 28, 1906.

I. The following programme of athletic sports and exercises is announced for the command:

For Saturday, September 1, 1906: 100 yard dash; shoe race; potato race; tug of war; mounted rescue race; obstacle race; 120 yard hurdle race; wall scaling; 400 yard relay race. (4 men).

For Saturday, September 8, 1906: Finals for 100 yard dash; tug of war; hurdle race; 400 yard relay race; potato race; sack race.

Artillery driving contest. (Details to be arranged by the commanding officer, field artillery battalion).

The afternoons of September 4, 6 and 11 will be devoted to base ball.

The rules of the Amateur Athletic Union will govern in athletic contests, and Spaulding's Official Base Ball Guide shall be taken as the standard in base ball games.

Each company, troop and battery will be required to enter one contestant in each individual event and will be allowed to enter one team in each team event. No company, troop or battery shall enter more than one team in each team event. All members of any one team shall be from the same company, troop or battery, and all detachments shall be considered as separate organizations.

The names of all contestants will be given to Captain George P. White, Sixth Cavalry, before 6 o'clock p. m. the 30th of August, 1906.

The following events will be known as Exhibition Events for which prizes, but no points will be awarded:

Wall scaling contest (for infantry only), mounted rescue race (for cavalry only), artillery driving contest (for artillery only).

For all contests, except Exhibition Events, the organization or individual winning will be credited with five points;

those second with three points, and those third with one point.

II. Regulations for Athletic Events and Exercises:

Obstacle race: Obstacles to be unknown until the morning of the contest.

Potato race: Contestants will be required to place six potatoes in a basket at the starting point. The first potato will be placed five yards from the starting point; the remainder spaced five yards from the first. All potatoes of winning contestant must be in his bucket at the completion of the race.

Relay race (4 men): The starter will run from scratch to 100 yard mark, pass a handkerchief to a second man, who will run back to the scratch, passing it to the third man, etc. Each contestant will toe a line and will not start until the handkerchief is passed to him.

One hundred and twenty yard hurdle race: Three foot hurdles will be used.

Shoe race: For each contestant a pair of shoes with the number of the contestant chalked on each sole, will be placed in a pile twenty-five yards from the starting point. The winner must secure his shoes, put on and properly lace them and return to starting point.

Sack race: Sacks will be furnished under direction of the officer in charge. The distance will be 100 yards.

Tug of War: Each regiment or part of regiment at this camp, and the artillery battalion, will furnish a representative company, troop or battery team to represent the regiment or battalion, all the members of which shall be from one company, troop or battery. After the two contesting teams are in position for the pull, they will be allowed five minutes to prepare ground for position. No tools or implements will be allowed to assist them in this preparation. The winning team will be required to pull their adversary toward their side for a distance of five yards, shown by the center of the rope, or to have the advantage at the end of three minutes from start. Each team will be composed of one captain and eight men. No gloves will be allowed in this contest.

REGULATIONS FOR EXHIBITION EVENTS.

Wall Scaling Contest: One corporal or sergeant and seven men. Uniforms will be full field equipment except ball ammunition, and arms will be carried. Rifle will be loaded with five blank cartridges and locked. The squad will start at a point twenty-five yards from a ten foot wall, climb wall, run twenty-five yards to a finish. Each member will fire five shots. Time will be taken from start till the last man has finished firing his five blank cartridges.

Mounted Rescue Race: Team of two men. Equipment in khaki or olive drab with service hat. Arms—rifle and pistol. Distance between No. 1 and No. 2, 200 yards. No. 1 at starting point (mounted). No. 2 at 200 yard mark (dis-mounted); No. 1 has pistol loaded with five blank cartridges; No. 2 has rifle loaded with five blank cartridges. At signal for start, No. 1 rides toward No. 2, firing his five blank cartridges from revolver. No. 2 at signal for start fires five shots from rifle and runs toward No. 1 who is coming to his rescue. No. 2 mounts behind No. 1 and both return to starting point.

REGULATIONS FOR BASEBALL CHAMPIONSHIP.

Each regiment or part of regiment present at this camp and the artillery battalion shall have the right to select a company, troop or battery team to represent the regiment or battalion in a series of games for baseball championship, provided that when a company, troop or battery team is selected, every member of said team shall be from one company or battery. The championship will be determined by games between the representative regimental or battalion teams played on the afternoons of September 4th, 6th and 11th, on a schedule to be arranged by the athletic committee.

The following officers are announced as officials for the contests set forth above:

Officer in charge: Captain George P. White, Sixth Cavalry.

Judges: Captain B. H. Wells, Twenty-ninth Infantry; Captain A. G. Lott, Sixth Cavalry; Captain T. E. Merrill, Artillery Corps.

Timekeepers: Captain L. B. Kromer, Tenth Cavalry; First Lieutenant R. P. Rifenerick, Twenty-ninth Infantry; Second Lieutenant C. T. Smart, Artillery Corps.

Clerk of the course: Captain H. O. Williard, Fifth Cavalry.

Assistant: First Lieutenant G. H. Williams, Twenty-eighth Infantry.

Starter: Captain J. H. Straat, Twenty-ninth Infantry.

The officer in charge will have charge of preparing the Tenth Cavalry field for athletic event and exercises, and will be assisted by the following officers who will report to him for this duty.

Second Lieutenant William F. Wheatley, Fifth Cavalry; Second Lieutenant Oscar Foley, Sixth Cavalry; Second Lieutenant Robert Blaine, Tenth Cavalry.

It is recommended that each company, troop or battery contribute five dollars (\$5) to create a fund to provide suitable prizes and trophies for the winners of the various contests. This amount should be deposited with the officer in charge at the time the list of contestants is handed him.

Uniform: For all events, save exhibition events, any suitable costume may be worn; in exhibition events, the uniform will be prescribed in the regulation for that event.

Exercises scheduled for Saturday will commence at 9:00 A. M.

III. The athletic committee appointed by memorandum from this office, dated August 13, 1906, is charged with the assigning of prizes or trophies, and fixing the amount of the former, the appointment of umpires and referees, and the decision of any point arising on the field not covered by these instructions.

By command of Brigadier General Williams:

S. D. STURGIS,
Captain, Artillery Corps,
Chief of Staff.

Official:

JOHN F. MADDEN,
Captain, Twenty-ninth Infantry,
Military Secretary.



ELIMINATION.

We had occasion not long since to lay before our readers our views upon the subject of promotion. These views remain unchanged, and we are glad to see one of our prominent ideas is now being put into practice. We do not flatter ourselves in the slightest degree that we were the cause of this action on the part of the War Department, but there is a feeling of self-satisfaction in knowing that we are in accord with the powers that be. We are now referring to the permanent examining boards. Our comments upon this subject in the April number of this year, were of some length, and the reasons there given were sufficient, it is believed, to convince the most incredulous of the desirability of permanent boards for the different arms.

But there is this to remember about our permanent boards. If any good is to come from their existence their actions must be controlled absolutely and entirely by justice. Justice has no heart, only brain. Merciful dictates of a humane heart in any member of an examining board will vitiate its work and render it a worthless institution.

It will be a disagreeable duty, this being a member of a permanent examining board. There are only a few officers scattered throughout the service qualified to act. But these few are plenty. And for the future of the army let us have them.

It has been intimated that there is a dearth of work for our major-generals. We do not believe this, but in this connection we will say that a major-general at the head of each examining board (cavalry, artillery and infantry) will be as good a

thing for the service as could happen. It would be a gigantic display sign to the army at large that business is now really meant and that the weeding out is now to begin; that an officer's record and professional zeal and ability are the only passwords to promotion; that the fact of being a nice man or one with a large family cuts no figure whatever.

We have not a large personal acquaintance with the members of the boards already appointed. We trust, however, that they realize their responsibility. We all realize that there are officers in the service, that it were wise to replace by shavetails and take our chances on the latter. And we are all aware that stagnation in any business kills.

We can feel assured that unless the army does purge itself of worthless matter, elimination and selection will later come in such drastic form as to shake the very existence of the army. As THE JOURNAL has stated, medicine is going to be applied for stagnated conditions. We had better administer it ourselves instead of waiting for a consultation of surgeons in Congress who may direct a knife that cuts to our very vitals.

THE PRIZE ESSAY.

THE essay appearing in this issue on "The Cavalry with the Federal Armies in the West," marks the passing of the prize essay as far as the Cavalry JOURNAL is concerned. Like the Roman galley, the prize essay belongs to a past age. It is true that the essays are of use in many particulars, but to the readers of the Cavalry JOURNAL they are no longer of such moment as to take the space formerly allotted them. This is no reflection on the essays that have been given. But in the renaissance of military activity in our army, up-to-date subjects are demanding our attention. The idea of obtaining a history of the American Cavalry through the medium of the JOURNAL was excellent. And before the Spanish war, time spent on this subject was well employed. But to-day we are living rapidly, even in the conservative profession of the soldier. We must have in

our journals, if they are to keep pace with the times, short, pithy articles, so that he who runs may read, and reading derive benefit therefrom. It is now believed to be the province of the JOURNAL to devote its pages to such work rather than to histories of the past.

So we have determined to take the money heretofore given for prize essays and distribute it among the contributors of the JOURNAL, and whether the articles contributed be long or short, whether they be contributed with the idea of reward or not, all original articles appearing in the JOURNAL will be carefully considered and the best paid for in accordance with our means. The paid contributions shall as stated before in the JOURNAL, be determined by the Executive Council, and timeliness of topic and good sense shall be the guiding principles of the decisions, followed later by literary merit and other considerations of less importance.

Moreover, the JOURNAL has started, in its prize problems, what may later develop into a correspondence school of military art. A careful study of these problems and their solutions will be worth any officer's time.

In this connection we publish here a list of the prize contributors to the Cavalry JOURNAL and the subjects upon which they wrote. We shall in the near future engrave a paper, something in the nature of a diploma, and forward each of these officers as a testimonial that they were the winners of the contest and of the esteem of the JOURNAL.

The History of The Cavalry of the Potomac including that of the Army of Virginia (Pope's), and also The History of the Operations of the Federal Cavalry in West Virginia During the War. By First Lieutenant Charles D. Rhodes, Sixth Cavalry, March, 1898.

The History of the Cavalry of the Army of Northern Virginia. By Captain James G. Harbord, Eleventh Cavalry, January, 1904.

The Federal Cavalry With the Armies in the West 1861-1865. By Captain E. R. Stuart, Corps of Engineers, October, 1906.

THE PANAMA CANAL.

The curious American people always are finding new things to speculate about. Much time is spent in America over the doings of our ex-presidents and what constitutes agreeable and distinguished work for them.

As far as work is concerned, good honest effort of any kind is distinguished enough for anyone. There can be no reason why America should not have her Cincinnati as well as the ancient republic.

But when we find a president who voluntarily relinquished the idea of longer continuance in the curule chair, and one of such pre-eminent abilities as the present incumbent, and when we find almost the greatest work of the world at his very elbow, speculative minds are apt to connect the two. Not long since in any army mess an officer vouchsafed the idea that when President Roosevelt retired from the presidency it would be well to give him the task of building the Panama Canal. The unanimity of opinion displayed was remarkable for an army mess. But the idea was so happy that no one could dissent.

And is this an undertaking of a scope and magnitude befitting the position and dignity of one who has been President of the United States? Surely it is a labor worthy the ambition of any man. For not only is the work itself gigantic, but its consequences will shape the destinies of nations yet to come.

There have been many people on this earth and many rulers, the endless flow of whose successors ever crowds them deeper into oblivion. There is but one Panama Canal. The man who builds it has no successor.

We took occasion to remark shortly after the Wallace defection, that in case the committee then appointed should prove unable to complete the task, (which might happen only through sickness or death of the members), it would be wise to turn the canal over to the Engineer Corps of the army. They never have yet failed in any task assigned them and their record is singularly free from charges of corruption, only one serious scandal marring it. The

amounts of money saved the government by this body of men can never be known, even though much of their work has been connected with the improvement of our rivers and harbors, which is supposed to be the greatest of all means of of mulcting the Federal Government.

Our recommendation as to their ability to finish the canal still stands. But they are not well known to the country at large. They are a retiring set of men, not in the lime light of public opinion. And heavy expenditures, advised by them, needful as all know them to be, might call forth criticism and complaining from the press.

But with Theodore Roosevelt in charge of the canal, the people would feel, on account of their knowledge of the man, that the canal would be as expeditiously and economically built as possible. Aside from the tremendous energy of this man, the people's belief in his honesty would be a most helpful factor. His acts would be accepted with smaller questioning as to the advisability thereof than those of any other man or set of men in the world. And we may feel assured that a man who has attained his prominence, who has so long held the respect and esteem of the whole American people, who can with the turn of the pen rejuvenate the language of Shakespeare, certainly can dig a ditch.

But whether the present committee continues (with a suitable replacement of the member soon to be civil governor of the Philippines), whether the work is given to the army, or whether Theodore Roosevelt is called to the task, we are fully convinced that it will not be many years before ships are passing from ocean to ocean by means other than those of Cape Horn and the Northwest Passage.

BOOKS ON THE RUSSO-JAPANESE WAR.

AS stated in our last issue, we reserved notice of Sir Ian Hamilton's book on the war, "A Staff Officer's Scrap Book." After reading this work we are satisfied to give the following opinion concerning it:

People should be careful to read the preface to a book, as it frequently gives one an idea of the author that a perusal

of the volume might not do. General Hamilton is quite happy in his preface and one point he brings to notice that all know but we have seldom seen it put in such clever language. In speaking of military history always being misleading to some extent, the general has the following to say:

"If facts are hurriedly issued, fresh from the mint of battle, they cannot be expected to supply an account which is either well balanced or exhaustive. On the other hand, it is equally certain that, when once the fight has been fairly won or lost, it is the tendency of all ranks to combine and recast the story of their achievement into a shape which shall satisfy the susceptibilities of national and regimental vainglory. It is then already too late for the painstaking historian to set to work. He may record the orders given and the movements which ensued, and he may build up thereon any ingenious theories which may occur to him; but to hopes and fears which dictated those orders, and to the spirit and method in which those movements were executed, he has forever lost the clue. On the actual day of battle naked truths may be picked up for the asking; by the following morning they have already begun to get into their uniforms."

This preface is followed by a heading opposite Chapter I, by W. E. Henley that "One eye-witness, however dull and prejudiced, is worth a wilderness of sentimental historians."

This statement of Henley's is positively correct, but one part of it does not apply to the general's book, for his work is far from dull. We cannot say that it is so far removed from prejudice, for his artillery leaning causes him to misunderstand many valuable chances for cavalry action where the voluble general will not allow the same, or in many instances will pass over without any remarks as to the advantage of good cavalry at such a point. However, this is his only prejudice that is very apparent and taking it but as the vagaries of one not trained to know the exact work of good cavalry, we are disposed to overlook it.

Chapter I gives simply the old stereotyped subject of first impressions of Japan, expressed somewhat better and with more cleverness than they are expressed by the ordinary

globe trotter. However, in this chapter he gives voice to a belief "that up to-date civilization is becoming less and less capable of conforming to the standard of military virtue, and that the hour is at hand when the modern world must begin to modify its ideals, or prepare to go down before some more natural less complex nervous type. As the author states, the city-bred dollar hunters are becoming less and less capable of coping with such adversaries as Deerslayer and his clan." This idea is nothing new. Every officer that has had any recruits to drill in the American army during the last twenty years knows that our citizens are no longer the natural soldiers they were. Time was when the average American was a rifleman, when hardly a citizen could be found that was not familiar with the musket, but those times have vanished into the past. Our recruits to-day are most lamentably unfamiliar with firearms of any kind, and teaching them these essentials of military knowledge takes up most of the time of training. Of course there is no help for this and careful preparation of the soldier must make up this early lack of knowing how to shoot.

The author pays his respects in a humble paragraph to the confidence trick games of the Hague Peace Conference, and to speak truly, a paragraph is more than such visionary schemes deserve, if we expect from such conferences international disarmament.

The author also gives his idea in this first general chapter that education in Japan is far ahead of its state in England, and that the thirst for knowledge on the part of the Japanese is most remarkable while there is very little of it in the United Kingdom, except possibly in some small degree with Scotch lads. From Lafcadio Herne's opinion of the Japanese we drew our belief that the Japanese cared more for knowledge for knowledge's sake than any other class of people. Our American idea, if we follow Mr. Schwab and others that think college life superfluous, is that knowledge is of account only when it enables its possessor to turn out dollars faster than he would without it.

In Chapter II we have General Hamilton's impressions and beliefs concerning the leading men of Japan. This is

of course interesting as an individual opinion, but that is all. We were quite laughably struck by one expression in this chapter and that was with regard to the poetry of the Japanese. It seems that in the Chinese War, Oyama ordered the planting of a cherry tree (Japan will have its cherry tree tradition some hundred years hence) at Kinchow to commemorate the engagement there, and then he ordered each of his staff to write a poem celebrating the occasion. The author states that the old idea of associating the poetic and military arts has not yet disappeared from Japan. But to tell the Anglo Saxon that a man writes poetry gives another idea than a military one. The laughable part of this is that we had heard how the Japs had sized up General Hamilton before we had read his book. It is related that one of the leading Japanese generals, on being asked what he thought of General Hamilton, replied: "Well, the general is a good poet." Viewed from the standpoint of how the Japanese regard poetry, as stated by the author, it may be the remark was intended to be most complimentary. But, as Carlyle says, But—

The first chapter of much importance to the military student is Chapter 6, The Position on the Yalu. This is a long chapter and contains much matter besides the giving of the positions. For instance here he speaks of the strength of the Russian forces at the outbreak of hostilities. We quote the following from this chapter: "I had been a few weeks at Tokio when I was specially privileged at an interview lasting several hours, to hear from the lips of a very great man what purported to be an exact account of the strength of the Russian forces. This account, technically called a distribution statement, gave the station and actual strength of every Russian unit east of Lake Baikal. It was for the month of October, 1903, and there was also a supplementary document, showing in detail the number of additional men, guns and horses which had arrived on the scene of operations between that period and the end of January, 1904. I was surprised, not only at the masses of professedly precise figures which had been got together, but at the formidable strength of the Russians. There were supposed to

be 180 full battalions of infantry, and with cavalry, artillery and engineers the total of the Russian forces in Manchuria came approximately to 200,000 men. I asked if I might communicate his long statement, and I was told I might do so as a very special mark of favor and of trust. Home went the statement, but unfortunately, later I ascertained that it was entirely misleading. I now know that at the time I fondly imagined I was being taken into the confidence of the highest authorities, the Japanese in the field knew well that the whole mobile field army at the command of the Russian Generalissimo would barely amount to 80,000 men by the 1st of May. All is fair in love and war, and it is something even to have gained the experience that the Japanese trust nobody."

The author's idea of Kuropatkin being handicapped by control from the government at home is as follows: "To the strategist, indeed, the difficulty of grasping the scope of Kuropatkin's scheme lies, not so much in accounting for his having sent so few men to the Yalu as in satisfactorily comprehending why he sent so many. No doubt it was highly desirable from the Russian military point of view, to deny Manchuria's soil for as long as possible to the Japanese, not only on account of prestige but also because every day gained meant the advent of increased munitions and reinforcements by the Trans-Siberian railway. (But a retarding force of Cossacks, mounted infantry and horse artillery, such as ought to have been operating in Northern Korea during the months of March and April, might have done this without running too much risk, whilst infantry and field guns mean serious fighting, and if their numbers are insufficient they are very likely to get caught.

This brings me to my second point: Why did Kuropatkin send Sassulitch to Fenghuangcheng with a force too small to fight effectively, too big and too immobile to extricate itself creditably, when once it had come into contact with the enemy's superior forces?

If in private life a sober, quiet individual upsets all previous estimates of his character by marrying his cook, it is not necessary to say *cherchez la femme*, because she stands

there as big as life. Where a gross and palpable blunder in elementary strategy is made by a general of repute it should be equally unnecessary nowadays to seek for the statesman who is usually quite apparent. It is difficult no doubt, for a ruler of any sort to restrain himself from interference with his instruments. Thus, in the old days, theologians having the power, used it for the purpose of routing the ungodly, as at Dunbar and many other places, where the result was good for the ungodly. Still the church could at least sometimes inspire the soldiery with individual fanaticism which might compensate for much bad direction. *Per contra*, the statesman has nothing in his gift but disaster as soon as he leaves his own business of creating or obviating wars, and endeavors to conduct them. The American war, for instance, was a war where the feebly timorous civilian strategy of the federals was a perpetual and never failing standby to its weaker adversary, whilst the greatest victory the North ever scored was when Jefferson Davis took a leaf out of Lincoln's book, and had the ineptitude to replace that competent, sagacious, careful commander, Joseph E. Johnston, by a mere thrusting divisional general, infinitely his inferior in all the higher attributes of generalship." Let the reader ponder over this lesson.

Of course the opinions quoted above are but those of a private individual. But considering General Hamilton's rank and the British Japanese alliance, we may suppose his opportunities for observation were greater than those of any foreigner accompanying the Japanese armies. We believe, from reading his book, that he used these opportunities to advantage, and while we think him rather narrow minded as regards the possibilities of his favorite arm, the artillery, and prone to belittle the importance of the other arms, especially the cavalry, yet, as a whole, we are favorably impressed with his work.

The book will be exceptionally good for the general reader, the author's humor and keen appreciation of his position being most pleasing. It is a very good work for the company officer, for we find much more about the smaller

Japanese units, such as the company and small patrols, than we find in any other work on the war.

Speaking of the preparedness of the Japanese for the war the author has the following to say of the Battle of the Yalu: "The plan of battle was arranged long before the army left Japan. It was even settled that the Twelfth Division on the right should advance through the mountainous triangle between the Yalu and Aiho and turn the enemy's left; although the sweep of this turning movement, and whether it should keep touch with the rest of the army or work clear of it down the Kuantienchen road, was left to be decided on the spot. No doubt the Japanese had alternative plans, but their main plan, the plan most carefully studied and relied upon, was brought with them from Japan and put into execution without essential modification on May 1st. The rear guard action of Hamaton was of course unforeseen and is therefore the more interesting military operation of the two, as extempore effort makes demands of a very different order from those which are employed in elaborate and studious preparations."

This reminds one of Von Moltke, on being told of the action of the French Government precipitating war, reaching into the fourth pigeon hole, third tier, and spreading upon the desk the map of the on-coming Franco-Prussian war.

The following chapters are the only ones of interest to military students:

Chapter 6, The position on the Yalu.

Chapter 7, The Battle of the Yalu.

Chapter 13, An Affair of Outposts.

Chapter 14, The Battle of the Heaven-reaching Pass.

Chapter 15, Chaotao.

Chapter 17, The Battle of Yoshirei.

Chapter 18, The Disastrous Retreat from Penlin.

The last two chapters are worth study and thought. They are well told and accompanied by plain maps. These two chapters alone make the book worth buying. In reading them we are led to believe that luck was with the Japs. These chapters give the lie to the oft repeated statement

that the Japanese took no chances. Our space is too limited to go into any description of this battle between Count Kellar and Kuroki, but we recommend this description of Hamilton's to students of battles and campaigns.

As we say, these last two chapters make the book worth while, but the giving of details of small parties add greatly to the value of the work, especially, as we have already said, to the commanders of small units. The book is worth the price and should be carefully read by our officers. The JOURNAL adds it to its list, which is still quite small. While there are many people that are not favorably impressed with the work we believe there are many phases of the war that will be entirely new to readers and students.

In hastily running over the ideas that struck us the most forcibly in the book we believe the prominent ones are that the Japanese are far from being as infallible as we were led to expect from their uniform victories; that the Russians not being successful at times can be explained in no other way than in believing their accredited stolidity or even stupidity to be true and coupling with this an almost complete loss of morale in the latter stages of the war among the brigade and division commanders. At the present writing it would seem there is a lull in the book producing business upon the subject of the late war. We know of no works other than those already reviewed in the pages of the JOURNAL that call for special mention, nor do we know of any soon to be produced.

As a closing word on the Russo-Japanese War we wish to call attention again to the Wizard of the Rail, Prince Khilkoff. This magician waved his wand over the slender thread of Russian communications, thousands of miles long, and threw into the Far East reinforcements in sufficient strength to enable Kuropatkin to confront the Japanese at the last struggle with an equal number of men. Moreover, the Russian commander, though continually forced back, was never seriously in danger. There never was a time when Oyama was anywhere near crushing Kuropatkin, and the Japanese never had the least chance of capturing a Russian army. True, Port Arthur, foredoomed, fell, and the House of Cards, known as the Russian Navy, totally collapsed. But

at the last great battle the Russians confronted the Japanese with equal chances, and a defeat led only to an orderly retreat. We cannot see that the Russian army had much to dread from a further continuance of the war.

The JOURNAL'S list of specially recommended book upon the late war is as follows:

On the causes:

"The Russo-Japanese Conflict." (Asakawa).

On the War:

"From the Yalu to Port Arthur." (Wood).

"The War in the Far East." (The military correspondent of the *Times*).

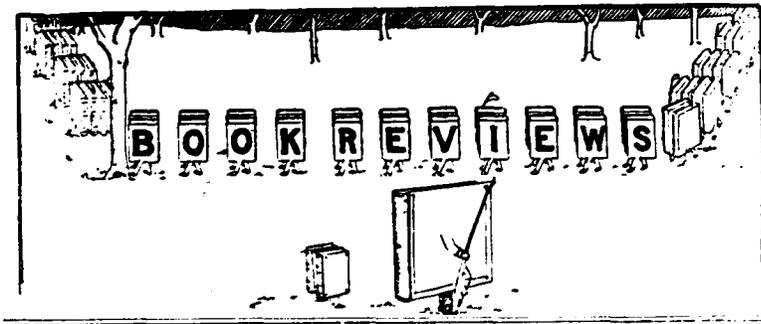
"A Staff Officer's Scrap book." (Hamilton).

Articles in *The Outlook*. (Kennan).

For comparison:

"The China-Japan War." (Vladimir).

The Outlook has not as yet published Kennan's article in book form. All the above have been carefully reviewed in the JOURNAL. Asakawa's book can be purchased from Houghton, Mifflin & Co., for \$2.00; Wood's and Vladimir's from The Hudson Press, Kansas City, Mo., for \$1.50 each; "The War in the Far East" from E. P. Dutton & Co., New York, for \$5.00; and Hamilton's book from Longmans, Green & Co., New York, for \$4.50.



**The Private Soldier
under
Washington.***

Mr. Bolton is certainly to be congratulated on a very interesting work. He has amassed a wealth of detail and presented it in a very striking manner. The contents are as follows:

The Origin of the Army.
Maintaining the Forces.
Material Needs.
Firelock and Powder.
Officer and Private.
Camp Duties.
Camp Diversions.
Hospital and Prison Ships.
The Army in Motion.
The Private Himself.

The author does not ask one to take his statements untested. He has gone to contemporary records of all kinds, memoirs, travels, correspondence, State papers, soldier's diaries, and all the possible sources that could give reliable information about his subject. To army officers this book is very valuable. It being our duty to handle the private of to-day

*"THE PRIVATE SOLDIER UNDER WASHINGTON." By Charles Knowles Bolton, Librarian of the Boston Athenaeum. Illustrated, 12 mo. 358 pages, including index. Price, \$1.25. Charles Scribner's Sons, New York.

we should know his history and know what sort of a man he was in the birth days of the nation. This book should be owned by every officer in the service and there should be a copy of it in every organization library throughout the army. It would be a very popular book with the enlisted men.

All little details that trouble the troop and company commanders to-day we find troubling the officers of the Revolution. The wonder of it is that with their much greater difficulties they ever succeeded at all. We quit the book only at the very end and our admiration for the suffering private of, not only Valley Forge, but the entire war, is greatly increased. The troubles of all, from the Continental Congress down through all the officers, particularly the recruiting officers, seem at this day unsurmountable. The whole work speaks volumes for the tried and true men of those early days.

The publishers made a special price during the early part of this year of 60 cents but now have advanced the book to its old price, \$1.25. It is well worth anyone's money and particularly that of the present day army man.

**Suggestions to
Military
Riflemen.***

Lieutenant Whelen is to be congratulated in giving to the army something of moment and value. We can give the idea of instruction contained in his work in no better way than by quoting his introductory remarks.

"In the days of the old Springfield rifle, Blunt's Firing Regulations contained an excellent chapter entitled "Suggestions to Riflemen." This work, a most excellent one, was widely consulted and assisted to a large extent in improving marksmanship in the army. To-day, however, rifle firing has reached such a science that it is impossible to burden our firing regulations with this subject. The need

*"SUGGESTIONS TO MILITARY RIFLEMEN," by Lieutenant Townsend Whelen, Thirtieth United States Infantry, winner of the army competitions, 1903, coach of the army infantry team, 1905, distinguished marksman, etc., formerly range officer First Brigade National Guard of Pennsylvania. From the press of the Franklin Hudson Publishing Company, Kansas City, Mo.

of such information and knowledge in the service is greater than ever, and the desire for it expressed to me by many officers of the regular army and National Guard has induced me to undertake this work. While the great part of it is compiled from my own experience, I have consulted practically all the modern writings on the subject obtainable in my endeavors to present to the reader everything on the subject of any practical value.

I shall not attempt to describe the rifle, for I do not care to take up the space necessary. The best description of it will be found in a pamphlet entitled "Description and Rules for the Management of the United States Magazine Rifle, Model 1903." Nor will any of the data contained in the firing regulations for small arms, other than that which is absolutely necessary to make the text clear, appear in these pages. A knowledge of the contents of both these works is necessary to a clear understanding of what is to follow. The reader is referred to any of the standard works on ballistics for the scientific part of rifle shooting, as I shall take up only the practical side of the subject, it being my intention to give fully that information which the marksman and the instructor need to shoot and teach on the range and battlefield.

The system of instruction which I have laid down was first given to the army in a paper of mine entitled "The Scientific Coaching of the Rifleman," published in the *Journal of the Military Service Institution for 1904*, and the success of and the publicity given to this article, as well as the results achieved by the system have firmly convinced me that it is sound both in theory and practice. The system of coaching was first tried on a company of regular infantry in 1902, and since that time every competitor from that company has won a place on the army team.

It is my hope that I have given something to the service which officers and individuals will care to study and to carry to the range with them."

The contents are as follows:

- Chapter 1, The Selection of an Accurate Rifle.
- Chapter 2, The Care of the Rifle.

- Chapter 3. The Firing Positions.
- Chapter 4. Holding and Pulling the Trigger.
- Chapter 5. Position and Aiming Drills.
- Chapter 6. Gallery Practice and Calling the Shot.
- Chapter 7. The Sights and their Adjustments.
- Chapter 8. Elevation and Zero.
- Chapter 9. Windage and Winds.
- Chapter 10. Mirage, Light and Atmosphere.
- Chapter 11. Ammunition.
- Chapter 12. The Score-book.
- Chapter 13. Slow Fire.
- Chapter 14. Rapid Fire.
- Chapter 15. Skirmish.
- Chapter 16. Long Range.
- Chapter 17. Coaching the Company and Team Practice.
- Chapter 18. The Eyes.
- Chapter 19. The Rifleman on the Battlefield.

We believe it worth while for troop and company commanders to purchase enough copies of this work so that a systematic study along the lines laid down can be carried out during the winter months. Its style is simple and clear and the matter is so handled that the enlisted man can digest all of it.

We have always held that shooting a rifle at a stationary target is a matter of brains. That the average man possesses enough brains if he uses them or is taught how to use them to make a good shot. We believe that with careful instruction our soldiers can be made much better shots than they are at present. This instruction must be given to all, for a few expert riflemen here and there will not help us much in time of war. A good general average is what we want and this can be attained by careful instruction. And the ideas and experiences of a master, such as the author, should be carefully studied.

The author and the service is to be congratulated on the appearance of "Suggestions to Military Riflemen." We are glad to see that it is published in our pet form, a small volume that fits the pocket of the khakie blouse and so can be carried on the range without any trouble.

We give below a few extracts picked out here and there to show more fully the nature of the work. In chapter 4, on the subject of holding, the author has this definition, "By holding, we mean that attempt on the part of the brain, nerves and muscles to control or eliminate the trembling of the rifle long enough, while it is correctly aimed, to deliver the shot."

From the same chapter we quote the following:

"There are two ways of pulling the trigger of a military rifle. One is to gradually increase the pressure ounce by ounce until the gun suddenly goes off, in the meantime holding the best you know how, the report and recoil coming in the nature of a surprise. The other is to learn to put just so much pressure on the trigger that an ounce or more placed on very carefully at the exact instant when it is desired to fire will discharge the piece. Both methods have their advocates. I believe the latter to be the best way, for we thus have the rifle go off when we want it to, whereas by the former method we limit the accuracy to the average error of holding while applying the pressure. Rapid fire forms such a large part of a rifleman's practice to-day that a man should be able to fire his rifle the instant that his aim is correct. However, the former method is a great factor in teaching a man to overcome flinching, and it is perhaps better to teach recruits to fire in this way and then when they have overcome all tendency to flinch, change them to the other method. Jerking or snatching the trigger is, of course, fatal to good shooting. Control of the trigger is everything in rifle practice. It is that part of the art which is soonest forgotten. When we change to a rifle with different trigger pull we must learn it all over again. Hence, we should stick to one rifle as long as it remains accurate, and by daily trigger pull accustom ourselves to the pull and keep in practice."

Speaking of sight the author has the following to say:

"I believe the half sight and the peep sight should be the only ones taught, and one or the other of these methods of sighting should be insisted upon. The use of the peep sight should be encouraged. This sight is used almost exclusively by nearly every expert shot in the country."

He then goes on to explain his reasons for favoring the peep sight. However, he states later on, under the subject

of rapid fire that "At 200 yards it is best to use the open sight as it is hard to catch the peep quick enough."

He speaks about each soldier having his own gun and by gallery practice during the winter months keeping familiar with it. "To become really expert with the rifle, one must use his piece until it becomes almost a part of himself; must know its trigger pull, bolt, action, feel, balance, sights and peculiarities as he knows the alphabet. There is an old saying, 'Beware of the man with one gun.'"

Chapter XII, the Score Book, is well worth serious study. And the same may be said of all the chapters.

It is well to remember that in reading Lieutenant Whelen's book we are getting the ideas of an expert, one who knows how to reduce the chances of missing the target to a minimum. One who is not satisfied with hitting the bulls eye, but must know exactly the place in the bulls eye the bullet hit, and what must be done to insure hitting the center of the bulls eye with the next shot.

The whole of our army instruction is for the purpose of putting an equal or superior number of men to the enemy on the firing line, and when there of having them better men than those of the enemy, that is better shots. If the staff corps are able to provide better arms and ammunition, to eliminate the twenty per cent. of sick in time of war, to perfect the lines of communication so that the commander will constantly be in touch with his various units, then we shall have little to fear as to results, if we have upon the firing line a well instructed soldiery, who know how to take advantage of all helps and reduce all disadvantages to the lowest limit, who understand that the only question is of who shall kill whom, and that the best shot will live to shoot again.

About Race Horses.*

"The American Thoroughbred," in the American Sportsman's Library, edited by Casper Whitney, is written by Charles E. Trevathan, than whom none is better qualified to treat such a subject. The writer reviews horse-racing thoroughly from

* Published by the Macmillan Company; \$2.00 net.

the days of Bulle Rock, the first American race horse, foaled in England in 1718, down to Waterboy, McChesney, and their congeners of the present day. This history of the American turf is dealt with in an entertaining manner. The performances of famous racers are recorded, and the main facts of their genealogies are given without the tedious details of the stud book. A significant chapter is headed, "Early Owners were Gentlemen." There are notes on well known patrons, breeders and owners, and some graphic accounts of great races of the past. While not written for the specialist, the book will interest all horsemen, and it furnishes information of an interesting character for the outsider. There are a number of pictures of horses and portraits of men.—*San Francisco Argonaut.*

**Aids to
Scouting.***

This is one of Gale & Polden's pocket series. Being written by Major General Baden-Powell little introduction is needed.

This soldier officer has written down his ideas and many of his experiences for the use of noncommissioned officers and men. But no officer can read it without being benefited.

The aids are eminently practical, very clearly explained and will appeal to the intelligence of those to whom addressed. It is a valuable little work for about ten or twelve lessons in the noncommissioned officers' school.

The following is the contents: Pluck and Discretion, Finding the Way in Strange Country, Quickness of Eye, Keeping Yourself Hidden and Dodging the Enemy, Tracking, Reading the Spoor, Getting across Country, Sketching, Reporting, Headings for Reports, Despatch Riders, Care of Man and Horse, Spying, Scouting on Service.

The appendix contains some exercises and the directions how to carry them out. Such as the spider and the fly exercise for drilling patrols. Also scouting competitions and how to organize them and carry them out with interest.

*"AIDS TO SCOUTING." By Major General R. S. S. Baden-Powell, Inspector of Cavalry in Great Britain and Ireland. Gale & Polden, 2 Amen Corner, Paternoster Row. London. Price, one shilling to any part of the world.

The little work is written in the racy style of this celebrated cavalryman and is most instructive and entertaining. The proof sheets of the original edition (this is a second edition) were actually revised by the author while besieged in Mafeking.

The author has submitted some diagrams which give a general principal of patrolling formations for fairly open country. He gives the section in "Diamond" formation, and then two sections and then three, the latter in "Arrow Head" formation. These ideas are worth looking over.

**The
Military Law
Examiner.***

Gale and Polden have just brought out the sixth edition of The Military Law Examiner. The questions and answers are methodically grouped in sections which correspond to the author's earlier work on "Military Law." The two books may be used together and the student thus be able to test his knowledge step by step as he gradually works through the subject.

The manner in which the questions are framed show that in general a long answer is a wrong answer. We do not know that we agree with the author in his belief that as an examiner has to look over a large number of papers he will not put question that entail long answers. What an examiner wants is to find out if the one examined knows the subject. The form of questions will depend upon the individual manner of the examiner. Of course it is obviously impossible then to state what the form of questions will be unless we know the personal reputation of the particular examiner.

However, we believe the author has made as good a catechismal work as can be made. Personally we never knew these question books to be of any great use. They may serve a purpose in helping one to study an original work but we never derived much benefit from them in preparing for an examination. Some men do, of course, else the publishers

*"THE MILITARY LAW EXAMINER." By Lieutenant Colonel Sisson C. Pratt, Royal Artillery, retired. Gale and Polden, Ardershot. Price, post free to any part of the world, 4s. 6d.

would not be bringing out a sixth edition. American officers will of course derive more benefit from a reading of the author's first work than from this question book.

We are struck with the simplicity of the author's definition of military law which is as follows: Military Law is a law that governs the soldier in peace and in war, at home and abroad, at all times and in all places. It deals with offenses committed by officers, soldiers, and other persons, who are, from circumstances, subjected, for the time being, to the same law as soldiers. When used in a wider sense, the term includes not only the disciplinary but the administrative law of the army, as, for instance, the law of enlistment and billeting.

Army Service Pocket Book.* We must say that we do not agree with many publishers as to the merits of this book. It is a good work of course, but one not at all indispensable and we question the use of purchasing it unless one has some particular need for it, or a book of its kind. As indicated by the title the work intends to be a sort of manual or guide for the service generally. It gave us one idea and that is would it not be possible for some military genius to devise some sort of a military Trautwine? Possibly the idea could not be worked out but something along that line would be better than Lieutenant Stewart's work.

The following are the heads of sections:

Protection.

Reconnaissance.

Finding and Marching on Bearings.

Despatch Riding.

Attack and Defense.

Judging Distances by Day and Night.

Horsemastership.

Camp Duties.

Field Sketching.

Field Engineering.

*From the Press of Gale & Polden, Lmt'd. Price, 2s. 6d. Author, Bertrand Stewart, Second Lieutenant, West Kent (Queen's Own) Imperial Yeomanry.

Few military books deal with such a range of subjects and that the author did as well as he did is a matter for congratulation. But the subject is too large for such a volume and though he has many good ideas and many well expressed pages yet the work is of no particular moment to our officers.

**The Battle
of
Tsushima.***

It would be rank flattery to say that this book is in every way satisfactory; but it is most improbable that we will ever be offered anything better. As far as the translators, Dr. J. H. Dickinson and Mr. F. P. Marchant, are concerned, we have little but praise to offer. It is true that occasionally Russian technical terms are rendered by description rather than by their English equivalents, and that the rendering of the Russian into English weights and measures has not been carried out quite completely; but the translation on the whole appears to be adequate, and the irritating simplicity of the earlier pages is, seemingly, but a fair reproduction of the style which Captain Klado judged to be necessary in order to make his views clear to a public very ignorant of naval war. The volume itself is very handsome, and the publishers are to be complimented upon its *format*. For the benefit of the very numerous illustrations, chiefly reproduced from photographs, the size is large (11 in. x 8 in.), but by the use of a light paper for the letterpress the weight of the book has been kept within reasonable bounds. The front cover is decorated with an imperial Japanese chrysanthemum, presumably not at the suggestion of Captain Klado. Nearly all the illustrations are good and clear. There are a few fancy pictures which might have been dispensed with; but the great majority of them are representations of the Russian ships both before and after the battle. The damages to the ships are reproduced with much minuteness. The only serious error noticeable is at p. 24, where a particularly fine photograph of the cruiser *Oleg* is described as the battleship *Orel*.

*"THE BATTLE OF TSUSHIMA." By Captain N. Klado, I. R. N. Hodder & Stoughton. 1906. Price, 30s. net.

There will be many who will consider that, by the nature of his conduct at the time of the Dogger Bank affair, Captain Klado forfeited his right to pose as an authority. It has indeed become customary to say that his strategy is sound, but that his method is "unsympathetic." As to the soundness of his strategy, it is permissible to have doubts. The groundwork is, of course, the doctrine of Mahan, but the application is all Captain Klado's own; and we will be much astonished if we are alone in detecting several serious *non sequiturs* in Chapter I. § viii. As to the intrigues that accompanied the equipment and despatch of the Baltic Fleet, it is to be presumed that the author is well qualified to speak in virtue of his intimate and official connection with the Russian headquarters staff. But Captain Klado's comment on the shortcoming of Russian officialdom, on the pitiable lack of efficiency in the Russian Navy, even his occasional ill-tempered allusions to England, do not constitute the whole of the book. The greater part of the second half is composed of narratives of officers who took part in the battle, and it is from these that the author attempts to reconstruct the battle. It would seem that with such material the task is an impossible one. Not that the letters and reports of the Russian officers have not a real value, but their value is not mainly scientific. The writers were not so situated that they could play the part of dispassionate observers; and the result is that, if their letters are vivid with the psychological atmosphere of battle, yet they suffer from "the fog of fighting," and show that the interconnection and sequence of the movements of the fleets passed comparatively unnoticed owing to the fierce strain. The result is that the attempted diagram of the battle fails signally: it bears not the slightest resemblance to any plan or account hitherto published, and it contradicts the Japanese evidence at every point. On the other hand, the narratives and plans here given bear out, and indeed add somewhat to, all that has been said of the Russian formations before the battle and during its early stages.

A good deal of interesting, perhaps valuable, information may be drawn from this book. For instance (p. 17), as to the Russian designs on the Dardanelles—this seems to have

slipped from Captain Klado's pen unobserved; as to the ignorance of Russian officers (p. 79); and as to the value of 6-inch guns in a fleet action (p. 133). All Russian officers seem to be agreed on this last named point, and they have had reason to know; but it must be confessed that Captain Klado does not increase our respect for his individual opinion by his clinging to the absurd belief that the Japanese used submarines in the great battle (p. 124), or by continuing to aver (p. 5) that the restoration of the *Malacca* was a "shameful surrender."—*United Service Magazine (England)*.

'From
Libau to
Tsushima.*'

This is a narrative of the voyage of Admiral Rojdestvensky's fleet to the Eastern Seas, and is a singularly human document. It is in the form of extracts from a diary sent home in letters to his wife by Engineer Constructor E. S. Politovsky; it begins with the departure from Libau and ends when the fleet was somewhere off Shang hai, since Politovsky went down with his ship, the *Kniaz Suvaroff*, in the battle of the Sea of Japan. Like many of his shipmates in the ill-fated fleet, Politovsky had never before been to sea, having done all his service in the Admiralty at St. Petersburg; everything consequently was strange, but one cannot read his diary without feeling that here is a reflection of his fears, doubts and despondency which filled the hearts and minds of the *personnel* of the foredoomed squadron. Politovsky's billet on board was no *sinécure*; the ships, old or originally badly constructed, or execrably handled, were constantly in need of repairs, in which Politovsky's supervision was invariably required; there was little discipline among the crews; the ships were ill-found, and on occasion the decks and casements were over-laden with coal; two at least of those in chief command were in constant bad health—and yet this amazing voyage was actually accomplished without one ship of the armada being left behind.

*"FROM LIBAU TO TSUSHIMA." By the late Engineer-in-Chief E. S. Politovsky. Translated by Major F. R. Godfrey, R. M. L. I. London: John Murray. 1906. Price 6s. net.

From the outset Politovsky had no hopes of success; throughout the weary and protracted voyage he seems to have felt—as many of his shipmates must have felt with him—that all were bound on a desperate and hopeless mission. That the fleet was brought out to the east and laid alongside the enemy was largely due to the skill and devotion of the writer of these despairing letters, which complete the story of this voyage, of which hitherto we have known but the dramatic beginning and end.—*United Service Magazine* (England.)

**Five
Years a
Dragoon.***

Soldiers' autobiographies, seldom interesting to strangers, and more rarely of value to anyone, have been common enough since 1865. But the experience

of an intelligent regular before the Civil War now appears for the first time. In "Five Years a Dragoon" Mr. Lowe embodies ten years of military life, five in the mounted ranks, and five as a high-grade quartermaster's employee in active service on the great plains, beginning in 1850. The story was well worth waiting for, for besides its interest as "a human document," as the phrase goes, it is the history of a past never to be repeated, and full of peril and of an excitement that closely approaches romance. It is an enlisted man's supplement to Marcy's account as an officer. It describes from the inside that life of frequent storm and stress of which Parkman caught glimpses along "The Oregon Trail." There is nowhere a formal record of how the rough, and often dissipated recruits, were transformed into iron soldiery, who held positions or died in their tracks with no other thought than that of duty. No drill-book teaches the art. But the careful reader sees here that the officers, who were also gentlemen, encouraged the worthy, controlled the unruly, administered justice, and enforced obedience with an impartial and relentless hand, and solely for the public good, thus establishing a standard to which

*"FIVE YEARS A DRAGOON," by Percival G. Lowe. Kansas City: The Franklin Hudson Publishing Co.

each in his own grade was insensibly drawn. Lost to the popular eye in the hordes of volunteers, the little army thus created was more than "a stone wall;" it was from end to end a *corps d'élite* that never had, and doubtless never will have, popular recognition of its service in the dark and stormy days of the rebellion. Ravaged by hostile fire, impossible to be recruited under the counter inducements for volunteers, it was frayed into nothingness before Appomattox was reached, and its reconstruction became a weary and difficult task.

Mr. Lowe's relation is a new proof that "the captain and the first sergeant make the company." In later days he would have been commissioned long before his enlistment had expired. Many a man with less military aptitude, merely because he carried a rifle, has become a company officer, to say nothing of filling higher places. The wisdom of that policy is another question.

In these pages, men afterward very famous, then young and unknown, cross the path. Cuvier Grover, Simon Buckner, Robert Williams, Eugene Carr, J. E. B. Stuart, John Buford, all subalterns who later became generals of renown, and others of greater rank, as Sedgwick, Harney, Sumner, Van Vliet, Fitz-John Porter, Albert Sidney Johnston, were building character by the inconspicuous discharge of routine duty often interspersed with peril and loaded with responsibility. Charged with practical hints about savages and civilians, mules and wagon trains, troop horses and troopers, this is an important contribution to a phase of American history, the opening of the great plains whose intelligent record is so inconsiderable. There are occasional errors in proper names, and there is no pretence at literary style; but it is a good book. We make note of it not as essential literature, but as the truthful and unadorned story of a man who in a most modest sphere rendered valuable public service. Every collection of Americana should open for it, and many a library besides.—*The Nation*.

Fredrick Remington says:

"Its a great document and the best kind of history of a period which has left little copy."

In a letter, the Hon. D. W. Wilder, one of the most famous newspaper men and critics in the West, says:

"The edition will all be sold. Your fame is permanent. The 'Nation' likes the book so well that it finds no fault."

And again he says:

"You have done a patriotic work in writing it. Incidentally your own sterling character, courage and intellectual resources are fully revealed. Historically, you have done a work that few professional authors ever succeeded in doing—made a book that will live as long as our country is inhabited by civilized man. It will be read, printed, placed in libraries, enjoyed by young and old, and will teach the virtues that you have lived and practiced. In this central west, with its increasing millions of people, it will be a permanent service book to all historians."