

Vol. X

MARCH, 1897.

No 36

JOURNAL

OF THE

United States Cavalry

ASSOCIATION.

PUBLISHED QUARTERLY
BY THE UNITED STATES CAVALRY ASSOCIATION.
FORT LEAVENWORTH, KANSAS.

COPYRIGHT U.S. CAVALRY ASSOCIATION, 1887
ALL RIGHTS RESERVED.

FRED C. KETCHUM & REEVES
LEAVENWORTH, KANSAS.

JOURNAL

OF THE

UNITED STATES CAVALRY ASSOCIATION.

VOL. X

MARCH, 1887

NO. 36

WORK OF THE CAVALRY IN PROTECTING THE YELLOWSTONE NATIONAL PARK.

BY CAPTAIN GEORGE S. ANDERSON, SIXTH CAVALRY.

BEFORE entering upon the subject proper, it will be well to give a short résumé of the history of the Park, and to show by what process the cavalry becomes a part of the legal machinery for enforcement of order there.

The organic act of the Park bears date March 1, 1872. The first superintendent was appointed on May 10th of that same year. He received no compensation, did not live in or near the Park, and afforded it little or no protection. On April 18, 1877, he was relieved by a successor, who served under the same conditions until July 5, 1878, after which date he received a salary of \$1,500 a year, and spent at least a portion of each year within the Park.

This superintendent was removed February 2, 1882. He paid little or no attention to the protection of the game, and was himself one of the leading vandals in breaking up and carrying away the beautiful incrustations about the springs and geysers, and in despoiling the petrified forests. In succession to him were three others, whose joint incumbency covered the period from February 2,

1882, to August 1, 1886. During all this time there was no law for the government of the Park, and all acts of the superintendent were arbitrary and legally unauthorized.

In March, 1883, the Sundry Civil Bill provided that the Secretary of War be "directed," on the request of the Secretary of the Interior, to make details of troops to prevent the destruction of game and objects of interest. Congress, however, failed to properly provide for the execution of this act, and the Interior Department did not seem to desire the assistance of troops; so no action was taken under it for several years. Meanwhile the destruction of the Park was going on at an accelerated rate, until in 1884 the Legislature of Wyoming, then a Territory, passed a law for its protection. The law was strict enough, and its penalties were ample, but the machinery for its enforcement was most defective.

The assistant superintendents of the Park (Federal officials) were given appointments as justices and constables under this law, and eked out their small salaries by levying a species of blackmail on the traveling public. Finally the law was repealed in March, 1886, and the Park reverted to previous conditions. The repeal was brought about in this way: In 1885 a Member of Congress from Illinois was arrested and fined \$50.00 for leaving his camp-fire unextinguished. To the justice of the peace he looked about like a man who would probably have \$50.00 in his pockets. Had he paid it, the money would have been divided between the justice and the constable, and all would have been well; but this time they had the wrong man. Under the law an appeal lay to the Wyoming courts. This Member of Congress made a motion for an appeal, and asked them to fix the bond. Such proceedings had never been heard of in their court, and an adjournment was taken for consultation -- and drinks.

The justice had never heard of an "appeal bond," but he was resourceful. Could he not put the amount out of reach; make it \$100,000, and still get the \$50.00 in cash? That was his method; but it did not work. The prisoner offered as bonds Mr. G. M. PULLMAN, Mr. STORY and Mr. ARMOUR, and other friends who were with him, who offered to qualify for several millions.

The guardians of the Park had evidently hit too deep; they took another adjournment -- the justice and the constable -- and returned with a verdict of "not guilty;" but this the prisoner would not agree to accept. This begat more trouble. The results of it all was that from the Sundry Civil Bill for 1886 the pay for the superintendent and his ten assistants was struck out and, strange to say,

they all vacated their offices at the end of that year. It was then that the act of March 3, 1883, came in play, and in accordance with its provisions the Interior Department asked for the army.

Major MOSES HARRIS, then captain First Cavalry, was sent with his troop from Fort Ellis, Mont., and became the first military ruler of the Park, with the title of "acting superintendent," while at the same time he was the military commander of the troops, under army regulations. He arrived and assumed charge in August, 1886, and the Park has been under military rule, and cavalry rule, ever since that date.



SNOWSHOE PARTY.

Until June, 1894, there was no law to protect officers and troops in the exercise of their onerous duties under park regulations, but for the last three years all has been properly provided for by the "Yellowstone Park Protective Act" of May 7, 1894.

The military garrison at first consisted of a single troop of cavalry, which remained here the entire year, assisted by a second one (or a detachment) from June 1st to October 1st; this second one always summered in camp at the geyser basins.

In 1891, upon my arrival here, the construction of a new post was begun. This post was intended to replace the old, temporary one, built by Major HARRIS in 1886. The new post was occupied in November, 1891, and in May, 1892, a second troop arrived here and

has remained ever since, spending the summers in camp and the winters in the old post.

The Park proper is about fifty-four miles from north to south and about sixty-two miles from east to west, giving an area of about 3,350 square miles. In 1891 the President declared a forest reserve, in shape like an L, on the east and south of the Park—about twenty-five miles on the east and ten miles on the south. This area was placed under the control of the superintendent of the Park, with the same rules and regulations as were in force in the Park itself, but of course it was not under Park law. This added about 2,000 square miles to the area to be guarded, making the entire domain longer than the State of Connecticut. This tract is situated on the very summit of the Rocky Mountains. Fort Yellowstone, which is nearly the lowest point within it, is about 6,300 feet altitude. The most of the Park plateau is near 1,500 feet higher, and the peaks rise to 11,000 to 13,000 feet. The whole area is well watered, which results in a heavy snow-fall. There are large sections near the Yellowstone Lake, over which the year's snow-fall is fully twenty feet. At least four-fifths of the Park is covered with a dense growth of highly resinous pine trees, too small for lumber, but perfectly adapted to conserve the snow and allow it to gradually melt and pursue its belated course to the ocean.

There are few treeless tracts, but wherever such are found the grass is luxuriant, and there the game seeks its winter sustenance.

As might be supposed, the climate is very severe, yet in many ways it is enjoyable. Thermometer records have been kept since Major HARRIS came in 1886, and a hasty inspection of them shows that here, at Fort Yellowstone, the thermometer has been as low as zero every month in the year but May, June, July and August, and that it has been below freezing every month in the year. In the higher levels, which include most of the Park area, we expect at least ten degrees lower. At the time of this writing the registered thermometer at this post has not been above zero for over five days, and one day showed a record of twenty-nine degrees below. In spite of all this, we enjoy delightful weather most of the time, for we are spared the winds which make low temperature unbearable.

The works of "protection" which have fallen to the cavalry may be generally grouped under three heads. 1st. Protection of the beauties and wonders of the Park from destruction by tourists and sight seers; this work is confined almost entirely to the four months of travel—June, July, August and September—while hotels are open and transportation service running. 2d. Protection of the

forests from fires; this work is largely limited to the camping season, which is, generally speaking, July, August and part of September. 3d. Protection of the game from the ravages of poachers.

In addition to the post proper a number of out-stations are established. Four of these stations remain the same summer and winter. One is at Norris Geyser Basin, twenty miles south of here; a second is at Riverside, about twenty-five miles southwest of Norris and near the west line of the Park; a third is on Snake River, one hundred miles south of here and near the south boundary, and the fourth is



SNOWSHOE CABIN.

at Soda Butte, forty miles east of here and near the northeast corner of the Park. Norris is on the main circuit of tourist travel; the other three are on the only routes by which it is possible to enter the Park by wagon.

A non-commissioned officer and three men are kept at each place during the entire year. They have good, comfortable log houses, with fairly comfortable stables. The horses are left at all of them, except Snake River, during the winter, but on account of deep snow they cannot as a rule be used between December 1st and May 1st. The Snake River horses are turned into post in November and sent down as soon as practicable in the spring. We have generally found it impossible to get to this station with supplies before July 1st.

The main work of these men is to examine all parties entering

and leaving the Park, register their names, destination, transportation, arms, etc. If entering with guns, the mechanism is so tied with red tape as not to be capable of movement, and the knot in the tape filled with red sealing wax. Each party is then passed on to the next station that it will meet on its way.

All violations of Park regulations are looked after, and particular attention is given to the prevention of forest fires. For this purpose a mounted man leaves each station every day during the season, soon after his breakfast. He rides leisurely along the road, carefully examining all recently abandoned camps. Should unextinguished



CROSSING ALUM CREEK.

fires be found, the guilty parties are arrested and brought here for trial. At a point about half way to the next station a man from that post is met; the two eat luncheon and spend an hour or two together, and in the afternoon they retrace their steps, exercising the same vigilance as in the forenoon.

But it is in winter that their hardest and most perilous work comes. All must be done on snowshoes, and the Norwegian ski is the one always used. The work at this time is entirely under the third head—the protection of game. As blankets, subsistence, and all necessities must be carried on the back, I have established a number of small huts, with fireplaces, at different places known to the men on station, and in the autumn these are stocked with cut

wood and certain staple articles of food, such as flour, hard bread, bacon, coffee, sugar, etc., properly protected in tin-lined boxes. There are few trips now made where the men cannot spend the night in one of these.

For bedding a man generally carries a fur-lined sleeping bag, and in case they have to spend the night out of doors, one must sleep while the other keeps up the fire. It is always necessary to carry an axe, and I never permit a man to go alone on any snowshoe trip.

I require monthly reports from these stations, giving names of men on trips, date of departure and return, number of miles traveled—on horseback and on skis—object of the trip and results accomplished. The mileage reported from these stations runs from 200 to 500 per month on skis, and more when they go on horseback.

In addition to these stations, I have a winter station at the site of the summer camp of the troop, at the Lower Geyser Basin, and a winter station near the Hayden Valley, and summer stations at the Upper Geyser Basin, Cañon, Lake and Thumb. The main object of these summer stations is to regulate the tourist travel, keep it orderly, prevent forest fires, and prevent the mutilation of everything beautiful by scribbling names upon it. The deposits of the hot springs soon cover a name, written in pencil, so it can not be rubbed off, but the material is so transparent that the name is visible through it for a number of years.

In 1891 there were so many names that I found it impossible to recognize a new one and thus arrest the offender, but I caused them all to be chiseled out, and on the appearance of a name it was sure to be new and the culprit was easily caught by reference to the hotel's and campers' registers, and by use of the telegraph line, which connects all the hotels in the Park.

A very picturesque figure is a sentimental youth at twilight as he transmits his name to fame by writing it upon the "formations"—the hot springs deposits. A much more interesting figure is this same youth at sunrise the next morning, when, followed by a mounted soldier he proceeds, scrub-brush and soap in hand, to the same spot and removes the perishable evidence of his late presence. Each year a good many trials and convictions are had under the law of 1894 for this act as well as for leaving camp fires unextinguished and for breaking or mutilating objects of interest or wonder.

Owing to the rigors of the climate, the winter work is ever accompanied by danger. In March, 1894, a private of "D" Troop, Sixth

Cavalry, left Riverside for the Lower Basin, for the mail. The sergeant in charge of the station went about six or eight miles on the road with him, and he was then over the half of his journey. He was never seen or heard of after, until his remains were found a year and a half later, ten miles or more from where he was last seen, entirely out of his proper direction and in a place where he must have forded at least one large stream to reach. He either became lost and wandered about until he perished from cold, or he met with some of our good neighbors, the poachers, and they gave him his quietus. The latter theory is not at all unlikely. One or two other men have perished of cold since my arrival here, and at present there is a man in hospital whose feet were badly frozen on a recent snowshoe trip to the buffalo country.

During the ten years of occupancy of this post, only six deaths have occurred among the soldiers here, and five of these were from violence. The records show this to be the most healthy post in the army, in spite of the very large percentage of frost cases. For the most part the men are thoroughly satisfied on stations, and it is never difficult to get men to volunteer for these places. The main trouble is to get non-commissioned officers suitable for the duties. It requires much tact, judgment and firmness in dealing with tourists; and it requires energy, push, courage and knowledge of the country, and the ways and habits of poachers in dealing with their winter problems. They have as a rule been faithful to their duties, honest, reliable and worthy of all praise.

As a consequence of their good work, the beauties of the Park are no longer defaced; no fires have ravaged the forests; poaching has diminished to a small percentage of what it was ten years ago; and more than all, order exists everywhere, and there are no more fake courts in session for the blackmailing of innocent travelers.

The government truly recovers a large interest on this small investment.

HORSESHOEING.

BY CAPTAIN WILLIAM A. THOMPSON, FOURTH CAVALRY.

THE fact that a very large majority of horses have imperfect feet, contracted and mutilated walls of the hoof, is *prima facie* evidence that we have not, as yet, in general use, a system of shoeing, and a horseshoe that is perfect. Out of a thousand prairie and ranch bred horses that have never been shod, it is exceptional to find any afflicted with any of the diseases so common to horses that have been subjected to constant shoeing, such as spavin, ringbone and diseases of the fetlock joint, coffin bone, and hoof.

A horse with good, sound feet, properly shod, so the hoof is kept in a healthy and natural condition as far as possible, should be serviceable for twenty years. The average period of a horse's usefulness is not over twelve years. I believe it can be proven by the natural laws that govern the breeding of animals, that, owing to this faulty system of shoeing horses that has been going on for ages, the hoofs of our stallions and mares have become so deformed that their get are born with badly shaped and imperfect feet.

The horseshoer, with a very few exceptions, in preparing the hoof for the shoe, proceeds to slice off the wall, sole and frog, to the extreme. As a rule, so much of the sole is sliced off that it is left so thin it can very easily be dented by a slight pressure of the finger. Of all parts of the hoof, the frog and sole, as well as the outside ball of the hoof, are the parts that under no circumstances should be cut off or in any way removed. It is a very common custom among our horseshoers to fit the hoof to the shoe, instead of fitting the shoe to the hoof. After the shoe has been placed and nailed, in many instances from a sixteenth to as much as three-sixteenths of the wall of the hoof projects beyond the outer edge of the shoe, especially at the toe; they then rasp off this portion of the

outside wall of the hoof, simply so they can have a neat looking job. The result is, it is only a short time before the hoof is ruined.

This nonsensical and pernicious habit, coupled with the cruel cutting away of the sole and frog, has been the cause of completely ruining thousands of horses, and also the cause of untold agony and suffering. Every nail driven into the wall of the hoof, and every unnecessary portion of the wall sliced or rasped off, is a mutilation, and any part of the sole and frog removed is a great injury, for it is totally unnecessary, and only hastens the permanent disablement of the horse.

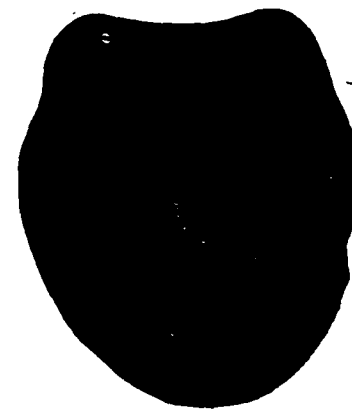
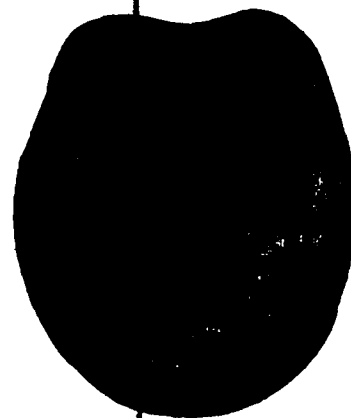
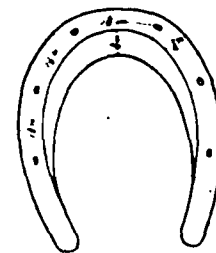
The knife should be discarded. The rasp is the only tool needed in preparing the wall of the hoof so the shoe can be placed. By using the knife, uneven cuts of the surface are made, and it is a very common practice for the horseshoer to place the shoe, just hot enough (and very frequently red hot) to burn the wall in order to make the shoe fit, or rather to burn the surface of the wall level, all of which is most injurious. When the rasp only is used, a level-bearing surface for the shoe to rest upon the wall is secured.

After having my notes ready for this article—ones that I had jotted down from time to time during my twenty-five years' frontier cavalry service—upon this matter of horseshoeing, I read an acknowledged English authority upon "horseshoeing," and he recommends the burning of the wall with the shoe, to be placed so as to secure this level-bearing surface so much desired. As noted, by using the rasp only the same result is secured, therefore why the necessity of burning? I think it is a great injury, and only hastens the deterioration of the hoof, for the following reasons:

The wall consists of a number of fibres containing a soft, cellular, nutritive material. If this is burned, it destroys the moisture of the horn which is so essential to its life and toughness, and in consequence the horn becomes brittle and hard, then contracts. Having become hard and contracted, the wall presses unduly on the vascular and sensitive parts within, especially on the lamina, and this becomes inflamed and ultimately diseased. A good horseshoer can fit the shoe to the wall as it should be done without applying it red hot. To my mind this method is unnatural, and if followed constantly, will ruin the wall of the hoof in a very short time. If the shoe is constructed with a perfectly level surface, about one-half inch in width, for the wall to rest upon, that solidity and perfectly even bearing surface can be secured by the use of the rasp alone.

It is a difficult thing for the shoer to use the rasp, as now made and shaped, so that he can take the wall of the hoof only, because

its width is such that he is forced to—and does—rasp off a quantity of the sole, almost the same thickness of it, as of the wall of the hoof. The wall of the hoof, that portion where the shoe is placed, is a full half inch in thickness at the toe, tapering towards the frog or heel to less. It is desired to rasp off the wall only, and not touch any part of the sole. To enable the shoe to do this, take the fourteen-inch rasp, place a piece of iron a quarter of an inch thick, half an inch wide, and as long as the rasp, clasped at each end so it divides the rasp's cutting surface, as in Fig. 1. The rasp so fixed enables the user to cut only to the proper depth. This rim rests against the outside wall of the hoof, and the rasp can cut only the wearing surface of the wall.



The defects of the horseshoes now in common use are:

1. They are very heavy, weighing sixty four ounces to the set, front and hind. Being made of wrought-iron and soft steel, they are necessarily thick.

2. Swelled at the heel. I never could understand why horseshoes are all made so the heel of the shoe is so much thicker—at least one-eighth to three-sixteenths of an inch—than at the toe; but there are a number of good reasons why they should not be so made. A horse standing on a level without shoes rests equally upon all portions of the hoof. The frog then acts as a cushion, and when he steps off receives the shock and prevents slipping; with the raised heels, coupled with the thickness of the shoe as noted, the frog cannot strike the ground, and the result is, in time the frog becomes hard and dried, and to help this evil along the shoer slices it off. This elevated heel of the shoe gives an unnatural slant to the hoof and the longer the shoe is worn the greater is the slope; the shoe is always worn thin at the toe and very little at the heel. This unnatural and forced position of the horse's feet, I am quite sure, causes sprains and inflammation of some one of the joints, bones, ligaments or tendons in the horse's legs from the knee to the hoof that ultimately lead to such diseases as bone spavin, ring bone, and other painful diseases the horse is heir to in that part of his anatomy. From the knee to the hoof is the most wonderful and delicately constructed portion of the horse, and if we cause the slightest interference with the proper adjustment or working of any one of the joints, tendons or ligaments, an inflammation is produced, ulceration and suppuration follow, and the result is a ruined horse.

3. The shoes are all made with a groove in which the nail-holes are placed. This groove soon wears off and the nail-heads with it; also the shoes have eight nail-holes, four on a side, and placed so close together that the wall of the hoof is in many cases split, chipped off or otherwise injured.

We must shoe our horses, and the endeavor should be to arrive at some method of doing it with the least possible mutilation or injury to the hoof, save the horse pain and discomfort, and allow a perfect working as nature intended of all the parts of the leg and hoof. The following system of horseshoeing I used in my troop for the last two years with excellent and very satisfactory results:

To prepare the hoof for the shoe, use the rasp divided as described. The shoer can cut only the wall, rasp off just enough of it so that when the shoe is placed it will fit the wall, the outside

rim of the shoe to be even and flush with the outside edge of the wall all the way around. The shoer must be guided by the shape and condition of the bottom of the hoof as to the amount to be rasped off. In designing the horseshoe the endeavor was to have it as light in weight as was consistent with the character of the work the horse was called upon to do, for every ounce that can be saved the horse from carrying in the shoe takes just so much from his fatigue after every march, and lessens just so much the drain on his vitality. It was made of what is known in the market as machine steel. By using this material a shoe of great tensile strength, and weight less than one-half of that of the wrought iron shoe was secured. The actual cost per pound of this kind of steel is but a cent or two more than wrought iron and, considering its many advantages over wrought iron and soft steel, this is far the cheapest of the three.

Specifications—Fig. 2. Width one inch at the point of the toe, tapering to about five eighths of an inch at the heel, three-sixteenths of an inch thick from toe to heel, of uniform thickness along the outer rim, inner one-half inch wide where the bevelling commences, this bevelling stopping about one inch and a half before reaching the heel of the shoe.

This shaped shoe gives a level bearing surface of just the width necessary for the wall of the hoof to rest upon. This thickness is ample to protect the wall, and if rasped off properly, leaves the frog so it is able to perform the duties nature intended, and the hoof rests on the ground just the same as it would if not shod.

In Fig. 2 six nails were used, three on a side, the two side nail-holes about one and a half inches apart. This distance for the two side nails may be decreased or increased a little, according to the size of the shoe. The nail-holes countersunk just so deep that when the nails are driven home about one-sixteenth of the nail-head projects. By having the nail-holes countersunk it strengthened the shoe, by doing away with the groove; the slight projection of the nail-heads assists in preventing the horse from slipping, and the longer the shoe is worn the firmer the nail-heads are set. The particular distance apart of the nail-holes in any shoe is of great importance, and no person who has not studied and experimented upon the subject can fully realize that importance. (1) Being so far apart, it reduces the danger of splitting or chipping off the wall of the hoof to a minimum. (2) It saves mutilating the hoof two nails. (3) It holds the shoe in place more firmly and much better than using four nails on a side so close together.

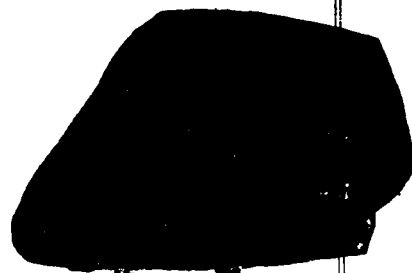
I kept four of the troop horses shod with these steel shoes, with the following results, viz: (1) All the sets used were worn evenly from toe to heel; of course a little more immediately at the toe, than any other part of the shoe, but very little in comparison with



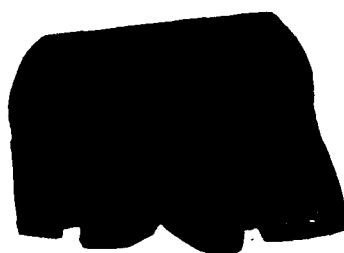
Shoe fitted



*The old wrought iron shoe
no frog pressure.*



*Old wrought iron shoe
Hoof cracked from
using eight nails.*



*Steel shoe showing
frog pressure*

the wear of the raised heel shoes at the toe. (2) This fact proves that the principle is the correct one, for the horse uses and wears off the shoe evenly from toe to heel, just as the wall would wear off if not shod. (3) These three-sixteenths thick steel shoes protect the wall only, permit a perfect freedom of action on the part

of the frog, enabling the horse to stand without the slightest strain to the hoof or any part of the leg. I used these shoes for eighteen months, and proved that at the very greatest requirements of hard campaigning three sets of front shoes and two sets of hind will wear a horse for one year.

Horses' hoofs differ as to growth; some grow faster than others; all more rapidly in summer than in winter. Resetting these shoes once a month is a safe rule to follow. When the outside edge of the wall commences to project a little the shoe should be reset. These shoes were used upon one or two horses that had badly contracted feet, with a decided improvement.

The cavalry that can be equipped for war with the very least possible weight in all articles necessary for both horse and rider, will last longer and be of much more value than a body of cavalry where this important object is not carried out to the utmost limit; and the correct way to start in is to commence with the foundation of the horse. If we can have our horses shod with shoes that weigh just half as much as the kind now used the horse will carry two pounds less on his feet, and two pounds less on his back (every cavalryman is supposed to carry a set of shoes in his saddle-bags), so we save the horse from carrying four pounds, and in addition have horseshoes that wear just four times as long. The wrought iron horseshoes weigh four pounds, and a horse will wear out a set in one month. These machine steel horseshoes weigh two pounds per set, and a set will last four months.

THE SHELTER TENT.

BY CAPTAIN JACOB A. AUGUR, FIFTH CAVALRY.

A BOARD of officers convened at Fort Leavenworth, Kansas, August 5, 1889, in obedience to Special Orders No. 90, headquarters Department of the Missouri, July 27, 1889, and continued in session until it made its final report May 2, 1891, on the subject of shelter tents and knapsacks. Lieutenant J. F. BELL submitted a shelter tent as an improvement on the tent then in use, which latter consisted of two halves, the two halves buttoned together, making the tent open at both ends. The material was of very poor quality, affording but little of the shelter which its name implied, was not waterproof to any extent, in that it was soon soaked through, leaked, and practically of very little use as a covering except to lessen the downpour if it came straight down, otherwise, if the rain was a driving or slanting rain, one might as well be under no covering at all.

Campaign after campaign has been made with this article called a shelter tent, a misnomer, and officers and men subjected to the elements. This state of things has occurred so often it is a marvel that no one has attempted to improve upon this equipment long before, by suggesting a new article heavy enough to keep out rain, and improved by minor details, so the service could have a shelter tent in name, which fulfilled the functions of a covering shelter, comfortable, roomy, dry, and not too heavy to prevent its being added to the equipment of the soldier, especially with reference to the infantry.

No doubt the existence of the above state of affairs impressed Lieutenant BELL, and his admirable shelter covering was the outcome. He did not claim it especially, as I understand it, as an invention, but simply as a design, which he submitted as a better and more suitable one than the tent in existence at the time that he

THE SHELTER TENT.

19

appeared before the Board. Since that period, six or more years ago, the Quartermaster's Department has still issued the old pattern tent until very recently, when a new kind replaced this one, so that when pitched the tent could be closed at one end. The fabric from which it is made is no better than of old. It is just as flimsy and worthless, and makes no great improvement as a shelter. The word shelter signifies that which covers, a protector. The name should not be given to a design which does not literally fulfill the spirit as well as the meaning of the name. Consequently I fail to comprehend the reason for continuing the issue of an article that is neither "fish, flesh, or fowl." The only excuse I can discover, which is a very poor one, is that "it is not deemed advisable." I confess this is the only reason, and am very sorry to have to advance it in this age of enlightenment, progress and civilization.

This tent was examined by the Board, a report duly made, with the recommendation that fifty of these tents be made and issued to one troop of cavalry and fifty to one company of infantry. The Board, in speaking of this tent, said: "The shelter tent submitted by Lieutenant BELL is superior to anything else of the kind ever seen by the Board, and meets with their complete approval."

Forty seven of the tents were sent to my troop, "A," Fifth Cavalry, for trial and report, in the spring of 1893, just previous to a change of station from the Indian Territory to Texas. It was not until the fall of 1894 that I was enabled to make my report, which was most favorable to this pattern, and I expressed the hope that as this tent fulfilled all the requirements of a good shelter, and so far superior to the old pattern, they would be manufactured and issued to the service. Since that time a further use and test has more than confirmed my expressed convictions.

While stationed at Fort Sam Houston, Texas, several officers were sent out with small parties on bicycle reconnaissances. To each officer I gave one of these tents; upon their return they all expressed but the one opinion, that it was the best tent they had ever seen. Again, on a practice march in the spring of 1895, from the same post with four troops of cavalry, my troop used the Bell tent, the other three troops those issued by the Quartermaster's Department. One night after camp was made a violent and heavy rain, with a strong wind, came up, lasting nearly the whole night. My tents were pitched as tents and ditched, and the men were completely protected and dry, while the other men were wet and uncomfortable the whole night. This was a practical test of the two tents,

and settled, without any doubt whatever, the superior advantage of the Bell tent.

Nothing further seems to have been done in the premises, and we still are receiving the pattern now in use. As to the actual weight, this is an important factor to be considered. The weight of the half piece of Lieutenant BELL's pattern is three pounds nine and one-half ounces; the weight of the half now in use is two pounds seven ounces. The difference in weight is one pound two and one-half ounces. The designer uses the carbines and rifles for tent poles, and thus does away with the necessity for carrying poles. Even if it is not deemed advisable to use the gun or carbine for poles, the men could be in no worse a plight than at present. For the cavalry there is no objection to this slight increase in weight, when the comfort that follows these few extra ounces additional is considered. The roll on the cantle of the saddle will have to be more carefully and tightly rolled; this is the only difference. The stud on top of the tent was made for the .45 caliber. In those that may be made hereafter the stud would be made for the .30 caliber. If a suitable pole is desired, I would suggest a telescopic steel pole, light, yet strong, so when closed it would be just one-half the length of the pole. It could be rolled in the blanket, each man having one pole. These two men would have a complete tent.

For cavalry the arrangement would be perfect; now for the infantry. Let us see what weight the soldier is supposed to carry

One blanket.....	5 lbs.
One blue shirt.....	1 lb.
One knit undershirt.....	13½ ozs.
Two pairs of drawers and two pairs of stockings.....	1 lb. 13 ozs.
Small articles.....	1 lb.
One overcoat.....	6 lbs.
One pair shoes.....	5 lbs. 3 ozs.
One gun.....	9 lbs. 5½ ozs.
One bayonet.....	1 lb. 8 ozs.
One hundred rounds ammunition.....	7 lbs. 6 ozs.
One-half shelter tent.....	3 lbs. 9½ ozs.
Belt.....	1 lb. 4 ozs.
Total.....	43 lbs. 3½ ozs.

Whether in actual campaign service, more especially in a warm climate, or during a summer campaign in a northern climate, the soldier will, even if he starts out with a full kit, have much left but the actual absolute necessities at the end, will be an experiment that must be tested again in actual warfare, although during the

late war, 1861 to 1865, the loaded knapsack was cast aside and replaced by the blanket roll.

Whether this practice was confined to our volunteer forces only it is impossible to determine, for our regular army was a mere handful in comparison, yet it would be important to know whether there was any difference between them in carrying the kit. Our forces, in the event of a war, will be composed entirely of volunteers, except the small regular force of 25,000 men, and it is an open question whether the men could be made to carry a heavily loaded knapsack with the articles deemed essential. Knapsacks have been cast aside, and it is fair to presume they will receive similar treatment in future armed conflicts. However this may turn out, if it is advisable to load a man, a shelter half, with or without poles, should form part of his outfit, and it must be a serviceable one just heavy enough to form with its mate a covering that is in reality a covering and shelter in its truest sense. If the load is a trifle heavier this objection is offset by the comfort afforded the man when, after a hard day's march or in camp, when exposed to the elements, he knows that at night he will have a sure refuge, a place in which he can repose and rest in peace, with no disturbing causes to keep him shivering to keep dry. This, to my mind, is ample compensation for all other drawbacks. This applies to the foot soldier. For the cavalry, no such objection can, with propriety, be advanced.

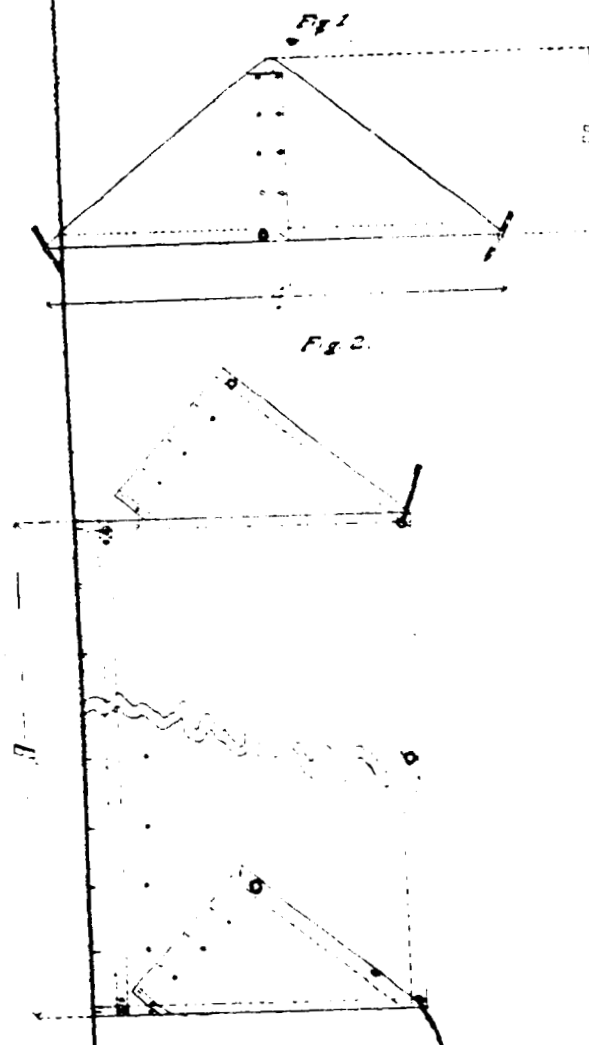
The issue of this tent has apparently been limited to the two issues recommended by the Board. Very few, comparatively, in the service have seen the tent, and more than half of the army have not even heard of its existence, and perhaps are hoping for a new model shelter tent in place of the apology for one we now have, when in fact there is such an admirable one, *in evidence*. It is not understood why the general issue is not made. The tents were made by the Ordnance Department at the Rock Island Arsenal, but as the designer has the working patterns, the Quartermaster's Department could just as well manufacture them, by following the plans. Troops in every war must bivouac with all its accompanying discomforts. It is part and parcel of a soldier's lot to be subject to all the ills that war entails. In its worst features, war can be toned down to a minimum if the men can procure temporary shelter. There is none so good, so easily obtained, because each man carries it, as a good shelter tent. I do not believe, judging from my own feelings, that men in dire distress would cast away

an article which offers a shelter and refuge from storm and cold I may be wrong; if so, then I am happy to be on the wrong side of the question.

In the campaign of 1876 against the Sioux Indians, after the long march north, when the command of General Crook turned to the south, towards home, hundreds of miles away, there was little of anything left to carry on horse or man. Violent and heavy rains were added to their other discomforts of lack of food, clothes, and blankets. One day, after the command had gone into camp, a heavy rain storm came on, when suddenly there appeared one shelter tent, standing solitary and alone in all its glory, to the great surprise and astonishment of everyone. Many exclamations as, "Where in the devil did that thing come from?" and other stronger and more emphatic remarks were heard. The few weary souls who could crawl beneath its inadequate shelter found some comfort which all the others would have been glad to have secured. If one could look out for himself, why not others? Men are not alike; some will suffer, when by timely forethought their sufferings could have been mitigated. So I say shelter is necessary and can be had, and armies could have it in bivouac and on other occasions, if the shelter was accessible, and ready at hand to be utilized.

Coming back to the main point in the discussion, shelter, I say it is absolutely necessary if it is desired to keep a command in good health and spirits. There is nothing more demoralizing to a force in its morale and fighting qualities than lack of protection from as many of the hardships of war as can be had without coddling the men. Anything which keeps up the spirits, animates the body and soul of a unit, tends to increase its qualities for actual service, and makes an army indeed in the highest and broadest sense, one of discipline and morale, ready for battle, with an abiding confidence in its success.

I have said a good deal, probably too much, on a small subject, a shelter tent; yet I have done so, simply stating what we need and why we need it, in the hope that some good will be the outcome, and the army provided with these serviceable tents. The drawings will give an idea of the tent. Figure 1 shows an end view. Figure 2 shows one of the pieces (a half of the tent), one flap buttoned, the other flap open. The tent may be pitched with one end closed, the other end flaps drawn to the front and pegged, thus making the tent longer. The tent is six and a half feet long, twenty inches high and four feet wide. The sides are made of eight ounce canvas, the flaps of six and one-half ounce canvas. The tents are of brown canvas.



the color of the barrack bag, an admirable color, and difficult to distinguish. A camp of this colored canvas would be a hard matter to discover by parties sent out on patrol duty, owing to its bearing a close resemblance to the surrounding ground. If my words on this subject will benefit us to the extent of causing the issue of this tent to the army, I shall feel amply repaid for my feeble effort in bringing this shelter tent to the front. I shall insist that the brown canvas be used in preference to the white, a change that could be adopted with advantage to all other tentage in the service.

CAMPAIGNING IN ARIZONA AND NEW MEXICO, 1895-6.

THE surface of Arizona and New Mexico consists generally of sandy plains, valleys and rugged mountains, that alternate in tiresome succession, scorched during the dry season into desolate waste, devoid of moisture and of anything growing but the hardest vegetation.

The renegade Apaches, who number only six males, live, as a rule, on the highest peaks, and never descend except in rapid raids for murder and plunder. Their only business is to sack remote ranches, ambush unwary travelers, abduct or kill helpless squaws, and steal or destroy horses and cattle. All grant without question the impossibility of getting at them unless by surprise, and to take them unawares is almost unknown. From their hiding places in the mountains of Old Mexico they make swift incursions into our country and rush back like beasts of prey.

The white man is seldom given any opportunity of defense, and without a suspicion of danger often falls powder burned. The Apache crosses the valleys only at night and speedily regains the friendly mountains, going at the utmost pace of the horse, that is stolen or changed to suit his convenience. His marvelous ability to travel afoot is derived by long inheritance and steady practice. However steep, craggy or zigzag the path, he glides noiselessly on, and with spaky nimbleness does the severest journeys with incredible ease. Even where there is no real or instant need, he goes half bent, his body above the hips almost horizontal. He is wanton in havoc. Needing a few pounds of meat, MASSAI slaughtered a well-bred stallion valued at three hundred dollars, though he might just as easily have taken a pony or steer worth ten dollars.

The leaders of the renegades are KID and MASSAI, who, since the exit of COCHISE, VICTORIO and GERONIMO, continue in a small, but brutal way, the bloody scenes of other times. The former, the KID, is of the San Carlos tribe of Apaches, and since 1889 has been an

outlaw, with a price of \$5,000 on his head. The latter, MASSAI, is a Chiricahua Apache. When his people were sent east ten years ago, he escaped through the car window near Independence, Mo., and wandering back was first seen after three years near San Carlos. His sudden appearance was characteristic. Two squaws, mother and daughter, were gathering hay in the hills, when MASSAI rose out of the earth, as it were, killed the older and took away the younger.

When General MILES, having subdued the Apaches, was about to banish GERONIMO and his Chiricahuas, four escaped, who, with the two leaders, are all that remain hostile to the United States. The feeling of the San Carlos, White Mountain and other tribes of Apaches toward these outlaws, is one of mortal hatred. At San Carlos, the name Chiricahua is synonymous for wickedness, and MASSAI is no better than the devil himself.

Since the Seventh Cavalry came to this department, eighteen months ago, these renegades have murdered and robbed three persons in the Fort Grant district. Mr. H. H. MERRILL, a citizen of Pima, and his daughter, were killed December 3, 1895. The murderers are known to have been a buck and a squaw. It is also clear that the buck shot MERRILL through the heart, while the squaw, going closer, inflicted lingering death by shooting the daughter twice low in the abdomen. The scouts pronounced the buck MASSAI. Mr. ALFRED HAND was murdered on the 28th of March last, with circumstances of peculiar brutality. His ranch, also, was thoroughly sacked. The miscreants are known to have been three bucks and several squaws. The most vigorous but futile effort was made on both occasions to capture the Indians.

On report of HAND's murder, Lieutenant Rice made 100 miles in twenty-five hours, only to find the game had flown to Mexico. Colonel SUMNER adopted the plan of using small detachments which, operating from a central point, searched the country in all directions, and in the campaign last spring and summer were quite successful.

The arduous service, so full of hardships and privation, thoroughly tested the discipline and tried the strength of the soldiers, who after riding all day were ready to walk all night, and endured without complaint the extremes of heat, thirst and sometimes hunger.

Nothing more can be attempted than a brief sketch of the operations of a single expedition made by either of two detachments

which, under the leadership of Lieutenants SEDGWICK RICE and N. K. AVERILL, of the Seventh Cavalry, were most successful.

The former, after marching seven days, reached in the dusk of the evening a point about six miles from the Indian camp, which from the trail was known to contain one buck and three squaws. As further progress on horseback was made impossible by darkness and the extreme ruggedness of the ground, and would have been unwise, from the likelihood of flushing the game, RICE now dismounted, and dividing his detachment into three parts, proceeded at about 8 P. M. to approach and surround the camp. Though they had marched thirty miles that day and over 200 in the past week, these determined men, setting out on foot, climbed the shaggy, craggy face of the mountain, and reached by daylight their several positions.

Each party was guided by an Apache scout, all of whose cat-like qualities were needed to make successful the climb of the soldiers, who in silence and darkness required eight hours to cover six miles. RICE opened fire at break of dawn and the buck was killed. Strong effort was made to catch the squaws, who vanished in a cleft of the mountain, fled to a neighboring cañon and were seen no more. Being fresh and well rested, they easily outran the tired soldiers, who had tasted little food since noon the day before. Mr. J. H. SLAUGHTER, a ranchman who accompanied the expedition, leaping upon a horse near by, was close on them, when the animal stumbled, rolled down the mountain, and he, for the time being, was non-combatant.

RICE reports that the camp was on a pinnacle of a high mountain, and was well supplied with goods used by Indians. Everything, including five horses, was taken or destroyed. The buck had a rifle, model of 1873, and a pair of field-glasses. There were several articles of woman's apparel among the spoils, which were taken to Mrs. MERRILL on August 2d and identified as having belonged to her daughter.

The detachments often traveled fourteen or more hours without finding water on the way, and all suffered intensely from heat and thirst. The men's clothing was reduced to shreds, and it was extremely hard to keep horses shod.

After a forced march of some eighty-six miles, Lieutenant AVERILL, Seventh Cavalry, reached another hostile camp, which was known to contain three bucks, seven squaws and a child. It was about 4 A. M. when we struck it, and the detachment had been climbing on foot since midnight. Dividing his small force into

three parties, AVERILL tried as well as possible to surround the enemy and close every avenue of escape, but as their camp was on a high, rocky hill, at the junction of four deep cañons, this was found impracticable. The black hours had at last crept by, and all were nearly in position, when the savages suddenly came out together, and running like deer, made a headlong rush for the cañons. The soldiers fired, killed a buck and accidentally wounded a squaw.

AVERILL, in his report, says: "We then climbed up to their camp, and found they had left everything but their guns. They fired fifteen to twenty shots at us from a very high hill six hundred yards away, but did no damage. With a gun of Mr. SLAUGHTER's and one of the new carbines I soon drove them away. We found a little girl about two years old, a large supply of dried meat, mesquite corn, sugar and salt, bags full of acorns, large hides full of water, nine ponies and horses, seven saddles and bridles, ammunition, smith's tools, reloading outfits for Winchester rifles, blankets, carpets, leather and money. Most of this stuff was American, and four of the horses belonged to SLAUGHTER, whose ranch is on the Mexican line. Much of the property was afterward identified and claimed by Mr. FRANK HAND, whose brother's death has just been noticed.

As far as possible, both RICE and AVERILL traveled by day in cañons and thus concealed their march from the Indfans. In both cases surprise was complete, and nothing but insurmountable obstacles could have prevented the victory being a complete one.

Concluding, two of the brigands are dead, and all are deeply thankful in Arizona. They were driven two hundred miles south of the line, when the heavy rains set in and stopped further work.

Detachments under other officers toiled with the same devoted zeal and endurance, but were less fortunate than those whose operations have been sketched.

DEVICE FOR LOADING AND UNLOADING CAVALRY HORSES IN MOVEMENTS BY RAIL.

BY LIEUTENANT N. F. MCCLURE, FIFTH CAVALRY.

THE following is a description of a light, portable, durable, handy and serviceable contrivance for loading mules or cavalry horses onto cars or unloading them from cars. It is a slight modification of the one used in October, 1896, by First Lieutenant E. S. Avis, Eighteenth Infantry, during a movement of troops from Fort Bliss, Texas, in pursuit of alleged Mexican revolutionists. In that instance it was necessary to take on and off horses at several places while en route.

The arrangement consists of eight good oak planks, each 12'x1'x2", and two trestles. Five planks form the roadway; the sixth is a reserve plank in case one should break, and the remaining two are for sides to the shoot. Each roadway plank should have seven cleats of hard wood, fastened at right angles to the length of the plank on one side, at equal intervals from one another, and from the ends. Each of these cleats should be of hard wood, 1'x3"x1½", and should be bolted to the planks or put on with long wire nails going clear through and clinched on the under side. The holes for these bolts or nails should be bored, and there should be four to each cleat. It will be observed that the roadway planks are not fastened to one another. A cast iron shoe to go on the end of each plank on the under side would enable one to hook the end of the board onto the edge of the car, and thus prevent slipping. These shoes should be four inches from the end of the boards, so that the latter would extend well into the car. If a shoe cannot be obtained, then hooks similar to those of a fire ladder, but heavier, should be put on. The Quartermaster's Department could furnish these shoes. The shoes (or hooks) should reach down at least four inches, so that

they could be caught on the door rail of the car. There are several different kinds of these rails, but a hook of four inches would fit all the kinds that I have seen.

On the under side of each roadway plank are fastened four other cleats, two to each trestle. These are put in pairs, just far enough apart to admit of the tops of the trestles slipping between them. These cleats would prevent the trestles from slipping from under the roadway. They should be far enough apart so that the trestle would slip in or out easily. The horse of the trestle should be of 6"x4" pine, and should be planed off so that the whole top surface would be in contact with the under side of the roadway. The legs nearest the car should make a smaller angle with the ground than the other legs, as this would make the trestle more stable when a horse's weight comes on the shoot. The larger trestle should be three feet high, and the smaller one foot six inches.

The height of the car is taken as four feet. Great care is necessary in placing the trestles properly so that they will take the strain from the roadway. If they are too high the feet can be sunk in the ground slightly. If the ground is muddy and soft, or is sandy, flat stones or pieces of board may be put under the feet of the trestles.

This device can be loaded into a car in five minutes and, if room is scarce, it can be put on top of the car. In two minutes it can be changed from one car to another. During the trip mentioned above, last October, by using it a troop of cavalry horses were unloaded miles from any stock shoot, right out on the ground, in fifteen minutes; and at another place, a stop was made and four horses taken on in about five minutes. It can be used almost anywhere along the road. If there be ditches along both sides of the track, then a road crossing may be selected as the point of debarkation. It would add to the security of the contrivance, if stakes were driven into the ground at the end of each plank of the roadway; but with a shoe as described above, this would not be necessary.

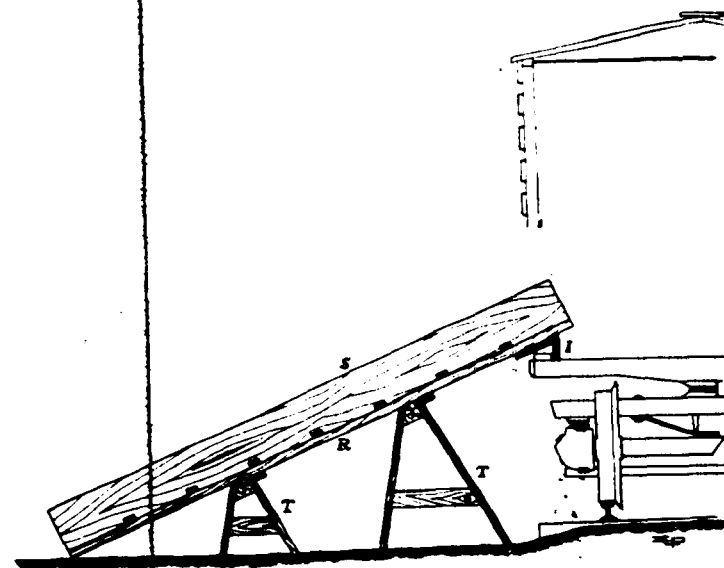
The two side planks may also be provided with cleats so that, in case of loss or breakage of roadway planks, they could be substituted. It is believed that, in case of the loss of the trestles, the two oak planks would still sustain the weight of a horse.

The value of this shoot, particularly in time of war, will readily be seen. It would also be useful where troops, taking horses with them, are changing stations. A troop of cavalry, or a squadron

provided with it would be independent of switch engines and stock-yards. Horses could be unloaded anywhere for feeding, watering, or resting.

A few handfuls of sand thrown on the roadway prevent the horses from slipping much. Lieutenant E. S. Avis, Eighteenth Infantry, intends to perfect this shoot by experiment. The one I describe can be made at any post.

The following is a sketch of the device



S. Side-board.
R. Roadway Plank.
T. T. Trestles.
I. Iron Shoe.

NOTES ON FEEDING CAVALRY HORSES.

BY LIEUTENANT ALLYN K. CAPRON, SEVENTH CAVALRY.

SO many able articles upon the horse, and subjects pertaining to him, have appeared in the JOURNAL that I hesitate to contribute one upon a question of such importance as that of "feeding cavalry horses," knowing full well that there are many officers far better qualified than I to write such a paper, and who could give it a scientific treatment, to which I shall not aspire.

This article is not by any means entirely original. I doubt if any article upon the horse is original throughout. My remarks are the results obtained from the study of a number of works by the most prominent members of the veterinary profession, and of many experiments made by myself.

To improper feeding can be attributed the majority of digestive disorders met with in cavalry horses. Every mounted officer should, therefore, be posted upon the subject, for in the words of a celebrated general of cavalry, "the strength of the horse depends upon his proper nourishment, and upon that strength depends the proper performance of our duties, and all our hopes of attaining distinction."

In our service, as is well known, the forage furnished for public animals consists principally of hay, oats, corn, barley and bran, the grain component of the ration depending upon the section of the country in which the animals are serving; barley, for instance, being issued in California, and corn in the North. Regarding the classification and nutritive value of these different foods I shall say but little, but will confine myself principally to the manner of feeding.

All public animals in our service are, as a rule, fed but twice a day. An examination of the digestive apparatus of the horse will show that the stomach is, comparatively speaking, very small. It is evident that it should not be so greatly distended with food, that

all power of contracting upon its contents is lost. The time required by the stomach for digestion depends upon the kind of food given, hay, for instance, passing out more quickly than most of the grains. The emptying process takes place soon after the animal begins eating, and continues rapidly so long as he takes his food. After eating, the passage becomes very much slower, and to empty the stomach entirely, three or four hours are required. When we give the horse large "feeds" at long intervals, the animal being hungry after his long fast, ravenously eats or bolts his food, thus very often causing the stomach to become distended and paralyzed, because it has not sufficient time to empty itself. Impaction is the direct result of such methods of feeding, and is almost always fatal. Tympanites of the stomach is also often caused by these large "feeds," while rupture of the stomach, for which no treatment is of any avail, is generally brought on in the same manner.

To the intestines, principally, are left the duty of digestion, and we know that only a certain amount of food is digested, while another portion is undigested. Therefore, if the horse receives too much food at one time, a large amount of digestible material will pass out unacted upon, thus causing an unnecessary expenditure of vital force by the digestive organs. What is the result? Indigestion and flatulent colic. As a matter of fact, nearly eighty per cent of the cases of wind colic are caused by these large feeds at long intervals. To prevent such conditions it is only necessary to *feed small quantities of food at short intervals.*

Horses should be fed at least three times a day, and many high authorities say four. All of them agree in saying that at least three meals per day are absolutely necessary for the maintenance of good health.

The English service long ago awoke to the fact that the two meal system was most injurious, and now have "stables" three times a day for the purpose of feeding. In the morning they feed from one to two pounds of grain and one-fifth of the hay allowance, which in England is twelve pounds. At noon the horses are given five pounds of grain and the same amount of hay as at morning stables, while at evening stables, five pounds of grain and the remaining three-fifths of hay are fed. In our service we generally feed a large amount of grain, say from four to six pounds, in the morning, while the evening meal consists of about the same amount of grain and all of the allowance of hay, which is fourteen pounds. The English method is by far the better of the two, and I am sorry

to admit that the American cavalryman, usually so progressive, shows poor judgment in his manner of feeding.

The only reason I can find for our present system of feeding, is, that it is practicable to feed but twice daily while in the field, and that the horses should become accustomed to but two meals before entering upon a campaign, or fatal results would follow. While in campaign, horses have to be fed as occasion offers; often they will be lucky to get one square meal a day. Such being the case, we might just as well feed but once a day while in garrison, as to feed twice. Then again, if we feed but twice a day to prepare our horses for campaign, why not give them the rest of the hard work incident to such service? You answer that by so doing we would soon "break them down." Exactly. But we also "break them down" when we cause them to have indigestion and tympanites, both of which are results of the two meal system.

It most certainly seems to me that a horse free from indigestion and other stomach troubles, could far better endure the hard work and irregular meals of the field than one whose digestive organs have been ruined by disease. If it is possible to give them but one or two meals a day while in the field, they will have to stand it as the men do; but if the horses begin the campaign with their digestive organs in perfect condition, could they not stand it better than if they went into it from the first with all sorts of stomach disorders? I believe any fair minded person, who understood the results of such disorders, would answer "Yes." Then as long as we can give them three meals a day during times of peace, does it not seem but proper for us to do so?

We want our horses to have sound feet before entering upon a campaign, although we know they may have them ruined by the work they may be called upon to perform. We want their respiratory organs in perfect condition, free from disease, before leaving the garrison, although knowing they may all become victims to pneumonia or pleurisy before the campaign is finished. Then why is it not equally desirable that their digestive organs should be in good condition before starting upon the march, even though they may, in the course of the campaign, become ruined?

In the field, horses often have to stand at the picket line during a terrible snow storm, and stand there all night. Is that any reason why they should be made to stand out at all times while in the post, no matter what the weather, or how far down the mercury falls? No. But is there not just as much reason for this as for feeding but twice a day, to accustom horses to the field? I think so.

As mentioned before, hay passes through the stomach more rapidly than most of the grains. It would seem but proper, then, as recommended by MICHENER, that grain be fed *after* hay, "for if reversed, the hay would cause the oats to be sent onward into the intestines before being fully acted upon by the stomach, and, as a result, produce indigestion." Experiments with fifty government mules have convinced me of this, and it seems to me a most important point. Then, again, hay requires more time in mastication, and cannot be bolted like grain. For this reason it is also best fed before the grain, and especially in the case of very hungry horses, or after a long, hard march.

In nearly every troop that I have seen the grain is ready for the horses, together with the hay, when they are led in after evening stables. The animals, being hungry, almost always bolt their corn or oats, after which they eat their hay.

It is hardly necessary to mention that horses should be watered *before* feeding, otherwise the food will be washed from the stomach before it is ready for intestinal digestion. If this cannot be done, then they should not be watered for at least two hours after feeding. In hot weather, to prevent sunstroke, neither food nor water should be given in excess.

Another point regarding feeding, with which all cavalry officers are familiar, but which is of the greatest importance, is feeding the horse according to the work he is to perform. When an animal has a hard march before him he should be given a "spare feed" about two hours before starting, and never a heavy one. No animal can perform hard labor on a full stomach. Take the hunting dog for instance. In the morning before hunting never feed a dog so much that he cannot work. Many a so-called hunter gives his dog a heavy breakfast before starting, and then wonders why he "goes slow" all day. Give him but a "spare" breakfast, and at night after he is thoroughly rested give him a good meal.

I believe it is the same with man. Often I have ridden forty or fifty miles on half a pound of dates and a cup of cocoa, the nutritive properties of which are, by the bye, astonishing, and felt better than when I started out after a heavy breakfast. In the case of the horse, however, it is a most dangerous thing to give a heavy feed before hard work. After the march a small quantity of hay can be fed, but he must be given no grain for at least an hour or two after the camp has been reached. Violations of these rules are almost sure to result in "colic" or tympanites of the stomach, and most probably in death.

When there is but little work to be performed, and on Saturdays and Sundays when in garrison, the horses of the troop should be given less food than on days when hard work is expected of them; in other words, *the quantity of food must depend upon the amount of work to be performed.*

Horses should be turned out to graze at every possible opportunity. Not only is the grass they thus obtain of value as an alternative, but it is of the utmost importance that they be trained to "herd" properly. A troop whose herd has been trained to graze, and which can be driven anywhere by a few herders in a quiet, orderly manner, has a great advantage over one whose horses are wild and unmanageable. This advantage is of great importance when forage cannot be obtained in the field, or when in the enemy's country.

The grass obtained while herding also acts as a medicine in certain diseases, as it lessens the fever and aids recovery, while all cavalrymen know that a wounded horse recovers more rapidly on grass than on grain.

One of the most dangerous habits the horse can contract is that of "bolting" his food. This is caused, as a rule, by large feeds at long intervals. It may be prevented in several ways, one of which is to spread the grain over a hard surface. Another good method is to feed the grain with cut hay, thus insuring its proper mastication. The South African corn recently introduced in this country, called Kaffir corn, besides being a most excellent food for all stock, is especially valuable for this purpose when fed with the heads unthreshed.

The present nose-bag furnished the mounted troops is a very poor affair, and nothing will make a "bolter" of a horse in less time. It is so deep and narrow that confirmed "bolters" are often choked by eating from it, while many horses will not eat from it at all. A heavy piece of canvas twenty two inches square, bound on the edges with leather, and with eyelets around the sides, about four or five inches apart, through which a strong cord could be passed, makes the best kind of a feed box for the field. When in use the cord is pulled well up and fastened, thus causing the sides of the canvas square to roll up and form a kind of box, into which the grain can be put, and the box then placed upon the ground in front of the horse. When not in use the cord is unfastened and the canvas folded up and placed in the saddle pocket. Such an arrangement would also weigh less and be easier to pack than the present nose-bag.

During campaign it may often happen that we cannot obtain the regular ration for our mounts, and that they must live upon the country. If nothing but clover can be had be sure to allow it to wilt before feeding. It should be cut at least twelve hours before it is to be used. General DE BRACK, in his book, states that the "French cavalry, which arrived in perfect condition on the banks of the Niemen, to open the Russian campaign, lost more than a thousand horses in a single night from eating clover." Be very careful when feeding new hay. If possible mix it with old hay, and feed but small amounts at a time, as it is very difficult to digest. When nothing but new hay can be obtained, many authors recommend that it be moistened with salted water. Wheat, rye and oat straw, chopped are fair substitutes for hay. Oat straw, as it contains more nourishment and is more easily digested than the others, is the best. Wheat and rye should be used in very small quantities, and then only after having been crushed. If possible feed them mixed with other grains or hay, otherwise they are most apt to produce laminitis and similar troubles. Carrots are excellent, and potatoes if steamed or boiled, very good, as food for horses.

When grass cannot be had, leaves will be readily eaten by horses. Those of the elm tree, according to most writers, are the best. Leaves of the cottonwood, oak, and of many vines, are also good, and General WOLSELEY says, "Horses, ponies, and especially mules, thrive well and can do hard work on bamboo leaves." The same writer also states that "horses have done work for some considerable time on the thatch taken off houses."

Cotton seed meal, corn, sorghum, cane and Kaffir corn fodders, are all good foods. When feeding the last four, standing or green, or in the case of second growth sorghum or cane, or growing wheat or rye, be very careful not to feed too much at a time, as their subsequent fermentation liberates gas in sufficient quantities to distend the stomach. All fodders are best fed chopped, but this would be hard to do in the field.

The most important thing, however, is to accustom your horses to the grain of the country in which you are operating, as early as possible, and to feed but lightly all food to which they are not accustomed, as sudden changes of diet are always dangerous.

It seems most probable that in the wars of the future compressed forage will be used to a great extent. Cavalry can then be sent on a short raid, or on any other detached service, without the usual forage train, as each horse would carry enough compressed food for

himself for four or five days. During the campaign in Egypt in 1882, the English cavalry were issued compressed forage in the form of cakes, the components of which were oats, bran and hay. A hay cake, made of compressed hay chaff, was also used in connection with the forage cake. Both of these proved most satisfactory, and four days' rations were carried on each horse.

In conclusion, I would state that after many experiments I find that horses can do more work, keep their weight and muscular power up to standard, and have very few, if any, attacks of "colic" when fed as follows: Morning, about three pounds of grain and three of hay; noon, about four and one-half pounds of grain and three of hay; evening, about four and one half pounds of grain and eight of hay. The hay is to be always fed first.

PROFESSIONAL NOTES.

Owing to the change of station resulting from his promotion, Major CARTER has been compelled to relinquish the editor's chair which he has so efficiently filled for the last three years. Having the best interests of the Association at heart, his efforts to make the JOURNAL a success have been unremitting. The Association Council extends to Major CARTER its sincerest thanks for the able manner in which he has conducted the JOURNAL, and its best wishes follow him to his new field of duty.

It is hoped that the members of the Association realize the great difficulty the editor has in obtaining articles suitable for publication, and that they will do all they can to relieve this. There is a large number of subjects upon which articles are desired. Among this number might be mentioned the following: Reminiscences of Indian campaigns; lives of distinguished cavalymen, as for instance that of General A. J. SMITH, who recently died at St. Louis, Mo.; signal instruction in the army; proper method of instructing the National Guard; methods of military instruction to be followed at schools, colleges and universities; military clothing for the cavalry; army athletics. Articles on any military subject will be gladly received, especially those that have been read before Lyceums and have been found to possess a high order of merit.

Attention is called to the prize offered, on the last page of this number, by the Association. It is proposed to give a prize semi-annually and publish the articles which are awarded first place, in the December and June numbers of the JOURNAL. It is intended to run through the entire history of the American cavalry in this way, thus making one of the most valuable histories a cavalryman could possess.

It is pertinent to mention that such an undertaking will cost something, and this must be met by increased subscription. I regret to state that twenty-five per cent of the cavalry officers of our army are not members of the Association.

ED.

OUTLINE DESCRIPTION OF THE HORSE.

A certificate of description is a written instrument containing a concise, clear, accurate, and more or less complete enumeration of the external characteristics of the animal. For the purposes of the military service it may be limited to a simple indication of the external characters.

Such documents serve to prevent theft or substitution, and may become very important in disputes concerning redhibitory vices or when it is required to establish the identity of the animal in a legal manner.

A uniform order of enumeration should be followed; for example: 1. Sex; 2. Age; 3. Height; 4. The coat, its markings, blemishes, and brands; 5. Date.

1. Sex. We have:

- (a.) The mare.
- (b.) The horse, entire horse, or stallion.
- (c.) The gelding, or emasculated horse.
- (d.) *The gelding bistourné*. *Bistournage* is subcutaneous torsion of the testicular cord, leading to atrophy. In some countries the scrotum of the male sheep is removed by ligature.

(e.) The monorchid, or horse having only one testicle, which has descended into the scrotum. A horse with one testicle, the other having been removed by a surgical operation, would be called entire.

(f.) Cryptorchids; in this case neither testicle has descended. By horsemen cryptorchids are called *ridgelings*, which term is also applied to improperly castrated horses. Cryptorchids are troublesome but not fertile. The cicatrix of castration is sometime imitated in order to effect a sale.

2. Age. This is determined in the usual way by examination of teeth. Observers should be on their guard against the abnormal persistence of the cups (*bequité*); in such cases the age is determined by other indications, such as angle and cross-section of the incisors, appearance of the tusks, etc.

3. Height. The most reliable way of ascertaining the height is by use of the hippometer, which is a standard with a sliding arm to be placed on the withers of the horse. The animal should be placed on level ground, and the hippometer must be vertical when the measurement is made. Hippometric canes are used in the same way.

The Coats.

The coat denotes the whole of the hairs which cover the surface of the body. The colors are *black, white, red, russet or reddish brown, gray and yellow*.

We have:

1. *Primitive coats*, which the foal has at birth.

2. *Derived coats*, due to introduction of white into a primitive coat and appearing some time after birth.

3. *Conjugate coats*, or presence upon the same animal of two primitive or two derived coats.

Primitive coats are divided into three groups: (a. *Simple*,
(b. *Composite*,
(c. *Mixed*.)

In *Simple coats* the hairs are all of the same color. We have only blacks and sorrels.

Of blacks we have

- a. *True or ordinary*.
- b. *Rusty black*.

Of sorrels we have:

- a. *Coffee-and-milk sorrel*.
- b. *Light or fawn sorrel*, resembling the coat of a deer.
- c. *Ordinary sorrel*, approaching the color of cinnamon.
- d. *Bovine or washed sorrel*, resembling light sorrel, but the mane, tail and extremities are lighter, sometimes almost white.
- e. *Dark sorrel*, cinnamon, bordering on brown.
- f. *Cherry sorrel*.
- g. *Chestnut sorrel*, like a ripe chestnut.
- h. *Maroon sorrel*, like chestnut, with dark spots.
- i. *Burnt sorrel*, color of roasted coffee. Mane and tail sometimes white.

In *composite coats* the hairs of the body are yellow, red or gray; the mane, tail and extremities are always black. We have the *Isabella* or *dun*, the *bay*, and the *mouse color*.

Of the *Isabella* we have:

- a. *Light*.) Mule rays, zebra stripes and ear borders often
- b. *Ordinary*.) accompany this coat, which is some shade of
- c. *Dark*.) yellow.

The bay differs from the *Isabella* in that the hairs of the body are red instead of yellow. We have:

- a. *Light bay*. Light red color. Often resembling the dun.
- b. *Ordinary bay*. Distinctly red.
- c. *Cherry bay, blood bay, mahogany bay*: they are almost identical.
- d. *Chestnut bay*, light brown.
- e. *Maroon bay*, same as preceding, with some deeper shades.
- f. *Dark bay*, bordering on brown.
- g. *Brown bay*, almost black. Reddish color about the nostrils, elbows, flanks and abdomen.

Of mouse color we have:

- a. *Light*.) Head sometimes darker; mule rays and zebra
- b. *Ordinary*.) stripes not uncommon.
- c. *Dark*.)

In the *mixed coats* the individual hairs are yellow near the body and black at their extremities. Many varieties are found in different animals, but in the horse there is only one, *fox-color* or *loutet*.

We have:

- a. Light.
 - b. Ordinary.
 - c. Dark.
- } Mane, tail and extremities ordinarily dark.

Derived coats are those which appear after birth and result from the introduction of white hairs into a primitive coat. We have:

1. The *gray coat*. This is composed of white hairs and hairs of a darker color.
2. The *white coat*. With rare exceptions is only to be found at an advanced period of life.
3. The *flea-bitten coat*. Composed of red and white hairs mixed; mane, tail and extremities of same color, or lighter.
4. The *roan coat*. Red and white hairs on the body; black hairs in the mane, tail and extremities.

Varieties of the above coats. In the grays we have:

- a. *Very light gray*. Resembles white; very few black or dark hairs.
- b. *Light gray*. More dark hairs than the preceding.
- c. *Ordinary gray*. Equal mixture of white and dark hairs.
- d. *Dark gray*. Predominance of dark hairs.
- e. *Iron gray*. Has a bluish shade.
- f. *Slate-colored gray*. Has dull blue shade of slate. Varies from light to dark.
- g. *Clayey gray*. Has a very light yellowish tint.
- h. *Isabella gray*. Resembles the dun.
- i. *Roan gray*. Mixture of white, dark and reddish hairs. In one of the varieties, the *wine gray*, the red is quite marked.
- k. *Flea-bitten gray*. A dark roan gray with small white spots.

Of the white coats we have:

- a. *Dull, milk, or pigeon white*.
- b. *Porcelain white*. Black skin visible through the coat.
- c. *Dirty white*. Slightly yellowish tint.
- d. *Rosy white*. Large spots of pink skin visible through the coat.

In the flea-bitten coats we have:

- a. Light.
 - b. Ordinary.
 - c. Dark.
- } According to proportion of red in the coat.
- d. *All-flower*. Small patches of white scattered over the coat.
 - e. *Peach blossom*. Small patches of red on the lighter ground-work of the coat.

Of the roan coats we have:

- a. The *light roan*. The white hairs predominate.
- b. The *ordinary roan*. Equal parts of red and white hairs.
- c. The *wine, blood, or strawberry roan*. The red hairs predominate.
- d. The *dark roan*. Brownish red hairs predominate.

The *conjugate coats* are comparatively rare—the best known are the various kinds of piebald coats.

PECULIARITIES OF THE COAT.

These should be noted on the certificate of description:

Of brilliant reflections we have—Jet black, silver, golden copper, bronze, wavy.

The *dapple coat* is formed by round spots about the size of a silver dollar, of lighter or darker shade than the coat.

With reference to the presence of white hair we distinguish:

Solid color, no white hairs.

Rubican, with isolated white hairs.

Snow-flaky, light or heavy, spots of white strewn over the coat.

Flea-bitten, local areas of small white spots on the bay or sorrel.

Grayish, local areas of grayish shade.

Accidental white markings, caused by the saddle, harness, hobbles, or injuries.

With reference to the presence of black hairs on the coat we have *speckled, ermined, and leopard-spotted coats*. Similar markings may be made by spots of red hair.

The following peculiarities should also be recorded:

1. The location and form of brands.
2. Peculiarities of dentition such as wolf's teeth, cribbing, double teeth.
3. Scars, bare spots, splints.

White Marks on the Head.

ON THE FORE HEAD

a. As to extent we say:

Some hairs, scattered, medium, prolonged, interrupted, large.

b. As to form we say:

Irregular, blaze, star, list, crescent, flame, heart, bifurcated, pointed.

c. As to situation we say:

High, low, to the right, to the left.

ON THE FACE

A white mark on the face is called a *list*. We distinguish—Small list, wide list, semi-white-faced, and white faced. As to length it may be complete, incomplete, or interrupted. A white streak on the nose or upper lip is also called a *snip*.

The white marks also may be pointed, dentated, ermined, spotted, etc.

Fox-nose is the rusty coloration about the nostril of dark horses.

Moustaches are tufts of long hairs on the upper lip.

Moor-headed applies to horses when the head is black or very dark.

Wall-eye. The iris is bluish white instead of brown.

Mule ray is a dark stripe from withers to tail.

Cross upon the withers. In addition to preceding a dark stripe runs down the shoulders.

White or washed mane and tail, when the mane and tail, instead of the usual black, is white or of light shade, in black, bay, dun and mouse-colored horses.

Zebra marks are transverse stripes of black color on the legs.

WHITE FEET.

Number and position to be indicated.

Subjects with only the posterior right foot white were formerly called *arzel* and considered very unlucky. The Mexicans call a horse with four white feet *quatralvo*.

As to extent of the white foot we say:

Incomplete, interrupted, trace, beginning, small, white foot (when it extends to fetlock), large (or half stocking), stocking (to knee or hock), high stocking (above knee) and very high stocking (near body).

The color of the horn of the hoof is the same as that of the skin of the coronary band. It may be white, black, or mixed.

J. T. DICKMAN.

First Lieutenant, Third Cavalry.

"THE HUMAN ANIMAL IN BATTLE."

Under the title of "The Human Animal in Battle," Mr. H. W. WILSON has in this month's *Fornightly Review* gone into a very important military subject which has not as yet received as much attention as it deserves. The best drilled parade army is useless in the field if devoid of courage. It is rather a bold assertion—and yet we believe that our readers after examining it carefully will admit its correctness—to say that practically all men are naturally cowards. This will be considered a humiliating remark by civilian Englishmen, for the nation at large considers that every unit of it is naturally brave, whilst among the higher classes an accusation of cowardice is regarded as the most deadly of insults.

Mr. WILSON observes truly that courage is simply control of the nerves, and is largely due to the habit of confronting danger. He quotes General SHERMAN, who thus defines courage:

"All men naturally shrink from pain and danger, and only incur their risk from some higher motive, or from habit, so that I would define true courage to be a perfect sensibility of the measure of danger, and a mental willingness to incur it, rather than insensibility to danger, of which I have heard more than I have seen."

It is nevertheless the case that some men are, *pace* General SHERMAN, naturally insensible to danger. The writer of this article has known personally two instances of apparent unconsciousness of peril. In both cases they were men who obtained the Victoria Cross, and both possessed magnificent physique. One was a dull man with no cultivation of mind, and wholly destitute of imagination. It was probably the sluggishness or absence of imagination which prevented him from anticipating or realizing peril, and which made him brave. In the other case there was plenty of ability and culture, much quickness of perception, and his intrepidity may be attributed to his fine physique and pride of race. A third case may be mentioned, that of a man of high culture and power of imagination, whilst also a man of very fine physique: we refer to Colonel WILLIAM HOPE, V. C. The writer of this article was present once when Colonel HOPE tried a gun which he had invented. Colonel HOPE insisted on firing it off whilst standing at the breech, in spite of remonstrances. He realized the danger and made all spectators retire under cover. As to himself he saw that if the inventor did not show confidence he could not expect confidence from the soldiers and sailors who he hoped would work it in the future. The gun burst, and when the spectators hurried up Colonel HOPE was seen with a cut from a splinter on his face, and pale with disappointment, and yet as calm and resolute as if he had not just escaped death by a miracle. We must, however, in the main agree with SHERMAN, who maintained that everyone shrinks from danger, and with SKOLEJEFF, who considered that there were some men who could never overcome fear and were useless as soldiers. In our view courage is not natural to the many. It is only acquired by familiarity with danger, national or personal pride, *esprit de corps*, strong religious belief, and discipline. Further, we are inclined to hold that in the matter of courage most races are very much alike. The Egyptians under ARAB were worth little, but under British training and example those of KITCHENER have become formidable to one of the bravest races of the present day, the Soudanese. Certain natives of India, fighting against us, have at one time displayed the greatest poltroonery, at others—especially when forced to a resistance *à outrance*—they have behaved like heroes. When fighting on our side the native regiments, especially the Goorkhas, Sikhs, and Pathans, have fought magnificently both in the offensive and on the defensive. As Mr. WILSON points out, religion is a very powerful incentive to courage. The horsemen of old believed that they only lost life on earth to obtain a more joyous one in their Valhalla. The Mohammedans are assured that if they die when fighting the infidel, they will pass at once to Paradise. The Crusader reckoned earth well exchanged for Heaven. Now, however, among European races doubt or infidelity cause many of them to feel uncertain about the future, whilst being certain that this life may be ended in battle. Familiarity breeds contempt or indifference, and a soldier having escaped peril once or twice, thinks that he is destined to survive the campaign. The man who believes not

in religion, believes in fate, and in that wholesome soldier's proverb that "every bullet has its billet."

Turning to the battles of the future, Mr. WILSON points out that few men now survive who know from experience what war between two European armies means, and that probably the horrors of the combat will be largely increased. Moreover, he considers that with the increase of terrors there is a weakening of the nerves:

"To meet that trial the nerves of the modern civilized man are less fit than they were in the past, as the increasing rush and worry of our existence, the railway, the telegraph, the herded aggregations of human beings in cities, conduce to nervous complaints. * * * To counteract this downward progress, training and discipline grow ever more and more necessary."

That training and discipline coupled with national pride and *esprit de corps* will do much, is proved by the gallantry of our men at Alma. Of the army that fought in 1854, scarcely any but a few officers of rank had ever heard a shot fired in battle, and yet how well all ranks bore themselves. The same may be said of our cavalry at Balaclava—practically their first action.

It is certain nevertheless that the more men have been accustomed to danger apart from the risks of battle, the better they will conduct themselves on the battlefield. Hence Mr. WILSON points to dangerous sports and adventures as an admirable preparation for war. Fortunately for us most of our national sports contain some element of danger, and we are therefore to a certain extent better fitted to face the perils of the battlefield than are other nations. This is a strong argument against those who protest against certain sports as involving a risk of life. It should be remembered also by commanders of troops without experience of war, that the nerves both act and are acted on by the stomach. Care should therefore be taken to bring men into action as far as is possible free from excessive fatigue. It is no disparagement to Englishmen to say that they always fight best when well fed.—*Journal of the United Service Institution of India.*

WASHING HORSES.

Washing should be avoided, especially immediately on return from muddy field days. As much of the mud as possible should be scraped off, and the rest allowed to become thoroughly dry, when it may be brushed out. The skin affection known commonly as "mud fever" is almost always caused by grooms washing off mud and neglecting to thoroughly dry the parts afterwards. Cracked or chapped heels are caused in the same way, and are nearly always a sign of laziness and neglect in the groom. The practice of "hanging horses out to dry" on return, wet and sweating from a field day, is a most pernicious one. On warm bright summer days, and when the wisp is well used at the same time, there is not so much objection, if done under supervision, but the time usually chosen is

when there is a nice cold wind blowing, easterly or northerly for preference, and the man amuses himself by toying with the legs and feet while the wind dries the body. This is not an overdrawn picture. I have seen it again and again. Sometimes it is done openly, but more often surreptitiously, and the non-commissioned officers wink at it. The practice should never be allowed, except when properly authorized, and under the supervision of the officers. The feet should be thoroughly dried when washed out.—*Aldershot Military Society.*

THE ROLE OF CAVALRY IN AUSTRALIA.

This is a great, useful and powerful arm in the defense of the Colonies, either for scouting along the coast, inland reconnaissance, or in battle, strategy and tactics. I do not like the idea of blending this arm with that of mounted infantry under the name of "Mounted Infantry Brigade," because the blending of the two arms is apt to confuse both officers and men with regard to their true, proper and special role in war which, let me say at once, has been the subject of much dispute between staff and cavalry officers. Speed, smartness and rapidity of decision at the right time and place, in the front of advancing armies, is everything to a G. O. C. I know of no arm from which such keen vision, prompt military intelligence, and heroic resolution is demanded as from cavalry—the eyes, and yet the screen, of active operations. Cavalry were well worked by PAGET, SOMERSET and COMBERMERE in the Peninsula, but it was not well handled in the Punjab or Crimean Wars. Cavalry did noble service in the Mutiny, in WOLSELEY's Egyptian campaign, in the Afghan War (less the command of General Burroughs) and in the Chitral War. The role of cavalry was uncertain after Sadowa; and after Gravelotte and Sedan it was considered an arm fit for powder. But since 1890, the best cavalry officers have proved that it is not useless in modern war. French cavalry had to sacrifice itself at Werth and Sedan, just as VON BREDOW sacrificed the flower of the German cavalry at St. Privat or Lord CARDIGAN the Light Brigade at Balaclava. What MARLBOROUGH and VON SEIDLITZ taught the world in the use and destructive power of cavalry in European war, applied to the leading and operations of cavalry in the American Civil War, the Chinese War, and in Rhodesia. Mounted infantry displayed their role more in the last Russo-Turkish War than cavalry, but what could WOLSELEY have done in the rapid and essential capture of Cairo only for the cavalry role and dash of WATSON and DRURY LOWE, after Tel-el-Kebir. It does not follow that in consequence of the long ranged rifled guns and rifles, Maxims and Hotchkiss quick firing guns, charged with normal smokeless powder, that cavalry leaders must become food for the enemy's powder in the forlorn front. Our modern PAGETS, HOPE GRANTS, THACKWELLS, BATTYES, BAKER, RUSSELLS, LUCKS, FRASERS, HUDSONS and BURN-MURDOCKS must learn how to find out at all about the wily foe, read the strategy of the enemy, and maintain his ground

traversed, with or without the aid of mounted infantry, and without repeating the heroic sacrifice of VON BREDOW in 1870. The masterly handling of cavalry in the Corunna retreat, and on the Lom by General VALENTINE BAKER saved the Turkish army. Cavalry in a midnight charge at Kassassin saved the infantry of Sir GERALD GRAHAM, and if Lord CHELMSFORD had had cavalry in Zululand there would have been no Isandula. Sir EVELYN WOOD could have driven the Boers from their strong position on Laing's Nek with cavalry. In the next Boer war there will be no more Majuba Hills nor Kugerdrops.

Mounted or police cavalry are no use without fifteen-pounder field gun in front, with lancers backed up with hussars and mounted infantry working and charging the Boers, amongst the earthy outcrops, from the flank or rear. It is a fatal mistake for infantry to stand up in the open to be shot down by Boers under cover. How to beat the Boers is to pepper them well in front with machine and quick-firing guns, whilst the cavalry—lancers and hussars—take their positions by flank movements. When the lancers are in amongst them in the rear, the British guns to stop firing, when the lance and sword will do better work than crack shots and infantry, or if the infantry cannot get at the Boers with the bayonet. I am glad that a lancer and a hussar regiment are now in South Africa. I have for some time kept my eye upon the New South Wales cavalry—the lancers—and I am just afraid that they want cohesion, mobility, alertness in responding to the flying word of command, and practice in bush reconnoitering. Captain McNEILL, when he was here, had the lancers very well drilled in scouting and field discipline, but now the lancers are not out at drill often, yet they are too few upon parade to learn their true rôle and war duty expected of them. There is plenty of room in this country for cavalry to learn their duties upon horseback. The open bush would gladden the heart of an Aldershot cavalry adjutant or a Chalons Gallifet. We have the open bush land to maneuver all the cavalry of France and Russia combined, but we in Australia have not the cavalry squadrons nor divisions to light up the landscape with gay lances, nor charging reports. The New South Wales lancers are too few numerically to be up to date in cavalry operations. Lancers must understand that they exist not for show, but for real and continuous hard work to fit them for their dangerous and responsible duty as "the feelers" of an army. Young Australians should make good troopers, either as lancers, hussars, or dragoons. They cannot only stick to the pigskin, rough it like a digger or a back block stockman, put up with hard fare like a Mount Brown tramp or a Barcoo farmer, but they can read the bush horizon like an emu or a lyre-bird, to say nothing of a dingo or an old man kangaroo; but if the officers can think and study the plan of an enemy in his front like a HUDSON or a PAGET, "my colonial" should make an intelligent cavalryman. They are all anxious to learn the rôle of cavalry, but they get no chance to drill in numbers as cavalry regiments should and must do. The arm must be

brought more together, and the men made to know the different rôle of cavalry and mounted infantry and also how to act with home artillery and the three main armies of the service in the field. It is painful to see a dozen or two lancers turn out for drill now and then on the old Paddington range. I give the men credit for their devotion, but regret the wasted time and drill owing to the want of more complete troops and squadrons. Every Australian if they desire to be smart cavalry leaders should closely study the achievement of cavalry.

Sir EVELYN WOOD recounts in vivid and telling language the story of VON BREDOW's famous charge (August 16, 1870) against the guns and infantry formed on the ridge north of the Vionville-Rezonville road, whereby his six squadrons relieved the overpowered German left flank, and by wrecking six batteries and four battalions checked the advance of the Third French Corps. That VON BREDOW led his men with splendid determination and remarkable success is manifest; but Sir EVELYN has no doubt that the pace was too hurried, and that the horses were unnecessarily distressed before he closed on the enemy. "The instructions given were partly the cause of the heavy loss incurred, for had the brigade been rallied to its right after it had ridden through the infantry a greater portion of it might have got back. It is difficult to excuse the senior general on the spot for not supporting VON BREDOW, as the Sixth Cavalry Division was close at hand." Sir EVELYN believes that, if the devoted brigade had been supported, some of the forty-two guns it wrecked would have been brought back to Vionville, and probably with half the loss actually suffered. The loss was about fifty-four per cent. The cavalry arm is indebted to Sir EVELYN WOOD for his admirable exposition of some of its most brilliant achievements.

In scouting and reconnoitering, Australian lancers should learn their duties faithfully. Let them learn this, that when scouts are attached or mask the enemy's position they must withhold their advance in front whilst they uncover the flanks of the foe advancing. In broken country, on plain, or at night, the moving advance is stopped and replaced by patrols, through whose lines no one must pass, and who should never let a camp be surprised, care being taken, however, to prevent false alarms. When once scouts or patrols touch the foe, that touch should be kept and not lost sight of until the G.O.C. knows all about it. Cavalry scouts should avoid combat, and if a position is to be held, the mounted infantry should come up and do so, whilst the cavalry might follow the tactics of a SHIMLITZ. It is an important front tactics that officers and men distinguish themselves in war, as Lieutenant RHODES says: "Unless the patrol be a secret one, it should not, on meeting the enemy, fall back and report, but should keep as near as circumstances will permit, reporting to the rear by means of couriers. It is truly said, that it is only after contact has been made, that the duties of the advanced patrols begin. The Germans make a distinction between forced reconnaissances and reconnaissances of observation. The former seek an engagement in order to force the enemy into a premature

deployment, while reconnaissance of observation have duties indicated by their name. In his letters on cavalry, Prince Hohenlohe comments on the fact that the reconnoitering and security services are not sufficiently separated. The reconnoitering patrols having for their object the obtaining of information, are pushed too far to the front in contact with the enemy; while the security patrols, having for their object the safety of the command, are pushed forward only a proscribed distance. The officers' patrols, following the advanced scouts, make reconnaissances of observation. They consist usually of an officer and a small squad of cavalrymen. These patrols do not fight, but depend for safety on concealment, their marches often being made at night.

Special cavalry reconnaissances are also often made, especially when there is the likelihood of a battle, having for their object the gaining of information as to the physical character of the ground; and they introduce into their duties, more or less, topographical sketching, varying in accuracy from a hasty horseback reconnaissance to a completely finished survey. For the planning of marches and location of camps only such information as the character of the roads, fuel and water supply, fords, bridges, etc., is necessary. But in planning a battle a cavalry reconnaissance which will secure a more or less rough map of the topographical features of the ground, will be of the greatest importance.

Pace is a thing ill understood in Australian cavalry. It has to suit the demands of order, cohesion, and maintained strength of horses to meet the shock of opposing cavalry. A full gallop gets into serried ranks and less compact formation, with the result that both horses and men get out of leading and fighting direction. They lose temper and morale. A good, steady, dashing and effective charge demoralizes the foe. Uncontrolled charges are useless for destructive power, for cavalry can defeat galloping cavalry at a trot. Our lancers want to know how to do this. SCARLETT met the furious Russian cavalry at Balaclava almost at the trot, and defeated them by three to one. Leaders must know how to glean the decisive and impulsive moment in war by selecting the proper time to charge, and the battle occasion by the hand. NAPOLEON said that "cavalry charges are equally good at the beginning, middle and end of a battle," but they cannot go at infantry flank when they are engaged in front. WELLINGTON disagreed somewhat in the opinion that cavalry leaders should be left to themselves when to charge in the front, as such action might sadly derange the plans and tactics of a G. O. C. MOORE and WELLINGTON always ordered the charges of PAGET and CUMBERMERE, and WOLSELEY ordered DRURY-LOWE to march upon Cairo. The glory of success oftentimes makes cavalry go forward too far, and brings on a general action when not wanted, and with fruitless campaign results. WELLINGTON was great in defense, found victory in it, but we believe in the offense battle like NAPOLEON, FREDERICK, MOORE, CLYDE, ROBERTS, and other great heroes. The defense of Torres Vedras forged victory for WELLINGTON. I hope that a cavalry leader will have a

large discretionary power in charging the foe far in the front, far from headquarters, and using his own intelligence and dash in advancing or retiring. They should have the military eye of a SEIDLITZ or a WELLINGTON to read the field of battle, and also the hidden tactics, or plan of campaign of the enemy.

Pace in cavalry is everything, considering the sudden and dangerous work which lancers and mounted rifles will be called upon to do in action, advance and reconnaissance. Pace is all important in the sudden dash and charge in face of quick-firing machine and magazine guns. Pace, with well controlled cohesion in cavalry, adds weight to the charge, and helps to ride down the enemy. But pace means a good horse, with plenty of weight, bone and breeding. Cavalry must be composed of both light and heavy horse. Heavy horses told in SCARLETT's brigade when they dashed in front and on flank of the Russian cavalry on October 25, 1854. The Union brigade at Waterloo were "heavies," and the pace wonderful. I saw the Austrian and Prussian horse charge each other twice in 1856. The Austrian pace and smartness—light horse—nearly overthrew the heavy Pomeranian horse.

The old pace used to be eleven miles, then fifteen miles, and now modern cavalry officers want twenty miles per hour out of the chargers, simply because light troops must jump about in scouting like lightning, and the "heavies" in charging must gallop hard in the face of improved gun fire. Pace means a deal to a G. O. C. But how are commandants in Australia to get uniform pace and strong cohesion in the mad-like rush of charge, with grass fed horses, which are the steeds of our cavalry and mounted rifle corps? The Easter maneuvers proved in the majority of cases that grass fed horses will never do in war after four days' constant reconnoitering and galloping about. We know what grass fed horses can do upon long journeys in the bush. I once rode 280 miles in Queensland in four days, but our well-bred horses had to get two weeks' spell on grass before they could travel fifty miles per day for two weeks. Some stockmen tell some curious tales of horse endurance "out after cattle," but the average grass fed horse in recent camps could not do fifty miles per day for two weeks and be ready for "pace" when they felt the foe in front. Horses can be trained for pace and long journeys, but how many of the colonial mounted brigade animals are so trained, with plenty of wind, limb soundness and robust constitution? Give a grass fed horse two days' rest out of three, and they may be reliable for pace and sudden endurance; in fact, our bush chargers want height, barrel, physique and weight, to go upon a month's campaign. A little Indian corn and oats will improve bush cavalry. But twenty miles per hour wanted as by FRASER from grass fed horses is open to a doubt at present.

I have mentioned the lancers specially in this article, but whilst New South Wales arms its cavalry with lances, what about the second rank being armed with swords in cavalry action? The following extract from Colonel NEVELLE's paper on "The Rear Rank in Action," should be read by every cavalryman in the Colonies.

He says: "During the advance that the rear rank is necessary for the purpose of filling gaps caused by casualties or opening out in the front rank is generally admitted by cavalry officers. It is likewise admitted that at the moment of collision this rank is practically wasted, the men being of no stock value. If they charge home it is on top of their own front rank, which is thereby hampered if not injured, and if the regulation distance of eight feet is preserved, it is almost impossible for the rear rank to pull up when moving at charging pace so as to avoid this. If the troops are armed with lances it is extremely difficult for the rear rank men, jammed up as they are against their front rank, to make any use of their weapons."

Various suggestions have been advanced from time to time with a view to obviating this defect. Amongst these may be noticed (a) the armament of the front rank with lances and the rear rank with swords; (b) that the rear rank, if lancers, should sling their lances and use their swords, and (c) the adoption of a single rank formation. None of the above are satisfactory or practicable. The first (a) is all very well for a march past, but in action the filling up of gaps and the rally after a charge would eventuate in a confusion of lances and swords in the rank. It also happens in every collision that lances are broken or lost, which accentuates the undesirability of such an arrangement.

The second (b) is faulty because the lancer is taught to believe in his lance as the queen of weapons, and if he has to use a sword in lieu thereof his confidence is gone: he has little proficiency and no trust in the sword, and his lance, swinging on the elbow of his bridle hand, seriously hampers him in the management of his horse. The employment of a single rank is universally condemned for many reasons, which it is inexpedient here to discuss. Which then is the true solution of this question of the rear rank? It is necessary, as we have seen, during the advance; it is useless, if not dangerous, at the moment of collision when it removes some two-thirds of the combatant force from the line of shock action.

It will be well here to go back to the days when cavalry took the highest rank as a fighting arm—to the days of chivalry. Here we see the heavy armored knights on powerful horses, armed with long tilting lances, charging in line. They were followed at some fifty or sixty yards by a second line, composed of their esquires and men-at-arms on smaller horses. This second line (or rear rank) had no lances; they were armed with sword, battle-axe and mace. The first line of knights was used to break the enemy's line and throw them into disorder; the second line then coming up entered into the *mêlée*. If the charge was successful they completed the victory for the knights; if, on the contrary, it had failed they disengaged their masters and enabled them to rally for a new onset."

Cavalry formation in the attack is just the same to-day as ever it was. The charge must be formed up outside the zone of infantry and machine-gun fire, behind shelter or cover. The charging distance is still best at 300 or 400 yards from the foe; but long-range

fire will make the charging distance longer, and, therefore, more severe in killed and wounded in battle action. The leader will steal as much under landscape cover as he can, with an eye and intellect to seize the advantage at once. It will be a difficult matter to hide 6,000 horsemen from the opposite side; but it is almost impossible to manage such a huge cavalry force with order, cohesion, and intact heavy hitting power in the irrepressible gallop and Rupert charge. Disordered ranks in a cavalry charge almost means its overthrow, destroys its intervals, and induces the foe to send in the whole of his reserves to complete its disorder and fatal charge. It must be a grand sight to see 6,000 French, German, Austrian, or Russian cavalry at a review in full gallop towards the saluting point, and suddenly pull up in line or column, without disorder in the ranks, as was done before the Czar, at Chalons, the other day. We shall never see such a cavalry discipline in Australia in our generation; but colonial cavalry should be trained to do this, even in squadron numbers. NAPOLEON and the Archduke CHARLES are said to have reviewed 12,000 men in review; but such numbers are hard to work in action. The chief points of cavalry battle formation are sufficient speed to attack the foe in flank; the second squadron to follow after the first, and in the event of its defeat to keep up the charge, whilst the first squadron retires by the flanks or through its intervals; and the third or reserve squadron to deploy at 400 yards from the charge, and drive it home. As JOHN, Duke of Argyle, said, "If it were na weel bobbit, we'll bobbit again." It all depends upon the nature of the field, and attack whether to form cavalry in *echelon* or in extended formation. A British cavalry regiment consists of four squadrons of 440 sabers, and a brigade of three regiments, and one battery of horse artillery. There are only 2,600 cavalry in an army corps, as against 880 in a German army corps. The cavalry formation liked by JOMINI was one-fourth, and deploy one fourth in column on each wing, and one-fourth in reserve, or out of forty squadrons, ten to be in line, ten in column on each wing, and ten in reserve in rear of the center attack, but all must sooner or later deploy for the grand and overwhelming charge.

It was MARMONT, who said that "cavalry should never fight in column as it prevented good marching and good deployment in front of the enemy." It is also fatal to change formation in front of the foe at 400 yards distance, as the troops are not steady enough to attack or defend when the attack is once committed. Cavalry must be very poor indeed if they cannot successfully charge broken or shattered infantry. Lord NAPIER, of Magdala, said of cavalry in pursuit: "Follow the broken enemy up, hit them hard, give them no time to rally; defeat, scatter and disperse them at all risks." This he always did. What SCOBELLEFF did at Goke Tepe; what DEBY LOWE did in Egypt, and what Lord STRATHNAIRNE did in Central India. The value of effective pursuit is lost if the enemy is allowed to rally in the line of retreat. A river does not stop cavalry in India. The only thing to stop cavalry in pursuit, *a la* CURETON or GILBERT, is a Plevna or Kaferdower. Modern science

has not done much for cavalry as an arm of the army, but Colonel NEVILLE, of the Bengal lancers, has done much to improve cavalry attack and defense. The cavalry of MARLBOROUGH and EUGENE was too slow in movement, but it was left to SEIDLITZ, FREDERICK and NAPOLEON to improve the role of cavalry in war. MURAT nor KELLERMAN knew its value from SEIDLITZ and his dashing horsemen, as they won successes by more maneuvering than in charging home. It will be terrible work for cavalry to charge an infantry square of Lee Metfords, Mannlichers, Machine and Hotchkiss guns or rifles. It was last done by Lieutenant MALCOLMSON in Persia, in 1856, and I do not think that VON BREDOW's will be repeated in the next great war. HAMLEY favors the cavalry final attack in open instead of close column—in successive lines of supporting charging squadrons, as the best deep formation, with intervals in the front line which are one-fourth of a squadron in separation. The Australian bush is highly suitable for echelon cavalry formation, with the front supported by a second, and the leading must be prompt, firm, initiative—heroic! How can the Sydney or Maitland lancers acquire this discipline without camps of continuous training? How can they learn cohesion and the art of driving the charge home without such instruction in peace time. The whole defense force is going to the dogs for the want of field drill and operations. False retrenchment will ruin the force. All the work of General HUTTON and his staff officers is being undone; in fact, his mobilization scheme has never yet been put into practical force either at Newcastle or at Sydney. How can cavalry learn to protect infantry flanks or work round the enemy's flank if they receive no practice; and can infantry learn to protect the charges of cavalry if they do not know how? All arms of the service must help each other in war, and men of all ranks must learn to read the signs of battle. I have penned these lines, and given some extract from great cavalry writers with the view to review the whole question of the cavalry arm, its role and value, in our defense forces. It is right that our young men should know this. Both corps have a special interest for Australians in choosing a corps to serve in defense of Queen, Empire, and Australia. Next week I shall send you an article upon the role of mounted infantry in probable colonial war.

— George C. Craig, *Defense News, Sydney.*

THE CAVALRY CUPBIT BITS (MODEL 1892).

The following circular was issued some time ago by the Ordnance Department:

"These differ from the Shoemaker bits principally in the proportion existing between the lengths of the upper and lower branches. There are three sizes which are precisely alike, except that the length of mouth-piece of 'No. 1' is four and one-half inches; of 'No. 2,' four and three-quarter inches, and of 'No. 3,' five inches.

"Bits of this model should first be adjusted to the horse's mouth, so that the length of mouth-piece shall correspond, as closely as possible, to the width

of mouth; that the mouth-piece shall rest properly on the bars of the mouth, and that the curb strap shall be neither too loose nor too tight.

"It is requested that any defects which may be found in these bits after thorough trial in service may be reported to the Chief of Ordnance, U. S. A., Washington, D. C."

As many troop commanders have continued the use of the Shoemaker bit, it is believed that the 1892 model has not given entire satisfaction. In this connection it should be remembered that the only way in which defects can be cured in any article of equipment, is to properly represent the facts to the department which supplies the particular article. In this instance reports are requested, and a failure to secure what is desirable will lie with those entrusted with the use of the bits.

Since the establishment of lycenms nearly everything connected with the service has come in for a share of criticism in a general way, but this very fact has taught officers that criticism easily degenerates into idle fault finding, and that unless pertinent facts and practicable remedies are submitted in each instance, it is wise to refrain from indulgence in a habit so easily acquired.

Discussions and reports of experiments published in the JOURNAL will always enable officers to compare experiences, and in that way it may be determined what is wanted by the greatest number. Whenever it becomes apparent, from publications in the JOURNAL, that the cavalry arm is in unison, it would be perfectly proper and legitimate for the Council of the Association to so represent the facts to the War Department.

W. H. C.

HUNTSMEN BECOMING TROOPERS.

The memory of dashing HARRY GILMORE, the Confederate cavalryman, still lives in Maryland. No braver cavalier ever followed the plume of RIBERT or sat with the gay spirits who drank red wine through their helmets barred at ARTHUR'S round table, than that bold and accomplished knight of the saddle.

The war between Spain and Cuba has set everybody to reading the history of the cavalry service during the Rebellion. UNCLE SAM is burnishing up his sabers, grooming his horses and giving his men riding lessons; while some of the hunt and riding clubs throughout the land have caught the inspiration and are organizing troops with a view to enrollment as regular arms of the various State militia.

The members of the Green Spring Valley Hunt, together with a number of Maryland riders, held a meeting at the Club's Kennels, near Pikesville, on the 13th instant, for the purpose of organizing a company, which is to be known as the Green Spring Valley Troop. By-laws were presented, and a petition was signed by twenty-one horsemen binding themselves to enlist for a period of three years.

The organization will be governed by both civil and military

officers, the highest positions in each set being the same ex-officio, viz: president, vice-president, secretary and treasurer; the commissioned officers will consist of a captain, first lieutenant, second lieutenant, bugler, surgeon and quartermaster; and the non-commissioned, a first-sergeant, five sergeants and four corporals.

Under a recent act of the Maryland Legislature, membership is limited to sixty. Their mounts will be individual property, although the State will otherwise equip them and probably provide an armory.

The following well-known cross-country riders have enlisted: Messrs. REDMOND C. STEWART, MAMI JAUNEY, RANDOLPH BURTON, Jr., W. PLUNKETT STEWART, EDWARD A. COCKEY, ALBERT T. MYER, C. MORTON STEWART, Jr., JAMES L. ROGERS, Dr. WILLIAM LEE, ARTHUR BROODEN, W. STEWART DIFFENDERFER, DUNCAN K. BRENT, J. M. PARR, Jr., Dr. CHARLES R. HILL, Dr. H. BURTON STEVENSON, W. P. E. WYSE, JOHN MCHENRY, WILLIAM LEE, Jr., and C. LYON ROGERS, Jr.

When the organization is completed the men will be drilled every week until the early summer, beginning with infantry tactics, under the tutelage of an officer of the Maryland militia, which will be followed by instruction in cavalry movements by officers of the United States cavalry. The first drill of the troop with horses took place on the 21st instant, under the direction of an officer of the Ninth Cavalry.

As the Green Spring Valley is noted for its superb horses and skillful riders, many of whom have had some military training, either at college or as members of the Fourth and Fifth Maryland regiments, it is likely that their proficiency will be such by the 4th of March as to warrant participation in the great parade on Pennsylvania avenue which will escort McKINLEY to the presidential chair.

In six months time the troop will no doubt be prepared to offer its services to the Governor and Adjutant General for enrollment, as a regular arm of the National Guard of Maryland.

This is a happy movement on the part of the Green Spring Valley Club, and the local interest it has already awakened indicates that it will prove eminently successful.

They have ample material of the highest class to draw from; for the means, the opportunity and the training are all at hand, which should enable them to fully develop their praiseworthy plan and become the peer of any volunteer command in the country.

I say it is a happy movement, because its purpose, which is two-fold, will contribute to the splendor and strength of Maryland's magnificent militia, as well as promote and keep alive the interest which is now spreading throughout the South in the breeding of fine horses.—*The Rider and Driver.*

TROTTERS BRING GOOD PRICES.

The sale of trotting-horse stock, under Messrs. W. B. FASIG & Co.'s management, at Madison Square Garden, last week, resulted most satisfactorily. The majority of the horses were well bred, with fast records, and those that gave evidence of being able to improve their past performances brought good prices.

The feature of the sale was the very prominent part taken by European buyers or their American agents. During the first day the foreigners picked up some rare bargains, notably the mare Fly, for which Mr. BERNHARD POLLOCK, of Vienna, Austria, only paid \$230. This mare is a granddaughter of the great Electioneer, out of Mecca by Mohawk Chief. She has a record of 2:29½, but has shown far greater speed in private. Another likely mare bought by Mr. POLLOCK is the six-year-old mare Guard, by Clay King, out of Hannah D., by Abdalbrino, for which Mr. POLLOCK paid \$775. Guard has a mark of 2:25½, but in trials is said to have shown 2:15. Mr. POLLOCK also secured the bay stallion Germain, 2:15¾, by Mambrino King, dam Verdant, by Almont, Jr., paying for him \$1,575. Many other lesser lights were also bought by Mr. POLLOCK and other foreign buyers. Altogether, Europeans purchased thirty-seven head, for a total of \$18,950.

Mr. ROBERT BONNER, owner of Maud S., Sunol, and other noted performers, created quite a sensation by buying the crack Western trotter, Don L., 2:12¾. The handsome and level-headed son of Colonel Tom was wanted by a number of turfmen and roadriders, but when they found Mr. BONNER's agent in the field, gave up, and the game fellow was knocked down to the distinguished patron of the trotter for \$1,650. When asked why he bought Don L., Mr. BONNER is said to have replied: "Because I want to ride faster than I ever have in my life." This coming from the man who has driven Maud S., 2:08¾; Sunol, 2:08¾; Dexter, 2:17¾; Rarus, 2:13¾, and many other flyers, is certainly high praise for Don L. Mr. A. A. BONNER, owner of the handsome stallion, King Rene, Jr., bought a two-year-old chestnut filly, by Nutwood, for \$240.

A Canadian horseman, Mr. A. H. GILMORE, paid \$2,300 for the great pacing mare Nelly McCrory, 2:11¾. This was the highest price paid during the sale. Marie Wellington, a promising green filly, consigned by Mr. EDWARD APPEL, of Rochester, N. Y., was purchased by Mr. JOHN MCGUIRE, of New York City, for \$1,000. The filly is by General Wellington, a full brother of Mr. BONNER's ex-queen of the turf, Sunol, 2:08¾. As the filly is said to have shown a 2:17½ gait, and is eligible to the 3.00 class, she should be a good money winner this season.

Mr. E. H. HARRIMAN, proprietor of Arden Farms, the home of the great Stamboul, 2:07¾, got a good bargain in the mare Livonne, by Gold Leaf—Minnie C, by Atlantic, for which he paid \$675.—*The Rider and Driver.*

THE INVASION OF ENGLAND: SHOULD LONDON BE FORTIFIED?

The paper which I have the honor of reading to you this afternoon has been compiled with the object of calling your earnest attention to the danger our metropolis, in its present unprotected state, would necessarily be exposed to in the case of an invasion of this island, and to point out the means by which we could not only ensure the safety of London, but also reduce the probabilities and dangers of an invasion to a mere shadow.

For convenience of discussion, I have put the paper under five heads, viz:

- I. A brief summary of invasions and attempts at invasion.
- II. Are there indications pointing to an invasion of England as probable in the near future?
- III. Is an invasion feasible, and what would be the invader's main object?
- IV. What are our present means for warding off, or meeting, a hostile force, and can those means be considered as sufficient for that purpose?
- V. If not so considered, what further steps should be taken?

I. SUCCESSFUL INVASIONS AND ATTEMPTS AT INVASION.

Up to the eleventh century this island was four times successfully invaded and conquered by the Romans, Saxons, Danes and Normans.

In 1580 the DUKE OF ALBA, the most able general of his age, and one who never lost a battle, elaborated a plan for the invasion of England by means of 600 ships and 60,000 troops. His death stayed the preparations, to be again, however, taken up, but on a more limited scale, in February, 1586. Owing to PHILIP's refusal to permit the DUKE OF PARMA to capture Flushing, so as to obtain a safe and roomy harbor from which to embark the 31,000 men and 4,000 horses which the latter had collected at Dunkirk and Newport, the military expedition was never formed. The incapacity of Medina Sidonia, coupled with bad navigation, and the initial mistake of forming the Armada into one fleet only, proved fatal to success. DRAKE'S fire-ships and a storm did the rest.

On the 5th November, 1688, WILLIAM OF ORANGE arrived off Torbay with over 600 ships, and successfully disembarked 14,000 troops.

In 1690, LOUIS XIV. sent 10,000 troops to Ireland, and on the 10th July of that year the French Admiral TOURVILLE so completely defeated the combined English and Dutch fleets off Dieppe, that for the next nine months the French had the entire command of the Channel. But LOUIS, like NAPOLEON 115 years later, had his hands full on the Upper Rhine and elsewhere, and allowed this favorable opportunity to pass.

In 1708, a feeble attempt was made by a French fleet of thirty-

two vessels from Dunkirk, but it was directed to the wrong point, and the French, meeting Admiral BYNG'S ships, retired.

On the 26th December, 1796, General HOUCHE sailed with an expeditionary force from Brest for Ireland, consisting of seventeen sail of the line and thirteen frigates, having 16,000 men on board. This force escaped the English blockading squadron, and although scattered by storms, arrived in Bantry Bay.

Here we have an instance of an invasion where the invader had not the command of the sea, but is blockaded and watched by a hostile fleet, and where the expedition fully demonstrated that England's shores had been for sixteen days at the mercy of an enemy, and this at a time when the naval power of Great Britain equaled, if it did not exceed, that of all the other nations put together.

On the 19th May, 1798, a French expedition sailed from Toulon for Egypt, with upwards of 36,000 men on board, nearly 400 ships. This fleet was sighted by NELSON off Corsica on the 31st May, and pursued by him; and it is a very remarkable fact, as proving how easily hostile fleets, even of great magnitude, may pass each other at sea, that from the logs of these two fleets it would appear that on the night of the 22d June they were for several hours barely fifteen miles apart, having actually crossed each other's track. Here again, in spite of all our vigilance, the French succeeded in landing their troops undisturbed.

On the 1st March, 1801, Sir RALPH ABERCROMBIE arrived in Aboukir Bay with an expedition of 200 vessels, having 17,512 men of all arms on board, which, however, owing to bad weather, could not land until the 8th March. Meanwhile the French general brought 2,000 men and twelve guns down to the seashore, and these, supported by the guns of the works at Aboukir, opposed the landing of the English. The latter was effected in three divisions, 5,500 men being brought ashore at a time in 150 ships' boats.

Our Guards as they landed on the beach were actually charged by French cavalry, but the landing was successful. General BERTRAND says in his report: "In five or six minutes, 5,500 men were in order of battle on shore."

Here we have an instance where a landing is opposed, by an inferior force certainly, but supported by artillery firing into the boats crowded with men as they came on shore.

We next come to 1805. NAPOLEON'S preparations for an attempt at invasion were, as regards scale, systematic preparation, and organization, such as will no doubt form the principle on which any future invasion, if any, will be based, especially his formation of two separate fleets, one of men-of-war left free for action, and the other for the transport of troops. He also adopted PARMA'S idea of flat-bottomed boats of low draught and provided with oars and small guns. Forty-eight hours were then considered by the French naval authorities sufficient to carry across the channel, and land, 132,000 men and 300 guns.

In July, 1805, the WALCHEREN expedition, an army of 41,000

men, with two battering trains, sailed from England on the 28th July, and landed on the Continent on the 29th; that is to say, this English army was thrown on the shores of Belgium within forty-eight hours of embarkation—an instance proving how quickly troops can be carried across this narrow strait.

I would ask you: Is an invasion of England by a foreign army, looking at it from a military point of view, such a different and more difficult task than the landing of an army on the shores of a continental nation?

From this brief summary of actual and successful invasions we surely must admit that under no phase of the question can an expedition, such as the invasion of England, be taken out of the category of what has been tried, and succeeded. Although defensive power has increased since those days, so has offensive power in quite as great a degree, and an enterprise which our ruder forefathers performed, cannot, I venture to think, be deemed impossible by the present generation.

II. ARE THERE INDICATIONS POINTING TO AN INVASION OF ENGLAND IN THE NEAR FUTURE?

I beg to submit to you that this question must be answered in the affirmative. An invasion, although it has for years past been considered a remote and uncertain contingency, has of late years become more real, and has assumed a more definite aspect in a ratio corresponding to the increase of our colonial possessions and consequent responsibilities, and hence has become much more probable than is commonly credited.

As this subject is, unfortunately, little, if at all, studied by our commercial community, it has not attracted in this country that general attention which it deserves. As a proof that this view is shared by some leading politicians, I need only point to our papers and magazines, which of late have from time to time sounded a note of warning in this respect. It cannot be denied that this threatening danger, that is to say, hostilities, between England and a foreign power, or a coalition of foreign powers, is in a great measure due to our present and past good fortune in surmounting with ease the commercial, financial, and political difficulties which poison the life of so many of the European powers.

It is owing to her prosperity, in fact, that England has become an "unpopular" nation. You know you cannot grow and prosper above others without becoming the object of envy, and envy must fasten unpopularity on the object envied. We learn that fact almost daily from the perusal of foreign papers. Who that has read the French ones, for instance, of late, can deny it? They tell us very plainly, that although our soil is not half as rich as theirs, yet that we are far less hardly pressed by taxation. That, outside Europe, we have all the best pieces in the world, and hold them so easily and at so little cost to ourselves, that indirectly they bring us in a great deal; while on the other hand, their own colonies are

a constant drain on the mother country. That we have no conscription, while their life blood is drained by it. That all this, moreover, is simply ours by sheer good luck.

But, though in England there is absolutely no feeling of hostility against any particular nation, there is no use blinking the fact that most continental countries are deeply jealous of the power and prosperity of the British empire, and that the feelings of a great majority of foreigners are distinctly unfriendly to England. We can only regret this, we cannot alter it. As long as, for instance, France finds England her perpetual rival in all parts of the world—in the Mediterranean, in Egypt, Madagascar, Siam, the Niger territories, Newfoundland, and elsewhere—so long will Frenchmen look upon us with unfriendly feelings.

As regards Russia, she naturally considers us a power whose function it is to be at times, when our interests are concerned, stolidly and stubbornly tiresome and unamiable. Even Germany, while she agrees with us in many things, considers us selfish, and finds us all over the world, a source of dislike and irritation; and so on with the other powers, great and small, they one and all show at times their envy of our prosperity as a nation.

Again, the fact of our vast and increasing commercial prosperity, which has made Great Britain the center of the world's commerce, and mistress of the greatest empire the world has ever seen, our success in the work of governing distant empires, of developing colonies; our easy solution of socialistic problems; and our stable, yet democratic, form of government, have one and all tended toward making us an "unpopular" nation.

I must further ask you to consider that Russia, France, Germany, and Italy, have one and all entered, with more or less success, the path of colonial enterprise. It is most probably due to this cause, that is to say, to mutual interests in various parts of the world, that the general European war, which has been expected for the last twenty-five years, has been staved off. But unfortunately, within recent years, the nations just referred to have gradually been drawing nearer and nearer to our spheres of interest in Asia and Africa; and I wish to put it to you, that however any foreign nation or nations may agitate or harass us to undermine our power there, the real decisive blow for our supremacy in either of those continents must, and can only, be struck, on a European battlefield, whether for good or evil.

Now, these points once admitted—and I do not think, judging by recent events, that we can very well shut our eyes to it—we must neither ignore nor forget them, because they become facts of the greatest importance, and a most distinct and unfavorable factor in all our dealings with foreign nations.

This is my apology for the statement I made at the beginning of this paper, viz: that there are indications pointing to the probability of an attempt at an invasion of England in the near

future, and that this danger is no longer a mere abstract theory, but an important political fact with which our government will have some some day to deal.

III. IS AN INVASION OF ENGLAND POSSIBLE, AND WHAT WOULD BE THE INVADER'S MAIN OBJECT?

I am fully aware that this subject of the possibility of an invasion is, in naval and military circles, a rather thorny one. Various opinions prevail. We have all experienced the fact how difficult it is to successfully combat the opinion of others. One may succeed sometimes in vanquishing people in a discussion, but never in fully convincing them. The fact is opinions are like nails: the more one hits them on the head the deeper one drives them in. Now, there are still in both services officers who persistently cling to the ~~my~~ as being capable of alone defending this country against invasion. Some even refuse to entertain the idea of an invasion of England ever being attempted. Rather than contemplate the probable consequences of a successful invasion, they ridicule the idea of its probability, and stigmatize as panic-mongers all who regard the possibility of such a disaster. WELLINGTON himself was much alive to this possibility of an invasion, and if you look at the great wars in which our fathers and grandfathers fought on the continent of Europe, and enquire into the cause of it, you will find that English statesmen always waged war with allies, and deemed no sacrifice too great to keep war away from our shores. They saw clearly and knew too well that although the English fleets swept every sea, invasion even then was a possible enterprise; and leaving the channel to fulfill its legitimate functions, they wisely determined to fight their enemy on foreign, not English, soil, making use of their naval supremacy as a means of shifting the war elsewhere. Thus their army became the true means of destroying their enemy, and so defeating his intention of invading this country. In this respect you must consider that although a "successful" invasion of England would be the cause of a far greater disaster than the invasion of any other country in the world, yet, on the other hand, the "failure" of such an enterprise would entail a loss on the country attempting it of but a small portion of its military and naval strength. Thus were any power, or combination of powers, to attempt such an enterprise, the risk incurred by England would be far greater and the stakes at issue would be utterly disproportionate. You will see the force of this argument when you consider that England is densely peopled, very rich, that its inhabitants live chiefly by trade, commerce and manufactures, and that it does not produce food enough to feed its population. Hence the effects produced by the sudden diminution of the commerce of the country—caused directly by the invasion and indirectly by the enormous depreciation of all marketable stocks and securities—would be of the most fatal character, and would, indeed, be tantamount to placing a large population, now in easy circumstances, in a state bordering on starvation.

Although very much of what I bring before you this afternoon is by no means new, but has been said and written before, yet it is most desirable from time to time to verify the data on which the usually received ideas on the subject of an invasion are based, and to examine how far new discoveries—or what is much the same thing, new possible combinations of foreign powers—may have altered or modified those data.

It is still a moot question whether the adoption of steam and electricity will be more favorable in future wars to the attack or the defense in case of an invasion directed against our shores. Both will no doubt, to a certain extent, be benefited. But as the essence of the success of an attack in most cases depends upon surprise, and in all cases, on rapidity of action, it would appear certain that the assailant will derive more advantage from these improvements than those who have to resist his assault.

Now, you cannot get away from the fact that the invasion of these shores, like any other warlike enterprise, is a mere adaptation of means to ends. If the means exist, there can be nothing impossible in carrying it out. The means requisite for the invasion of this country consist in the power of assembling a force equal, or superior, to our existing land forces, embarking it, ferrying it over a sea ranging from twenty-five to two hundred miles wide in safety, and disembarking it on English shores.

Once disembarked there can be but little doubt that an army of say, 160,000 to 200,000 men, would most seriously jeopardize, not the independence (for permanent conquest would not, and could not, be the object), but the credit and confidence on which the commercial prosperity of this nation is based.

As to the possibilities of transport across the Channel, I wish to point out to you the facilities possessed by Continental nations nowadays, in their network of railways for collecting troops inland and rapidly despatching them, together with stores, etc., to one or more seaports for embarkation, and the enormous advantage which would accrue to France and Germany when embarking troops, horses and stores from the possession of the numerous steam tugs, and the hundreds of flat-bottomed iron and wooden barges on their canals and rivers, more especially so on the Rhine between Rhurort and Mannheim, and on the Lower Moselle. These tugs and boats, constructed for low water, have but a few feet draught, and can embark and disembark with comparative ease guns, horses and stores, and land their cargo at almost any state of the tide.

As to the ports of embarkation, the ports of 100 years ago still exist on the Continent to-day. The true base for the invasion of England is undoubtedly the mouth of the Scheldt, and you may rest assured that the neutrality of neither Belgium nor Holland would be respected in such a weighty problem as the invasion of England. In 1870 the neutrality of Luxemburg just escaped violation because the French were not prepared to send an army corps towards the Lower Moselle—a fact which did not, however, come to the knowl-

edge of the cabinet at Berlin until about the 24th July. So also may it be doubted whether McMahon would have respected the neutrality of Belgium, had he not been wounded at Sedan.

As to the means for transporting a large army, with its stores, etc., across the Channel! Of course, no nation has such means for rapidly collecting scores of transports as we have, but the immense facilities England possesses in this respect to-day gives one a very accurate idea, by comparison, as to what other nations may be able to do. For instance, those who have gone into this matter of sending military expeditions across the seas, will know that, without any undue strain on our merchant steamers in home ports, we could embark and send to sea 200,000 men in one single week, *i. e.*, within seven days. To those in doubt, or hazy on the subject, I would say, take a walk, as I recently did for the purpose of this paper, down to the London, Albert and West India docks. Note the ships, and their tonnage, at anchor, and with the aid of a few civil enquiries of the officials you will be surprised to find that, by utilizing the piers and jetties at Harwich, Sheerness, Queenborough, Chatham, Dover, Portsmouth, Southampton and Devonport, carrying to each port men, horses and stores by a different line of railway, fourteen transports can simultaneously be loaded with stores and filled with troops, thus enabling 40,000 men per diem to be embarked from the ports just mentioned, while leaving the port of London for embarkation of artillery, guns and ordnance stores from Woolwich.

I have shown you that in 1797 and 1798 two French expeditions carried 52,000 men between them. The French mercantile marine has trebled since then. But the great facilities European nations at present possess in transporting power is mainly due to the introduction of the large passenger steamers, etc. These vessels, built for passenger traffic, with enormous engine power, make a combined movement from various ports much more sure than the sailing vessels of ninety years ago. The French calculate for military expeditions to be carried a long distance, one man per ton of shipping. But for short journeys, like crossing the Channel, these regulations would be modified. For instance, forty-two steamers of the "North German Lloyd" class, could bring over three German army corps, complete in all details. The "Valmy," a vessel of 2,800 tons, carried 3,000 men to the Crimea, and a vessel of 2,700 tons brought 2,800 men home from Mexico, when that expedition returned to France.

We must also bear in mind that during hostilities an embargo would be laid on English ships in foreign harbors, many of which are largely manned by foreign seamen. In this respect, I may instance that the Emperor PAUL, in 1800, seized 300 English ships in Russian ports alone, while in 1803, at the rupture of the peace, nearly 500 English ships were detained in various French harbors.

From this we may fairly conclude that the introduction of large steamers has rendered the transport of military expeditions an easier operation than it was in former days, and we also find that several Continental nations possess ample means for transporting their

troops to the coast, embarking them and carrying them across the Channel.

To effect the passage and landing of the troops in safety it would, of course, be imperative that the invader should obtain the temporary command of the Channel. In order to secure this, the invader will, you may be sure, profit by the lessons taught him by our forefathers in naval strategy. No one reading the account of the great naval actions which took place at the end of the last and the beginning of the present century, can fail to be struck with the fact that the English success was rarely due to superior force so much as to naval strategy, which enabled the English commanders to seize and keep an advantageous position, from which they could neutralize the enemy's superiority and apply their own force to the best advantage.

In the same way the invader, when attempting a passage of troops across the Channel, will endeavor to draw away our fleet and give battle to our ships at some point, or perhaps points, simultaneously, and distant from the spots selected for landing his troops. No nation would, for a moment, dream of counting the cost of a naval engagement for such a purpose. So also, it may seriously be doubted whether the fear of being cut off and severed from their base of operations will ever prove a deterrent to an invading force, when you consider the rich and tempting bait a successful invasion of England must be nowadays to many a Continental nation.

Ironclads, unfortunately for England, have somewhat diminished her power of resisting invasion. Can harbors be now blockaded as they were in the beginning of this century? I venture to think not! The blockading force off any hostile port must be composed of steamers, and the mobile power of steamers is entirely limited to the amount of coal they carry, say a month's supply. We all know that there are almost insuperable difficulties to the coaling of vessels at sea, even in fine weather. Ironclads certainly possess more power as fighting ships than wooden vessels, but they are not so mobile, nor such good sea-going ships; and as in the case of an invasion our navy would be acting on the defensive, our ironclads would have to watch everywhere, to see from which direction the blow would come, as an invading force need not sail from one port only; a certain point, out of sight of land, could be fixed on the chart as the rendezvous for the hostile flotilla. History teaches us that fleets have been evaded and passed before now, or decoyed away as NELSON was. With ships numerous and uncertain elements and accidents also come into play, such as storms, torpedoes, ships running ashore, on rocks, into each other, and so on. Our own naval maneuvers prove these matters, and the passage of a fleet of thirty French war ships in 1832 through the Straits of Gibraltar undetected, that is to say, the fact of these ships having passed through the most carefully watched waters in the world (which are barely fifteen miles wide) unnoticed, furnishes a striking instance as to the ease with which fleets may evade or pass each other.

You must also not lose sight of the fact that although our navy is at present more powerful than that of any other nation, yet that

this superiority will disappear when we come to speculate upon a coalition of nations for the purpose of an invasion. Say, for the sake of argument, a combination of France and Russia, with probably Germany's silent consent, a coalition not at all so unlikely when you consider the peculiar political relations ever existing between Russia and Germany. Or another, and much more likely one, viz: the neutrality of the Triple Alliance and the isolation of England in case of an attack on the latter by France and Russia.

In either case our fleets in foreign waters and our troops abroad would have to remain at their respective stations, and then the French Channel and reserve fleets added to the Russian ships would be superior in numbers, if not in tonnage, to our own home fleets, as at the commencement of hostilities we should certainly not be able to put all our reserve ships into commission for temporary want of officers and seamen.

It must also be borne in mind that the new Kiel Canal considerably facilitates a rapid union of fleets in the North Sea or Channel, and that, provided the invader has his ships handy and watching, in the present day of steamers with a speed of fifteen to eighteen knots an hour, the hostile flotilla would venture across such a narrow strait in almost any, except the worst, sort of weather, and the least space of time gained, one day, even one night, would give the invader the start of us, and suffice for his landing.

Moreover, I would ask you, Is it quite impossible that a British fleet may meet with a temporary reverse? However remote the event, it should be provided for.

Hence I maintain that in these days of steam and electricity every thinking man must come to the conclusion that an invasion is even more possible than in the days of our ancestors, and if the arguments I have adduced are fairly considered I venture to think that you will agree with me when I state that, given certain prevailing circumstances, an invasion is a feasible contingency, that we are by no means impregnable, and further, that our fleet is a great protection without doubt, but that it does not, and cannot, *alone* give that perfect assurance against invasion which this country demands, but that our land forces and defenses also must be such as will enable us to look calmly on any attempt at an invasion of these islands. To those still in doubt I would like to say this: "How many a serious and difficult undertaking has not in all ages been considered impossible by contemporaries, until someone arose who, by sheer force of genius and will power, carried it through?"

AS REGARDS THE INVADER'S MAIN OBJECTIVE?

That, I beg to submit to you, can be but "the capture of London." There is undoubtedly at present a temptation existing in the defenseless state of London inviting the enemy to take advantage of some opportunity offered by the temporary absence of, or reverse to, our fleet, or of one of those extraordinary developments which every

student of military history knows is the real cause of sudden and unexpected success.

I would further impress upon you that no invader would ever commit himself to an invasion of England unless with a view to gaining possession of London, because no destruction of dockyards, arsenals, or any similar contingency, would ever be likely to induce England to capitulate and make terms any more than it is likely that an invader would plant himself permanently on the white cliff at Hastings or any other part of England. No! The occupation of London once accomplished, the conqueror's soldiers mounting guard over the bullion vaults at the Bank of England, with a Provost-Marshal at the Mansion House, and the Quartermaster General in possession of the keys of our docks and warehouses, with parks of artillery in our principal squares, and London declared in a state of siege and under martial law, the British government would be powerless for anything but making terms with the invading foe. What government, I ask you, would dare to risk the loss of lives, the losses by destruction of property and ruin of trade, the misery, the crime and the saturnalia which any lengthy occupation by foreign troops would necessarily entail upon London and its six million inhabitants? Just imagine the evils inseparable from the presence of foreign soldiery, and the fact of our criminal classes finding themselves let loose. Hence I maintain that once London was seized, resistance in the country would be at an end, and a humiliating peace, accompanied by grinding war indemnities, would follow close on the news of the sudden invasion of England.

There can be no doubt but that the defeat of our army, and the subsequent seizure and occupation of London, must ever be the main objective of any hostile invasion.

Continental strategists, while admitting the serious and costly risk of an invasion, significantly put their finger on London and add: "Nothing venture, nothing win."

NAPOLEON, in 1803, when his attention was drawn to some reports stating that a number of British line of battle ships and frigates were cruising about the Channel and likely to harass or intercept the landing of the expedition on British soil, replied: "Well, suppose we lose 10,000 or 15,000 men while crossing; why, you lose a greater number than that in a single battle; and what battle, may I ask you, ever promised such results as the invasion of England and the capture of London?"

IV. WHAT ARE OUR PRESENT MEANS FOR WARDING OFF OR MEETING, AN INVADER'S ARMY, AND CAN THEY BE CONSIDERED AS SUFFICIENT FOR THE PURPOSE?

As I have already said, our fleet is our "first" line of defense, and is provided to prevent the sudden descent of a hostile force upon our shores. The fleet is the right thing for this duty, but may not always be in the right place, as I have endeavored to show.

Our "second" line consists of forts, and other defenses on various parts of our coast, for the protection of our dockyards and arsenals.

The "third," or innermost line of defense, is entrusted to our home army.

To show that there is a weak link in this chain, *i. e.*, our third line, and how this link may be strengthened so as to give real security, make London impregnable, and a successful invasion hopeless, is the purpose of this paper.

In the year 1874, I think, the late Colonel HOME, R. E., when on the staff of the Intelligence Department, prepared a scheme for forming our home army into eight army corps, which for home defense were to be concentrated in various parts of the United Kingdom. The scheme proved, however, too unwieldy, and was consequently abandoned. In 1886, when our present Commander-in-Chief, Field Marshal Lord WOLSELEY, was Adjutant-General to the forces, he created a branch at the War Office for the purpose of welding our scattered units into one army for the purpose of defense in case of an invasion, and the outcome of the deliberations of the staff officers occupied with that scheme I take to be the system for mobilizing our home forces as laid down in the official book published in November, 1894.

According to that scheme, the duty of meeting an invader's main army will devolve on three army corps and four cavalry brigades, the first and second army corps being composed entirely of regular troops, while the third will have militia battalions for its infantry portion. The four cavalry brigades will be made up of regular cavalry. Each army corps will consist of three divisions, and will number 32,519. The cavalry totals up to 10,755. Hence, we find that the "field" army numbers a total of 108,312 of all ranks. For a "reserve" line we then have the present existing twenty-two volunteer infantry field brigades, and thirty-two volunteer artillery (position and garrison) corps, to choose from. The mobilization scheme does not afford us any information in this respect, but I venture to think that we may take it that the intention would be to form some of these volunteer corps into army corps, to form a "reserve" to three army corps of regular and militia already mentioned, and that the duty of the former would be to move up in the places vacated by the latter, should they move forward from their original places of concentration. Taking the present strength and constitution of our volunteer force into calculation, they would give about 110,000 men, sufficient to form three "reserve" army corps.

The remainder of the militia and volunteers, say 180,000 men, would, with some line troops, we may presume, be allocated to form our garrison troops in Ireland, and to occupy our fortresses. The mobilization scheme, for obvious reasons, gives no data in this respect. In round numbers, then, we should have an army of 220,000 men to place in the field, and 180,000 to 200,000 men for Ire-

land and our garrisons and forts. This is, you will probably say, a not insignificant force, and at first sight one likely to make a possible invader hesitate before committing himself.

But I beg to submit to you that when you bear in mind the organization, composition, and training of our field army, and compare it with that of the hostile armies our troops may some day have to encounter, you will, I think, agree with me that our present "third line," intended for resisting an invasion, does not give that perfect security which we require, still keeping before us the unprotected state of London and its proximity to the coast.

I think I may venture to say that we are all agreed in considering the invasion of England a matter of such serious import, so important an undertaking, in fact, that it would be hopeless from its very inception, unless it were carried out by an army of considerable magnitude. I do not think that any nation would attempt it under any other conditions. RALEIGH justly says, "All petty attempts are more profitable to the invaded than to the invader." Hence it follows that we must be prepared to face the fact that, in the case of an invasion, our field army will probably have to meet and give battle to a hostile army of equal, if not of superior, strength to that of our own; and further—and this is a most important factor—that the adversary's troops will mainly, we may be sure, be composed of "highly-trained" troops, led by experienced and skilled officers.

Now, can we hope to oppose such troops with a similar number of "highly-trained" men? I fear not! We may succeed in placing 100,000 men of the regular army and army reserve in the field, all skilled men, but the remaining number required to make up another 120,000 men would of necessity have to be militia and volunteers.

I yield to none in my admiration of the splendid force we possess in our line troops, and I believe them to be a match for any army of whatever nation, number for number. But neither officers nor men of our auxiliary forces receive that individual training, that is to say, acquire that "painstaking mastery of details of the art of war," to which alone the term of "highly-trained" troops can be applied. Owing to the want of such "individual" training, they consequently lack the higher form of discipline. Whatever pluck, endurance, and intelligence may be possessed by officers and men of our auxiliary forces, yet they cannot, as at present trained and organized, with truth be considered in any way as a force fitted to match equal numbers of highly-trained troops on the field of battle, as modern tactics require the very highest training and discipline that a soldier can possibly have, seeing that they involve that which is most trying to the nerves of a soldier, *viz.* apparent isolation, disorder, confusion, and unflinching obedience. That the war of the future will bring a greater strain than ever on the nerves of those engaged, may be accepted as certain. Here I am speaking from personal experience, as I saw and felt the effects of these matters in the Danish War in 1864, and the Seven Weeks' War in 1866.

Need I quote you further instances of the second half of this century to confirm it? The American War of Secession is a brilliant example. Would that war have lasted six months if the North had at the outset possessed 150,000 trained troops? The Franco-German War, from November, 1870, to February, 1871, demonstrated that even when superior in numbers, partly-trained troops are not a match against highly-trained ones on an open battlefield. We also read in the narrative of the siege of Plevna, in 1877-78, that the want of training shown by the Cossacks caused serious difficulties on several occasions.

Before quitting this subject of the value of "trained," in comparison with "partly trained," troops, I ask your indulgence for a few remarks, as, having served in the ranks of an army raised by conscription, and in one raised by voluntary enlistment, I may be permitted to have some opinion on the matter.

A hundred years ago the armies of Europe were constituted more or less as the army of England is this day. But during the last sixty years war has become a science, and a very complicated one to boot. Hence, the continental powers saw the necessity of changing their military systems, in order to obtain the services of the whole talent and manhood of their respective nations for war, while England alone recruits her army as she formerly did. We are not concerned to-day in debating as to whether England, relatively to other powers, has lost or gained in not adopting conscription. But this I may be permitted to say, that the warlike strength of a country does not so much lie in the number of her guns, steamers, ironclads, torpedoes, railways, and so on, but rather in the skill and talents of the men who use these things; and further, that a nation whose army embraces all the manhood, skill, talent and knowledge in the country, must obviously possess more power both for offense and defense than a country where the army is recruited on the voluntary system, and consequently a thing apart from the nation. For you must bear in mind that in a country possessing a national military institution, whatever the nation has at heart, that the army seeks, because the whole intellect of such a country is more or less devoted to warlike pursuits. Hence, it follows that they are also superior in moral power to armies formed on the English model.

If you admit these arguments, then I maintain that we require special safeguards in order to extract the utmost value from our auxiliary forces under the present system, and I will now proceed to point the direction in which I venture to think such safeguards can be found.

There are, as we all know, comparatively few places on our coast where a hostile landing could be effected in great force, and on looking at these places on the map we also find that on almost every road leading from our coast to London there can be found certain points well adapted, if suitably occupied by our troops, for stopping the advance of a hostile force. The selection of such places is, of course, a confidential task, as it is our strategist's business to exercise that forethought in the establishment of positions, bases and

depôts, and the concentration of troops, whereby the greatest advantages are secured for the subsequent display of tactics in the presence of an enemy; hence, I need not go further into this matter. I should next mention that the whole of England is so enclosed and intersected by fences, woods, and enclosures of all sorts, and so thickly studded with villages and farm buildings, as to offer an immense advantage to an army on the defensive, and rendering it impossible for any large force to move across country, but confine it to an advance along the roads. Under certain circumstances arising, however, this advantage may cut both ways.

We may also, I think, take it that on an invasion becoming imminent, the working of all the railways would, by act of Parliament, be taken over by the Quartermaster General. But, as an invasion of this country, as is generally agreed, I think, can be effected only by a *coup de main*, that is, suddenly, and as our coast line is our frontier, it would appear, curiously enough, that the effect produced by railways on the problem of an invasion is not so very favorable to us, as the point, or points, of concentration near the coast would appear to be too close to the spot, or spots, likely to be the actual scene of operations to render concentration by railway either a safe or practical operation. The true function of railways in modern war appears to be rather the rapid concentration of troops and material at some point, which becomes the base of operations, or the point of departure, and subsequent supply of an advancing army, and the removal to the rear of sick and wounded men. Hence, the point of such concentration must be well removed from any danger of attack, and should, and ought, most certainly be near some fortified place.

Lastly, the electric telegraph, while it undoubtedly adds to our defensive power in enabling us to get early and rapid information from various points on our coast, will now also allow descents to be made on different parts of our coast simultaneously, and will thus prevent the great advantage which hitherto has accrued to the defense of acting on interior lines in such a manner, as to allow different parts of an assailing force, attacking at intervals, to be overwhelmed by the superior force of the defender thrown judiciously on particular points, while only weak detachments are watching other points. For to resist an invasion under modern conditions of steam and electricity, the defender must be in force at, or within easy reach of, the point, or points, selected by the invader for landing; and strength at one point necessarily entails, where a long coast line and several points have to be watched, weakness at some other, and if he disseminates his force along the whole line, he becomes weak everywhere.

Now, we may rest assured that every point, favorable or otherwise to us, that I have enumerated just now, is perfectly well known to the military and naval strategists on the Continent, and that they give such points due consideration in their academical studies on the subject of an invasion of England. Hence, there can be but little doubt that the strategic movements of an invader will assume

a form something like this, viz: his object will be, while threatening various points, to throw the bulk of his forces on the decisive point, and so arrange the movements of his expeditionary force that even, although numerically weaker over the whole theater of war, he may be strongest when he attacks that point.

Therefore we must give due prominence to the fact that the invader, if he succeeds in landing his troops under cover of his ships' guns, will immediately endeavor, not only to break through the veil of our nearest outposts, but will also strain every nerve to push the latter rapidly back upon their main body, and further make such flank movements as are most likely to bring on a first battle as far removed from the coast and as near to London as possible.

Now, supposing the defender's force should at the outset meet with a reverse. In every attempt to deal with such an event one is immediately struck with the immense difficulties the commander of the defending force would, under present existing circumstances, experience when rallying his beaten troops, and endeavoring at the same time to safely and rapidly call up and concentrate reinforcements. The latter would be imperative, and an immediate necessity, in order to enable the defender to inflict a crushing blow upon the invader before the latter could reach the metropolis. But, in the absence of any protection around London, or even any *points d'appui* between that place and the coast, and in the near presence of the enemy, a safe and rapid concentration near an open city must necessarily become a task beset with great danger, and one requiring the gravest considerations. Because the calling up of such mixed reinforcements as our troops would then present would mean the setting in motion of large bodies of partly trained troops, unaccustomed to the work, destitute of organized transport, armed with weapons requiring ammunition of a pattern different to that of the regular forces, devoid of trained ammunition columns, and short of cavalry and field artillery; and these troops would be required to watch, stop, and checkmate highly trained troops, flushed with victory, and within striking distance of their goal, our Capital. Here, I maintain, is our weak point, the weakest link in our chain of national defense. When you reflect that the concentration of troops in the near presence of an enemy must ever be beset with difficulties, you will surely admit that in the case of a reverse to our troops, and in the absence of any permanent works between London and the coast, the problem of re-forming our field army near London, safely and rapidly, should be put beyond a doubt, for what we should then require is "time." A French author says truly, "*L'art defensif est de gagner du temps*," and time, we know, is the very essence of all war, and more especially modern war; and in order to gain time you must, of necessity, have some fortified place to retire to, in rear of which to carry out your object. This merely confirms the principle that "whenever a capital, by reason of its situation is distinctly likely to be the objective point of an invader, strong works round the capital become a necessity, between and

behind which the defending army, if worsted in a battle, might be reorganized."

Can we, therefore, fail to see the necessity of providing some such works in England, where, as I have endeavored to show, we are to a great extent dependent on "partly-trained" troops, which need such special safeguards in order to arrest the progress of a hostile army threatening the metropolis? Hence I maintain that our present system of national defense does not give sufficient security for a rapid and safe rallying of our troops after a reverse, nor does it provide for the unprotected state of London.

I ask you, who can and who will guarantee success to our mixed forces from the very beginning of the landing of a hostile foe? Have we always done the right thing, in the right way, and at the right time, in our wars? I think not. Can we consider ourselves outside possible accidents and strokes of ill luck? Are we to wait until misfortune overtakes us, and then put our house in order, as other nations have had to do before now, and to their cost? Surely not! When you please come to consider that London is truly and essentially not only the capital of this country, but also the very center of the political, commercial and social life of the nation, you will surely grant that it behooves its rulers to make "assurance doubly sure" by adopting such measures for the protection of the metropolis as will in all likelihood prevent any danger to it ever arising.

V. WHAT FURTHER STEPS SHOULD BE TAKEN TO ENSURE THE SAFETY OF THE METROPOLIS?

Si vis pacem, para bellum, and how true this is to-day with regard to England's political relations with foreign powers!

You will ask what steps I propose should be taken to minimize, stave off, or prevent an invasion. My reply is, "A chain of large 'permanent works,' connected by smaller 'field' works, around London, so that it should be no longer the heart of the country without a breast-plate." You will agree that our fortifications at Devonport, Plymouth, and at other points are important only for the protection of our dockyards and arsenals, and as *points d'affaires* for our navy, but they are certainly not in any sense a protection for our metropolis, which must be of paramount importance in any scheme of national defense.

I am sure you will also admit that there is not anything new in a proposed fortification of London; but rather is it a proposition which has twice during the present century most seriously agitated the government of this country.

As early as 1803, when a French invasion appeared imminent, a long and interesting debate took place in the House of Commons upon the question as to whether London should be fortified. Mr. Pitt strongly enforced the propriety of strengthening the metropolis, and ended his speech by saying: "It is in vain to say that you

should not fortify London because our ancestors did not do so, unless you can show that they were in the same situation that we are. * * * If the fortification of the capital can add to the security of the country I think it ought to be done. If by the erection of earthworks, such as I am recommending, you can delay the progress of the enemy for three days, it may make the difference between the safety and the destruction of the capital."

Again, in 1860, when the Royal Commissioners, appointed on 26th August, 1859, to enquire into the national defenses, sent in their report, they recorded therein their opinion, and this notwithstanding the fact that the fortification of the metropolis was not included in the scope of the enquiries to be set on foot by the Commissioners, that "in addition to the twelve millions recommended for certain works, they were of opinion that further works would be necessary for the defense of the metropolis, for shielding the heart of the empire against attack."

Portsmouth and Plymouth have been fortified, but nothing has been done for London; our metropolis is still in its present unprotected state. Now, I beg leave to say that if we adopt fortifications for some vital points, such as dockyards, surely we ought not, and must not, leave the most vital of all—the metropolis, the occupation of which must decide a campaign—unprotected and unfortified. A high military authority, Baron MURICE, has written: "The capital is the center of the national life, and it must not be left to the risk of a sudden, bold attack. If Vienna, in 1805; Berlin, in 1806; Madrid, in 1808, had been fortified, the results of Ulm, Jena, and Burgos—would have been different. If Paris, in 1814-15, had possessed a citadel capable of holding out only for eight days, the destinies of the world would have been changed."

MONTMOLON, in his book on NAPOLEON I., quotes the following opinion, as expressed by the Emperor: "He had frequently turned in his mind the propriety of fortifying Paris, as he thought it the greatest of all contradictions to leave a point of such importance as the capital of a country without the means of immediate defense. Let not the English imagine that their naval superiority renders these observations inapplicable to their capital. Who will guarantee the navy of England in all future times against a maritime disaster, and against a rout of the fleet at, or near, the mouth of the Thames?"

Since this was spoken Paris has been fortified, and its fortifications proved of such great value in the winter of 1870-71, that the perimeter of the works has been doubled since. Are we the only people whose rulers will not profit even by experience? Are our military authorities so sure that our "army in the field" will, under all circumstances and possible conditions, suffice to insure the safety of the capital? I do not think for a moment that any government now shut their eyes to the danger of the metropolis being unprotected, but I also have no doubt that the remoteness and uncertainty of the possible peril, combined with a prudent desire to avoid the danger of creating a panic, by implying a doubt of the

durability of peace, or by creating a distrust in the capabilities of our military forces to cope with any foe in the field, may induce even a vigilant executive to postpone precautions until too late to adopt them with due effect.

It is for these reasons that I would at the present moment urge the propriety of surrounding London by a chain of works on the so-called polygonal system, the simplicity of which gives it the advantage of being more readily adapted to irregular ground. These works, occupying some fifty acres of ground, would contain sufficient storage, in addition to their own requirements, to hold mobilization stores and entrenching tools, as well as guns, stores, and ammunition for the smaller works, to be subsequently erected between the larger ones. These smaller works, on an average of say six acres of ground, might be made in the form of earthworks, or "redoubts," of as large a section or "profile" as time would permit, or they might be a kind of compromise between field and permanent works, what the sappers term "provisional" works.

These latter, two or three between the large ones, need not be constructed beforehand; it would only be necessary to secure the ground required for that purpose. Our troops could easily construct these secondary works when invasion is known to be imminent. Some works of this kind were constructed in 1866, just before the war, around Florisdorf, on the north side of the Danube, for the protection of Vienna, 7,000 men being employed. A little later in 1866, when war had broken out and the Prussians had occupied Dresden, several small detached works were built round Dresden by about 6,000 men in a fortnight. London and the surrounding country lends itself admirably for such a purpose. Once the larger works are finished, an invasion by a foreign power would become problematical, as a hostile force could not invest or starve London, its communications with its base would be far too insecure, as any reverses to our fleet would and could be but temporary. These works would prove of incalculable value to our auxiliary forces and enable them to become of much greater value than they are at present. The fortification of London is the very supplement to our volunteer movement. The very *raison d'être* of the volunteer force is the fear of an invasion. If we can boast that we possess a great deal of the talent and intelligence of the younger portion of our manhood in its ranks, surely we ought not to neglect the means so to our hands of turning that talent and intelligence to the best and most profitable account. In the execution of these works, both militia and volunteers could be employed, thus forming an excellent school of instruction in the use of the spade, and making the men thoroughly *au fait* with the task they may have one day to perform, and familiar with the works they may be called upon to perform.

Having thus surrounded London in a perimeter of some eighty miles by a cordon of earthworks, showing an armed front in every direction, you would have the termini and rolling stock of the principal railways within that circle; hence, every facility to transport

troops from and to all parts of the country. You would also have the power of calling a peremptory "halt" to any hostile foe threatening the metropolis. The boundary of these works would hold our field army, and thus become an "entrenched" camp, giving a secure starting point for operations against the enemy's field armies, and afford shelter to our own if worsted in the field.

As to the cost of such works as I propose here, I may say at once that we must look upon such an undertaking in the same spirit in which a man insures his house against fire, viz: as a premium paid by the nation to assure it against an invasion, and the capital against capture.

In this rough sketch here I have marked sixteen points for large permanent works, to show you the perimeter and also the distances between the large works. The latter would be distant some twelve to eighteen miles from the General Postoffice, and the distance between these works would vary from four and one-half to eight and one-half miles, according to the nature of the ground. The points I have marked are, commencing in the northeast:

- | | |
|---------------------|-------------------|
| 1. Waltham Abbey. | 9. Flint Hill. |
| 2. Abridge. | 10. Merstham. |
| 3. Romford. | 11. Boxhill. |
| 4. Rainham. | 12. Esher. |
| 5. Dartford. | 13. Kempton. |
| 6. Farningham. | 14. Hounslow. |
| 7. Steer Hill. | 15. Harrow. |
| 8. Hogborough Hill. | 16. Wrotham Park. |

The purchase of the ground, under Act of Parliament, for the erection of the works, say, 800 acres, at an average of £420 an acre, would be.....	£ 336,000
For construction of sixteen works, at, say, £320,000 per work.....	5,120,000
A total of	£5,456,000

Of course I do not by any means pretend to this being an accurate estimate, or to the points marked being those most suitable, as so much must depend on the type of works selected for erection, and the perimeter around London considered the safest and most suitable. Then there is the armament of the large and small works to be considered as items of first cost.

But even so, when you consider that something like twelve millions were expended for the protection of our dockyards, and when you come to reflect on the effect such works as the above would necessarily produce on the minds of continental strategists when speculating on an invasion of England, you will agree that even ten millions would be a cheap premium to pay.

Gentlemen, I have done, and I must ask you to accept my deepest apologies for having asked your attention for such a length of time; but I am sure that you will agree with me when I say that

the subject I have spoken on is a weighty one, and worthy of your best reflection.

Whatever may be the future, and whenever invasion may come, we hope, as we believe, that British officers and men will ever uphold the honor of the country, and that they will prove themselves equal to the calls which may be made on their skill, on their valor and their endurance.—*Captain W. H. Harrison, Quartermaster First London Volunteer Artillery, in Journal of the Royal United Service Institution.*

THE CAVALRY HORSE

B. POLLOCK & Co., of Vienna, cabled a day or two ago to GIL CURRY, the young Kentucky trotting-horse driver, who has been acting as a buyer of trotting stock for several Austrian dealers, asking whether he could supply 2,000 cavalry horses for use in the army of Greece. CURRY immediately took a steamer for Vienna, to consult with his correspondent. The troubles in Canea and Cuba, together with the wonderful taste for cavalry sports developed among the young men of America, as for example our own splendid "Squadron A" and "Troop C," make it timely to comment upon the cavalry arm of warfare. The Austrian cavalry is looked upon by many authorities as the finest in the world, and after the Hungarian cavalry maneuvers, not a long while ago, some very interesting points were brought to light in a letter to the *London Times*. These will prove not only valuable to our National Guard troopers and our amateur organizations in civic life, but should also become useful to the United States army authorities. The fundamental principle evolved was that "a good cavalryman on a bad horse is of no more use than a good infantry shot armed with an indifferent rifle." This once grasped, it becomes self-evident that the first necessity to improve the mounted arms is to raise the breed and increase the number of suitable horses throughout a country until the desired standard be attained.

On the continent this matter is now receiving well-deserved attention. The breeding of army horses is being enormously developed, with more or less successful results. In no country, however, has the question been so carefully studied as in Austria, where the government has, through a wise system of encouragement afforded to the farmer, converted the vast open plains of central and southern Hungary into the breeding-grounds of the best cavalry horses in the world. A visit to these parts soon convinces one of this. The most striking thing to the horse-loving traveler is the number of well-bred, well-shaped horses seen, and the dearth of course, hairy-heeled ones. Good animals, mostly of the stamp of smart, medium-weight hunters, abound everywhere. They are met with grazing in droves across the open plains, or trotting briskly along, generally in pairs, drawing the light wooden-framed farm wagon of the country, followed, as a rule, by a foal or yearling.

The young stock thus accompany the dam, feeding by the roadside, then trotting or galloping along to catch up the parent, becoming active and hardy, and at the same time docile and tractable, through the frequent visits made in this manner to the neighboring villages or towns.

There are nine large studs in Hungary, adds the *Times*, besides two large and six smaller ones in Austria. These are under the Agricultural Department, but have been managed since 1866 entirely by military stud corps. They were formed by the Emperor JOSEPH II. "to raise the breed of horses and to improve the mounting of the army." At these establishments a certain number of horses are bred, and thoroughbred stallions, many of them English, are maintained and sent around the country to different centers, for the service of farmers' mares, at nominal fees. The government has first call on the produce, which is purchased direct from the breeder at from five years old—exceptionally at four and-a-half—up to seven, at prices varying annually, but fixed for 1895 at between £16 and £32, so that the average may not exceed £25 on allotment to corps after all expenses have been defrayed. There are, besides these studs, three remount depots, where horses found to be exceptionally good, and bought, consequently, at three and-a-half, are kept while maturing. The average price sanctioned for artillery draught horses in 1895 was £28. The purchases are made by standing committees, of which there are at present six, at central places in Hungary. Regiments may purchase horses direct, if of a very superior class. Twelve per cent. of riding and ten per cent. of draught horses may be cast off annually, so that practically no cavalry horse serves more than eight years in the ranks or is over thirteen years of age. At the prices stated above, the Hungarian cavalry horse is far superior to the average animal of the same arm in England. The reasons, stated briefly, for this are the great care bestowed on horse-breeding by the government in Hungary, the assistance given through the cheap service of thoroughbred government stallions, the claim thereby established of first call on produce, and the purchase direct without the expensive intervention of the middle-man. All old and useless horses being eliminated through the weeding out of twelve per cent. annually, only thoroughly sound, serviceable animals remain in the ranks. They average 15.1½ or 15.2 in height.

It cannot be objected that the points mentioned above are inapplicable to our chief horse-breeding country, Ireland, concludes the *Times*. The system has only to be vigorously adopted for it to prove its own success within three or four years. The one thing necessary is the initial sum required to start a couple of remount depots and to purchase the requisite number of stallions. The latter would pay for themselves; the former would, with the other matters mentioned, economize a large proportion of the present remount expenses, and within five years the breed of Irish horses, of the trooper class, now rapidly degenerating in quality and diminishing in number, would be materially improved.—*The Rider and Driver*, March 13.

TO MOBILIZE THE MILITIA

OMAHA, March, 1897.—A man in this city, who has had considerable experience in militia matters, has made a suggestion regarding the mobilization of the militia of the United States in connection with the Trans-Mississippi Exposition, worthy of serious consideration. In brief, this plan contemplates the assembling of the militia of the several States of the Union in one grand school of instruction, such as has not been afforded the State troops since the late unpleasantness. This idea in itself is not a new one, the same plan having formed the subject of many discussions in gatherings of military men and having been exploited in magazine articles by military writers; but the opportunity offered by the exposition presents an occasion more favorable for the practical execution of the plan than has occurred since the idea was first advanced.

It is well known to all who are familiar with military matters that each State of the Union has a force of soldiers organized and armed under the direction of the State. These State troops hold encampments each year, or once in two years, the State paying the expenses in connection with such encampments. The plan under consideration involves the massing of these troops in the vicinity of Omaha during the summer of 1898, for the purpose of holding a school of instruction affording the opportunity of actual experience in maneuver and the movements of large bodies of troops. The magnitude of this plan is not apparent to the layman at first glance, but when it is considered that the uniformed citizen soldiery of the States of the Union number nearly 150,000, the idea grows until it assumes enormous proportions. The idea also includes the assembling of several regiments of United States troops of all arms, including infantry, cavalry, light and heavy artillery and engineer corps. In a word, it would mean the assembling at Omaha of an army of no mean proportions, and would be one of the grandest military events in the history of this country.

It is believed that every State in the Union could be depended upon to send its troops to this encampment for the sake of the advantage to be derived from such an experience. The expense involved would be little, if any, more than the usual expense attached to the regular State encampments, and the superior advantages offered by a summer campaign approaching as nearly as may be the experiences of actual warfare would be of incalculable value to all the troops.

The plan suggested contemplates having the entire affair under the direction of officers of the regular army. To do this it would be necessary to secure the cooperation of the Secretary of War, but as several former Secretaries of War have advocated very warmly the idea of fostering the State militia in order to form a well-drilled and experienced nucleus around which might be thrown the 9,000,000 of able-bodied citizens of this great republic who are available for military duty, it is not anticipated that there

would be any difficulty in securing the active and hearty cooperation of the government in such a movement. — *The Exposition Press Bureau, Omaha.*

REORGANIZATION OF THE BRITISH CAVALRY.

As explained by Mr. BRODRICK in the House of Commons, the reorganization of the British cavalry of the line will effect various changes.

There will still be four corps, namely, the Household cavalry, of three regiments, which is not to be changed at all; the dragoons, ten regiments; the lancers, six regiments; the hussars, twelve regiments.

The first and largest establishment will be that of the nine regiments in India; next come the eight at home, ready for service abroad; then three regiments in the colonies, and so on. According to the *London Standard*, each cavalry regiment will, under the new system, consist, as now, of 630 officers and men and 525 horses, but the total number of officers will be reduced by two, *i. e.*, one captain and one lieutenant, leaving one lieutenant-colonel, four majors, five captains, nine lieutenants and seven second lieutenants, in addition to the regimental staff officers. The three regiments abroad at stations other than in India (*i. e.*, South Africa and Egypt) will also have no change in their total numbers of men of all ranks and horses (497 and 360 respectively), and they will be the only line regiments to retain exactly their present establishment of officers, *viz.*: one lieutenant-colonel, three majors, six captains, eight lieutenants and three second lieutenants. Each of the eight regiments on the higher establishment at home will have their total numbers reduced from 696 to 682, but the number of horses will be increased from 410 to 433. There will also be an increase in the number of officers, the majors being augmented by one, the captains reduced by two, and the second lieutenants augmented by three, making one lieutenant-colonel, four majors, four captains, eight lieutenants and six second lieutenants. These eight regiments will probably include the Sixth Dragoon Guards, First Dragoons, Second Dragoons, Third Hussars, Tenth Hussars, Thirteenth Hussars, Fourteenth Hussars and Fifteenth Hussars.

Each of the seven regiments on the lower establishment at home will be increased from 450 of all ranks and 280 horses, to 578 of all ranks and 343 horses.

BOOK NOTICES AND EXCHANGES.

ROOT'S MILITARY TOPOGRAPHY AND SKETCHING. Revised and enlarged by Captain W. D. Beach, Third Cavalry; Captain A. G. Hammond, Eighth Cavalry; First Lieutenant C. H. Muir, Second Infantry; and First Lieutenant T. H. Slavens, Fourth Cavalry. Hudson-Kimberly Publishing Company, Kansas City, Mo.

The book contains 379 pages, and is divided into two parts, Part I being Topographical Surveying, and Part II Topographical Sketching. The topographical work is admirable, and the 216 illustrations are excellent. The index is full and complete.

The various subjects are presented in the clearest manner possible, and are so divided and subdivided as to make their understanding very simple.

Part II, which is of great importance to all army officers, contains much that is presented in a new way, and the authors of the revision deserve great credit for the arrangement and clear manner of this portion of the book. The colored plates will be of great assistance to all students of topography.

The book covers fully and concisely the subjects required in the examination of officers for promotion. Part II and a part of Chapters III and XI contain all the matter that hitherto had to be found by going entirely through "Richards' Topography."

The service has long felt the need of a work on topography in which the subjects were treated according to American ideas. This need is now fully supplied.

E. L. P.

THE DICKMAN FIELD HOLDER. Lieutenant J. T. Dickman, Third Cavalry. Hudson-Kimberly Publishing Company, Kansas City, Mo.

The holder consists of two stiff covers 5 1/2 x 8 inches, enclosing a pad of blank forms with appropriate headings, for use by commanders of patrols or larger bodies of troops in the field in making the usual reports and communications. One side of each blank is ruled with half inch squares for use in making a hasty road or outpost

sketch. An ingenious method of folding a detached sheet is devised so as to obviate the necessity for an envelope. There is a pocket and pencil holder on the inside of the cover.

The device as stated in the instructions, "is intended to be used in a course of instruction of the company or troop in field duties; later, in connection with tactical exercises of the battalion or squadron and of larger mixed bodies; and eventually in actual service in the field in time of peace or war."

The "Field Holder" should prove a valuable aid in the instruction of non-commissioned officers as well as a useful addition to the contents of every cavalry officer's saddle-bags. W. D. B.

CONVERSATIONS ON CAVALRY. Kraft Prinz zu Hohenlohe-Ingelfingen. Translated by Lieutenant C. Reichmann, U. S. A. Edited by Captain F. N. Maude. J. J. Keliber & Co., 33 King William Street, E. C.

The conversations are those recently published in the *JOURNAL* and present, in book form, the very excellent matter contained therein.

In his letter Captain Maude says: "My work as editor has been very slight, merely amounting to bringing the various technical terms used in the original into accordance with our own regulation expressions. Our Inspector-General of Cavalry is delighted with the book and joins me in expressing our gratitude to you for your kindness in allowing us to make use of your work."

The correctness of the principles laid down in these conversations is too well known to need any comment.

In his preface Captain Maude expresses his thanks to Lieutenant Reichmann and the *JOURNAL*, and concludes by saying: "I trust my readers will see in this courteous act a fresh evidence of the kindly spirit of comradeship in arms, which has always existed, and I hope ever will continue to unite the officers of both armies, and which is so well expressed in Admiral Tatnall's memorable saying, 'Blood is thicker than water.'"

The book should be in the library of every cavalryman.

A. G. H.

CAVALRY VERSUS INFANTRY. By Captain F. N. Maude, R. E. No. 4 of International Series. Published by Hudson-Kimberly Publishing Company, Kansas City, Mo.

The revised contents of this volume include many of the very best essays of that most versatile writer and profound military student, Captain Maude. This is the most readable collection that could well be assembled in one volume, and will be much appreciated by cavalry readers, a large part of the work being devoted to that arm of the service.

Captain Maude is a rare student, and is seldom carried away by

specious arguments, relying rather upon historical examples in the past than problematic prognostications as to the future, based only upon theory. In this connection he says in the essay, entitled "The Napoleonic Conscription":

"No matter what perfection the armament attains to, its ultimate power on the battlefield depends on the nerves and courage of the men to whom it is entrusted. Artillery has, relatively speaking, no nerves, for the gun and the ground never shake, and besides the detachments are, so to speak, anchored to the ground. The greater the torrent of projectiles poured out, the greater becomes the necessity for speed in the advance, and that speed will always be found in the cavalry, which arm also has the advantage, thanks to its superior mobility, of being kept out of fire till wanted, and then appearing with its morale not only unshaken, but positively intensified by the rapid motion of the charge.

"No matter what pitch of perfection fire-arms attain, these two fundamental advantages will remain on the side of the cavalry and artillery, and though we never expect to see again on any European battlefields soldiers so entirely demoralized *ab initio* as were the latter-day soldiers of the Empire; still the more the volume of modern fire is increased, and the greater the distances it sweeps, the more certain does it become that eventually such a state of moral collapse will set in, and the only way to guard against its effects on one's own side, or to draw advantage from them on that of the enemy, will be by assigning larger duties to the cavalry and artillery, and making the most of the above mentioned two fundamental advantages they possess. I do not wish to be understood to be desirous of exalting any one arm at the expense of the other, but I claim an equal right for all. An army forms a trinity in which none is before or after the other, none is greater or less than the other; and the country whose leaders are the first to recognize this great truth will be as invincible on land as Napoleon was till he met a leader backed by better men who understood this fundamental truth even better than he did himself."

These remarks are hardly in accord with the ideas of many officers, especially of the infantry, who believe that nothing can live within fifteen hundred or two thousand yards of an infantry line with modern magazine guns. Arbitration and the two thousand yard limit may settle some international troubles, but wars similar to the American Revolution or the late Rebellion, or in fact any war in which the hearts of the people are aroused, can never be concluded without a closing struggle in which courage, manhood, and the determination to uphold principle, will cause armed hosts to advance and settle in desperate battle the relative power and courage of the opponents.

It may certainly be accepted as an axiom, that no American general would presume to announce his defeat, or attempt to surrender his men, because of any fear of the much talked of "fire-swept zone," or whatever term may be used to describe the fearful mortality to be brought about by modern arms. If naval officers wrote and talked as much about the frightful risks of battle in our modern iron-clads as army officers do about those incident to smokeless powder, flat trajectories and magazine arms, no seamen could be enlisted to man our fleets. According to infantry teachings no cavalry can be used on the future battlefield, and artillery will not be allowed to unlimber within two thousand yards. Theorists seldom see any solution of battle problems except for the defensive, yet history teaches quite the reverse, and we may well believe that

in the future, as in the past, the three arms will find appropriate work on and near every battlefield where any vital question is settled. Pride in one's arm of the service is laudable, but to exalt it at the expense of historical truth and the feelings of brother officers of other arms, is neither praiseworthy nor evidence of knowledge and good judgment.

These remarks were suggested by certain parts of the essays touching upon the subject, but there are other essays of an entirely different nature of more than passing interest. The Berlin-Vienna race, and General von Rosenberg's hints on training and riding are very interesting as well as instructive; in fact, the whole volume may be taken as a fine example of essay writing, in which our officers are expected to be experts during the progress of the annual lyceum work.

W. H. C.

JOURNAL OF THE UNITED STATES ARTILLERY. January-February, 1897.

1. An Experiment With Militia in Heavy Artillery Work. 2. Notes on European Seacoast Fortifications. 3. Report on Development of a Photo Retardograph. 4. An Alternating Current Range and Position Finder. 5. On the Rifling of Cannon. 6. The Mounting of 8-inch B. L. Rifles at Fort Wadsworth, New York Harbor. 7. Professional Notes. 8. Book Notices. 9. Index to Current Artillery Literature.

PENNSYLVANIA MAGAZINE OF HISTORY AND BIOGRAPHY. January, 1897.

1. The Blue Anchor Tavern. 2. The Family of William Penn. 3. Extracts from the Letter-Books of Lieutenant Enos Reeves, of the Pennsylvania Line. 4. Washington After the Revolution, 1784-1789. 5. Diary of Lieutenant Francis Nichols. 6. The Battle of Princeton. 7. The Defenses of Philadelphia in 1777. 8. Some Account of the Second Troop of Philadelphia Horse.

PROCEEDINGS OF THE UNITED STATES NAVAL INSTITUTE. No. 4, 1896.

1. The Right of Search and its Limitation in Time of Peace. 2. The Chronology and Geographical Distribution of Icebergs in the Southern and Antarctic Oceans. 3. Target Practice at Sea. 4. Naphtha Fuel for War-Ships. 5. Development of Ordnance and Armor in the Immediate Past and Future. 6. Armor and Heavy Ordnance. 7. Professional Notes. 8. Book Notices. 9. Bibliographic Notes.

THE MAINE BUGLE. January, 1897.

1. The Vicksburg Campaign. 2. A Maine Boy in the Fifth Ohio Cavalry. 3. Adventure at Farmville, Virginia. 4. Adventures in a Rebel Prison in Texas. 5. Our Brothers in Blue. 6. An Incident of Central Guard House. 7. History of the Eleventh Maine. 8. Union Veterans Reunion. 9. The Color Bearer. 10. Reminiscences of the War. 11. Bugle Call.

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION. February, 1897.

1. Major-General Robert Ross. 2. On the Employment of Retired Blue Jackets, Soldiers and Marines. 3. The Invasion of England: Should London be Fortified? 4. Notes on Tactics for Ships and Weapons of the Present Day. 5. Naval Notes. 6. Military Notes.

JOURNAL OF THE MILITARY SERVICE INSTITUTION. March, 1897.

1. The Lyceum at Fort Agawam. 2. Land Mines. 3. Army Uniform. 4. Battle Tactics and Mounted Infantry. 5. Artillery Firing Chart. 6. The Field Outfit for an Infantryman. 7. Reprints and Translations. 8. Military Notes. 9. Comment and Criticism. 10. Reviews and Exchanges. 11. Annual Report.

THE UNITED SERVICE. January, 1897.

1. Society in Washington. 2. Balls Bluff. 3. Rear Admiral James Edward Jouett, United States Navy. 4. Some Experiences With the Cheyennes. 5. The World Beneath the Ocean. 6. Service Salad.

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA. January, 1897.

1. Military Railways in War. 2. Partisan Operations. 3. Cavalry Field Hospitals. 4. The Improvement of the Present Organization of Transport in India. 5. Occasional Papers.

PROCEEDINGS OF THE ROYAL ARTILLERY INSTITUTION. February, 1897.

1. A Two Month's Trip into Mongolia. 2. Artillery Positions and Screening guns. 3. Formula for Finding Speed of Objective.

ALDERSHOT MILITARY SOCIETY. December, 1896. Campaign of the Pyrenees, 1813.

REVUE DU CERCLE MILITAIRE.

IOWA HISTORICAL RECORD.

MILITAER WOCHENBLATT.

THE BREEDERS' GAZETTE.

THE RIDER AND DRIVER.

OUR DUMB ANIMALS.

Annual Meeting of the Cavalry Association.

The regular annual meeting of the Cavalry Association was held at Fort Leavenworth, Kansas, January 22, 1897, with Major A. R. CHAFFEE, Ninth Cavalry, in the chair.

The annual election resulted in the choice of the following officers for the ensuing year:

President—General WESLEY FERRITT Major-General, U. S. A.

Vice-President—Major A. R. CHAFFEE, Ninth Cavalry.

Members of the Executive Council—Captain W. H. CARTER, Sixth Cavalry; Captain W. D. BEACH, Third Cavalry; Captain E. SWIFT, Fifth Cavalry; Captain A. G. HAMMOND, Eighth Cavalry; Lieutenant A. L. MILLS, First Cavalry.

The question of offering prizes for meritorious articles to be published in the JOURNAL was discussed at some length, and met with almost universal approval; it was therefore

Resolved, That the Secretary be directed to take the steps necessary to cause the Constitution to be so amended as to remove the present limit upon the amount of the prize that may be awarded for essays, and to place the matters pertaining to prize essays entirely in the hands of the Executive Council, with unlimited discretionary powers.

The report of the Treasurer was then read and approved.

By a unanimous vote of the Association the following motion was adopted:

Resolved, That the thanks of the Cavalry Association be hereby extended to Captain W. H. CARTER for his able and efficient management of the JOURNAL during the past year.

The meeting then adjourned *sine die* .

ANNUAL MEETING.

27

The subsequent promotion of Captain W. H. CARTER to be Major and Assistant Adjutant-General, and the detail of Captain E. SWIFT to duty with the National Guard of the State of Illinois, removed two of the recently elected members of the Executive Council, and also left the Editor's chair vacant. A special meeting of the Council was accordingly called to meet March 4th to fill these vacancies, and to consider such other matters of importance as might be brought before it. The vacancies in the Council were filled by the election of Lieutenant J. A. COLE, Sixth Cavalry, and Lieutenant T. H. SLAVENS, Fourth Cavalry. Lieutenant SLAVENS was duly appointed to the vacant editorship of the CAVALRY JOURNAL.

The subject for a prize essay and the details of the competition were then discussed, but the Council finally adjourned to meet again on the 8th, when definite action was to be taken concerning this matter. The plan as finally adopted is published in a separate announcement elsewhere in this number of the JOURNAL.

E. L. PHILLIPS,

*Second Lieutenant Sixth Cavalry,
Secretary.*

PRIZE ESSAY.

At a special meeting of the Executive Council of the Cavalry Association, held March 8th, to consider the subject of a prize essay, the following resolution was adopted:

Resolved, That the Cavalry Association undertake the production of a history of the American cavalry, which shall be brought out in the form of a series of historical essays, to be published in the JOURNAL; to this end be it further

Resolved, That the Cavalry Association does hereby offer a prize of \$100.00 in cash for the first essay of the series.

The prize will be awarded under the following conditions:

1. The competition to be open to all persons.
2. The essays must not exceed 30,000 words.
3. Three typewritten copies of each essay will be sent in a sealed envelope to the Secretary on or before October 15, 1897.
4. The essay will be signed *only* with the *nom de plume* adopted by the author. A sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address, must accompany the essay. This envelope will be opened in the presence of the Council after the decision of the Board of Award has been made.
5. The successful essay shall become the unconditional property of the Cavalry Association, and will be published in the CAVALRY JOURNAL.
6. The second essay shall receive honorable mention, and if desired by the Council, shall, upon payment of \$25.00 to the writer, become the unconditional property of the Cavalry Association.
7. The prize shall be awarded upon the recommendation of a Board, consisting of three suitable persons chosen by the Executive

PRIZE ESSAY.

89

Council, who shall be requested to designate *the essay deemed worthy of the prize*, and also *the essay deemed worthy of honorable mention*.

Should members of the Board determine that no essay is worthy of the prize, they may designate one deemed worthy of honorable mention. Should the Board deem proper, it may recommend neither prize nor honorable mention.

The recommendations of individual members of the Board will be considered by the Council as strictly confidential.

In determining the essay worthy of the prize the Board will consider, *first*, historical accuracy, *second*, professional excellence, *third*, literary merit.

II

The subject selected by the Council for the first essay of the series is as follows: "The History of the Cavalry of the Army 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."

III

The names of the Board of Award will be announced in the September issue of the JOURNAL.

E. L. PHILLIPS,
Second Lieutenant Sixth Cavalry,
Secretary.

*NOTE - The subject is intended to include organization, armament, equipment and supply, as well as the operations of the cavalry.

VOL. X.

JUNE, 1897.

No. 37.

JOURNAL
OF THE
United States Cavalry
ASSOCIATION.

PUBLISHED QUARTERLY
BY THE UNITED STATES CAVALRY ASSOCIATION,
FORT LEAVENWORTH, KANSAS.

COPYRIGHT U. S. CAVALRY ASSOCIATION, 1897
ALL RIGHTS RESERVED.

PRESS OF KETCHUM & REEVE,
LEAVENWORTH, KANSAS.

JOURNAL

OF THE

UNITED STATES CAVALRY ASSOCIATION.

VOL. X

JUNE, 1897

NO. 37.

SABER AND REVOLVER

BY LIEUTENANT WILLIAM H. SMITH, TENTH CAVALRY

THE title, "Saber and Revolver," is used intentionally, for while much has been written on these weapons by officers of our service, the subject has usually been the "Saber or Revolver," and the effort has been to prove that one or the other was unnecessary, and as a matter of fact a large class of our officers so believe.

The present paper will be devoted to an attempt to show that each weapon has a distinct and separate sphere within which it is supreme, or, at least, superior to the other; and that, consequently, both are necessary components of the armament of our troopers.

The sphere of each weapon is, for the saber, all mounted actions in which any considerable body of troops is employed; and for the revolver, all mounted actions of a minor character, such as the combats of hostile patrols, mounted skirmishers in pushing a retreating enemy or in covering a retreat, by the points and flanking patrols in all advance and rear-guard work, and by vedettes on outpost.

That the saber or sword is an effective weapon for cavalry when employed in masses history abundantly proves; it only remains then to show that the revolver is less so.

*Essay deemed worthy of greatest excellence at the U. S. Infantry and Cavalry School, 1897. Recommended for publication by the School Staff.

Unfortunately, no war has as yet given us a fair practical test of the relative merits of the two weapons when employed by considerable bodies of opposing cavalry; hence, any arguments on the subject must be based more or less on theoretical grounds. However, there is one principle involved which admits of historical demonstration, and that is, that the longer the range of the weapon employed, the longer the range at which the force using it endeavors to fight. This desire to fight at the length of the range of their weapon seems to be instinctive with the mass of men and exceedingly difficult, if not impossible, to overcome permanently by training, and even if accomplished temporarily, the slightest relaxation in discipline results in a reversion to the original tendency.

The history of modern wars shows how rare is the shock action of infantry. If one side gets up sufficient nerve to attempt the use of the bayonet, the other side usually retreats before the actual collision occurs. On the contrary, the history of ancient wars, when the opposing footmen were armed with the spear and sword, shows that the battles were usually decided by hand-to-hand conflicts. Shock action in those times had to be actual and not simply threatened, as now, to be effectual. Are, then, modern soldiers degenerate sons of noble sires that a threatened hand-to-hand conflict is sufficient to drive them from the field? Or is our discipline inferior to that of our so-called barbarian ancestors? Or is the tendency to avoid hand-to-hand conflicts due to the range of our weapons?

Is it logical to place a revolver in the hand of a cavalryman, teach him to believe that with it he can disable his enemy at a distance of a hundred yards or more, and then expect him to charge boldly into the midst of his enemies armed with a weapon whose range he is taught to believe is only one and a half yards? Would not the tendency, of men thus armed and taught, to check up to open fire when arriving within the range of their weapon, be irresistible?

The charging speed of a well trained body of cavalry on favorable ground would rarely be less than at the rate of twenty miles an hour. If the opposing cavalry were equally good, the two bodies, for the few seconds just preceding the collision, would approach each other at the rate of forty miles an hour or at about twenty yards per second, that is, the two bodies would collide in about five seconds from the time they arrived within one hundred yards of each other. Supposing the two bodies approaching each other in this way when the success or not of the shock depends so

largely on the relative speed and cohesion at the moment of collision, will not anything that tends to cause a checking up or hesitancy on either side be fatal to its success? It is evident that there will be a loss of effectiveness in the shock; will there not be a loss of morale also? It is a common saying that he who hesitates is lost. Is it possible to conceive of any combination of circumstances to which this saying is more applicable than to the supreme moment of a cavalry charge?

The revolver advocates, however, may say that there need be no hesitation or checking up on their side, but to this it may be replied that human nature and history do not seem to support their claim.

Another serious objection to the use of the revolver when charging in mass, lies in the fact that the officers cannot lead. Let us suppose two bodies of opposing cavalry arriving within charging distance. On one side, the officers are well to the front, waving their sabers and calling to their men to come on; on the other side, the charge sounds from the rear, no officers are in front to show the way, only the enemy is there, and he seems to be a solid wall of straining horses and flashing sabers coming on with the speed of the wind. Will not the men of the last named side have to be naturally braver than their opponents to meet them in equal shock?

But it may be maintained that even admitting there is a checking up to deliver fire by the side using revolvers, that any decrease in the effect of the shock due to this cause is more than balanced by the loss inflicted on the enemy. To this it may be replied that conflicts of this nature are not determined so much by the loss inflicted as by the moral effect on the survivors. But as any considerable percentage of loss in a short space of time invariably carries with it a great moral effect, it is well to examine this aspect of the case as closely as attainable data will permit.

Annual instruction in pistol practice has been carried on by all troops of our cavalry for about ten years. This instruction has been supplemented and stimulated to a certain extent for a number of years by department competitions. While the degree of success in pistol shooting attained by each troop may have been influenced somewhat by the opinions of its officers respecting the value of the accomplishment, still there has been less variation in the results than in carbine shooting, and it can hardly be maintained that more thorough instruction could be given to troops raised or recruited on the outbreak of war.

There have been no reliable experiments whatever, so far as the

writer is aware, of massed firing against massed targets such as would actually occur in the charging of masses of cavalry in war, hence, in the absence of such data, the only way of arriving at an approximate effect of the revolver when so used is to take the individual effect as a standard of comparison, and in view of the many elements favoring the trooper at individual practice and hampering him at mass practice, it is believed that the results so obtained would be above rather than below the actual facts.

While it is impracticable to make a thorough examination and comparison of the records made by each troop during the last few years, or since definite methods of instruction have been evolved and generally practiced, it is believed, taking into consideration the mounted firing only, that forty per cent. would be above rather than below the general average. It is an admitted fact that firing to the front is by great odds the most difficult and least effective direction, probably under the old practice of firing at targets representing men standing not over one-tenth of the effect in other directions, or 4 per cent., but if we consider the target as represented by the man and horse combined, the sectional area of the target would be doubled, and therefore doubling the percentage we have 8 per cent. as representing the effect at individual practice of firing to the front.

As to the percentage of target practice which can be counted on in war the different authorities vary all the way from $1\frac{1}{2}$ per cent. to 10 per cent. Supposing that with the revolver the percentage may be as great as ten, and taking 10 per cent. of 8 per cent. we have $\frac{8}{10}$ per cent. That is, out of every thousand shots fired there would probably be eight hits.

Let us suppose two bodies of opposing cavalry, of 1,000 men each, deployed in line and just arriving at 100 yards distance from each other, and moving at the charging gait; that one side uses the revolver, and that each man is expert enough to fire five shots in five seconds with the estimated battle effect; that the other side uses the saber and charges in the regulation way. At the instant of collision the side using the revolver has fired 5,000 shots and made forty hits. How many of these hits would be fatal enough to put the men or horses hit immediately out of action is largely a matter of chance, but certainly with the revolver now in use the number would rarely exceed one-fourth, and certainly not over one-half, of the number hit. Therefore, at the moment of collision we would have 1,000 men with empty revolvers and checked momentum

receiving the superior shock of at least 980 men with loaded sabers. Would the contest be long in doubt?

However, for the sake of illustration, let us carry the supposition a little further. Let us suppose the side using the revolver has been able to withstand the shock of their opponents, and at the commencement of the ensuing mêlée that each man has succeeded in reloading his empty revolver or in drawing a fresh one. We would then have a crowd of about 2,000 men in a space about 1,000 yards long by perhaps fifty yards wide. Within this space the indescribable confusion resulting from the clash and intermixing of opposing bodies of cavalry reigns supreme; half of the crowd are cutting and thrusting at their opponents with their sabers, but their blows fall only on the bodies of their enemies; the other half of the crowd are popping away at their opponents with their revolvers, but does anyone believe that the bullets take effect only on the bodies of their enemies? As a matter of probabilities, would not the chances be about equal of hitting a friend as often as a foe? Even suppose that the ideal of the revolver enthusiast has been realized and that each man on their side is an "expert"—capable of hitting his enemy at every shot—does anyone suppose that each shot is going to stop in the body of an enemy? As a matter of fact, would not every glancing shot, as well as many of those that struck squarely, pass through the bodies of those for whom intended, and in their after flight, would they not as often find their billet in a friend as a foe? Even under the ideal conditions of the revolver enthusiast, it would seem expedient to pray not only "Good Lord, deliver us from our enemies," but also "Good Lord, deliver us from our friends."

There is one phase of the subject of the use of revolvers in connection with the employment of cavalry in masses that has never been discussed or advocated, at least not within the knowledge of the writer, but which to him seems to be of considerable importance. Nearly all authorities, in discussing the use of ground scouts, seem to contemplate using them for purposes of exploration and warning only, and for fighting purposes to rally them on bodies in close order. It would seem that these men could use the revolver to the greatest advantage. If instead of rallying on the attacking line when coming within charging distance of the enemy, these men should penetrate through the intervals and around the flanks of the enemy's line, shooting his officers and creating as much confusion as possible as they went, then proceeding on to his supports and reserves, picking off the officers, especially those of the higher grades, it would seem that great confusion and damage would result.

Let us conceive for an instant of the predicament of say a brigade commander trying to supervise the combat and direct the action of his supporting and reserve bodies, with a dozen or more of these ground scouts galloping around him and popping away at him with their revolvers, shooting his orderly officers on their way to deliver orders, etc.; in short, creating annoyance and confusion in the enemy's ranks during the crisis of the combat. They would certainly restrict the observation and control of superior officers by compelling them to remain close under the shelter of their own troops; and it would require more than their own number to drive the ground scouts off.

This use of ground scouts may be considered by some to be in conflict with the instructions of such eminent authorities as FREDERICK THE GREAT and VON SCHMIDT, but it is believed that a careful consideration of the principles laid down by these authorities will convince anyone that if there is any conflict, it is only apparent and not real. FREDERICK authorized his squadron commanders to saber any *eclaireur* met riding at random across the front; and VON SCHMIDT says that just before the shock the *eclaireur* must clear the front, making for the flanks of the squadron or of the enemy, the evident intention of both authorities being to prevent these men getting in the way of the charging line and creating confusion. As stated before, the writer would have these men penetrate through the gaps or around the flanks of the opposing line, and if both of these ways should happen to be impracticable, then each ground scout must endeavor to make a gap in the enemy's line for himself, and the writer would advocate employing only such men as ground scouts who could be counted on to make such an attempt.

The writer would advocate the selection of men as ground scouts for their daring, horsemanship and proficiency in snap shooting, as well as for their intelligence and aptness in the duty of exploration. He would have them mounted on the fleetest and most manageable horses of the troop, and arm them, in addition to the saber and carbine, with at least two revolvers, and would give them every opportunity and encouragement to perfect themselves in snap shooting. When the troop was acting in close order, he would put them in the line of file closers; when on advance or rear-guard duty, he would use them as points or flankers; and when on outpost work, for patrolling. When circumstances permitted, he would allow them special privileges, and would endeavor to make their position one of honor and distinction, so as to be sought by the best men of the troop. No matter what the casualties might be on

service, there would be plenty of candidates for the vacancies, provided the position were made one of honor and distinction.

Another important use of the revolver in connection with cavalry in close order, is in the use of it by mounted skirmishers in pushing the retreat of a defeated enemy, while close order bodies in rear watch for a favorable opportunity to charge. It is also evident that the same tactics might be employed in covering a retreat. The revolver could also be used effectively by a line of foragers in charging a battery. It is probable that if the foragers once penetrated the line of guns, that they could do more damage with their revolvers by shooting the horses and cannoneers than they could with their sabers, as the cannoneers would probably take refuge under the guns and carriages, and thus be out of reach of the saber, while the horses would be difficult to disable with them.

In each of these cases, however, bodies of cavalry in close order should be at hand to clinch with shock action whenever opportunity offered any success gained by the skirmishers or foragers, and it is intended that these mounted skirmishers or foragers should be used only when the ground or circumstances render either mounted shock or dismounted fire action inexpedient.

In the past, charging bodies of cavalry have frequently been forced to draw up almost face to face with their enemy by an impassable obstacle. It is evident that under similar circumstances the revolver could be used with effect even by bodies in close order.

So far the effort has been made to show that the revolver is not a suitable cavalry weapon for close order fighting, however, its uses in connection therewith are believed to be of sufficient importance to justify its retention as a part of the armament of our cavalry, even if there were not other equally, if not more, important reasons for so doing.

An effort will now be made to show that the minor actions of cavalry are peculiarly adapted to the use of the revolver.

The saying of NAPOLEON that two Mamelukes could easily defeat three Frenchmen, but that one hundred Frenchmen had nothing to fear from an equal number of Mamelukes, and that one thousand Frenchmen could defeat fifteen hundred Mamelukes would seem to fairly cover the case of the saber against the revolver. Success or defeat in the minor actions of cavalry depends largely on the skill and bravery of the individual combatants, while that of large actions depends principally on the skill of the leaders and the united action of the mass, the individual prowess of the combatants being relatively of much less importance.

The revolver is essentially a weapon for individual combats: in these, there is usually plenty of ground for maneuvering and little probability of injuring friends when only intending to injure foes. Numerous examples might be cited from the memoirs of DE MARBOT, PARQUIN and DE SEGUIER, where even the pistol of those days came off victorious in single combat over the saber, and from our own war of 1861-5 even more numerous instances might be mentioned, but the writer believes that very little difference of opinion exists as to the relative merits of the revolver and saber in individual combats where plenty of ground is available for maneuvering. The same conditions exist, however, in the combats of small patrols and actions of a like nature, and even to larger bodies until we reach a size when united shock action is more important than individual prowess, or for another reason, until we reach a size when the danger to friends from the use of the revolver is such as to render it less effective than the saber.

When this limit will be reached, depends a great deal on the character of the combat. It is evident that when two lines of skirmishers are opposing each other, that the revolver could be used without regard to the size of the force so long as there remained a well defined line of demarcation between them, but when the opposing forces are mingled together, the limit is very quickly reached, probably not exceeding a force of twenty combatants and certainly not over fifty.

The plan sometimes advocated of using the revolver while charging the enemy, and then just before the collision of dropping the revolver and drawing the saber, would not seem to have been well considered by its advocates, at least; every nation attempting a similar plan in war has quickly abandoned it, and it is believed that even a few experiments on the drill ground would convince anyone of its impracticability.

For the points and flankers, of advance or rear guards, and for vedettes on outpost, the revolver is just as effective for giving the alarm as the carbine, and at the same time is much more convenient and safe to carry in a state of instant readiness. The revolver can be carried at the position of "lover pistol" for hours at a time and at all gaits without any apparent fatigue, while to carry the carbine at the "advance" is not only difficult at the faster gaits, but is also very fatiguing on the soldier even at the walk, and if occasion should suddenly arise for the use of either with the revolver the soldier can quickly and with more or less accuracy deliver five

or six shots. With the carbine, he can only deliver one shot quickly and with effect only when the muzzle is jammed against his opponent's body. It is believed that the carbine should be as carefully restricted to dismounted as the saber to the mounted action, except, of course, where no revolver is carried. It may be necessary to use the carbine mounted for signaling or giving the alarm.

In the foregoing discussion of the revolver and saber, the questions of calibre, methods of instruction in each, and other questions of a like nature have not been examined; these questions, while pertinent and important, cannot be discussed without exceeding the limits prescribed for this paper. But a few words in closing as to the length of time necessary to make a soldier fairly proficient in the use of each weapon may not be out of place because of the subject having a particular bearing on our own surroundings and conditions, where on the outbreak of war, our regular forces would have to be quickly recruited to a war strength and these forces largely supplemented by new organizations.

To use a saber effectively under the conditions of an average cavalry combat, the main things in addition to a good sharp saber and good horsemanship are a strong arm, a supple wrist and the courage to meet the enemy. The strong arm and supple wrist with the necessary amount of skill in fencing may be acquired by the average soldier in less than one month of daily practice of not over one hour per day. To remain in this condition requires a daily practice of about twenty minutes per day. This instruction may be given in garrison, in camp, in bivouac, or even on the march.

As to the amount of training necessary to make a soldier fairly efficient with the revolver, officers seem to differ considerably, but very few are willing to admit that with every facility of ranges, targets and ammunition, that a month is sufficient. Some of the difficulties in rapidly training newly organized forces on the outbreak of war in the use of the revolver would be in the obtaining of the large amount of ammunition necessary, and in the other necessary facilities for practice, such as ranges, targets, etc. Practice with ball cartridges outside of regular garrisons or camps of instruction would be difficult, and on the march or in bivouac impossible, except where small forces were congregated.

Under the pressure of war in getting men ready for service it would seem good policy, while endeavoring to get them all fairly proficient in the use of the revolver, to pick out those who show a special aptitude and give them extra opportunities for practice.

As to the length of time necessary to make an "expert" snap

shot with the revolver, it would seem that the span of human life is rarely long enough. The writer's search for one has been a good deal like the search of the wise men of old for a perfectly happy man. "Man never is, but always expects to be happy;" and it may be said of the revolver enthusiast, that he never is but always expects to be an "expert."

BALLOONS IN WAR

BY LIEUTENANT L. DICKMAN, FORT S. CAVARY

THE employment of balloons in war probably has many surprises in store for us. Balloons are classified as captive, free or dirigible.

Captive balloons are observatories which largely increase our view and the command of positions. They are a powerful aid in a campaign and also in a siege—especially for the besieged. New horizons arise as the elevation of the aerostat increases; objects in the vicinity seem to descend, whereas objects at a distance appear to ascend. Movements on the ground seem to become slower. At an elevation of 1,000 feet the observer has before him a magnificent topographical map upon which he can readily trace the smallest details. Moreover, photography enables us to correct the errors that observation with a glass might cause us to commit.

Free balloons have a double use—to force a line of investment, and to make reconnaissances above the enemy's position. For example, in the case of an invested city, if it be necessary to communicate with other parts of the country, a free balloon ascending by night would escape observation and be carried by currents of air to a great distance, probably beyond the theater of operations. In any event there would be a good chance for the aeronauts to reach friendly territory, from which they could communicate by telegraph or by rail; answer could be sent back to the besieged by means of the carrier pigeons brought along in the balloon for that purpose.

Dirigible balloons permit us to leave a place and to return to it after a simple reconnaissance or a long voyage. They partake of the advantages of both captive and free balloons, and are provided with a mechanism which gives them a proper velocity greater than that of the wind in ordinary cases.

The employment of balloons in war, which was proposed by a

Frenchman named MONGE, was approved in July, 1793, by a commission of savants who regulated the details. At the same time when a central establishment of aërostation was being organized at Chalais, a company of aëronauts was created, April 8, 1794. Chalais is a town in the vicinity of Paris. COUTELLE was its first captain.

The captive balloon was held by two ropes about 900 feet long, each of which was attached to the equator of the netting by means of a crow's foot widely spread out. It was transported by two detachments of men holding the ropes; this permitted the basket to oscillate freely. The continued movements of oscillation and balancing shook the unfortunate aëronauts terribly. Great activity and skill in the use of the telescope were required in order to make profitable observations. The balloon having been inflated, if it was intended to renew the ascent, was hauled down by winding the ropes on a windlass held down by heavy stakes. Hydrogen gas was produced by passing vapor of water over red-hot iron, according to the method invented by LAVOISIER. On the 2d of June, 1794, the "Enterprise," which was the name given to the balloon, was in Maubeuge giving valuable information about the forces and works of the enemy. As soon as the siege was raised the balloon was transported, inflated as it was, and in the midst of the greatest peril, into the camp under the walls of Charleroi. On the 21st of June captive ascents permitted inspection of the condition of the place, which surrendered on the 25th. During the battle of Fleurus, Adjutant-General MORLOT was in the basket with COUTELLE. MORLOT was enabled to furnish most useful information to his chief, General JOURDAN. On the 6th of July, the "Enterprise" was torn by a storm.

A second company of aëronauts was created, and COUTELLE was made battalion commander of the two companies. These two companies followed the French armies into Germany without acquiring much distinction; nevertheless at Mannheim, Worms, and Ehrenbreitstein they rendered important service.

General HOCHÉ recommended disbandment of the companies in August, 1797. NAPOLEON took them along to Egypt, but the material was shipwrecked at Aboukir. They were finally suppressed in January, 1798, and with them disappeared the establishment at Chalais.

During the investments of Metz and Paris, 1870-71, free balloons served to carry dispatches and carrier pigeons.

The progress of meteorology, telegraphy, and, above all, the telephone, have opened new fields for military aërostation.

The shops at Chalais have been reopened. An aërostatic park was created by Captains RENAUD and KREBS. It was on trial in Tonquin on a reduced scale, on account of the lack of roads, and also at Bac-Nink in March, 1882, as well as in the operations which followed. Captive suspension secured constant orientation of the basket.

The complete regular park obtained a brilliant success at the maneuvers of 1886. The balloon was placed at 500 yards from the position of the general-in-chief. Reports were sent to the station on the ground by telephone, and thence by mounted orderlies to the general-in-chief. These reports always arrived twenty minutes before those transmitted by the cavalry.

The creators of the aërostatic park have been, and are now, ardently at work to solve the problem of the guidance of balloons. "La France" is the name of a dirigible balloon which attains a proper velocity of twenty feet per second. In five cases out of seven they have been able to bring the balloon back to the starting point. In order to arrive at a definite solution we must be able to attain a velocity of thirty feet per second, for, although the velocity of the wind, of course, varies exceedingly, statistics show that in three cases out of four it is below thirty feet per second (about twenty miles per hour).

The French naturally take the lead in these matters; other countries, however, have not been idle. During the War of the Rebellion LA MOUNTAIN used, near Washington, a captive balloon to reconnoiter the enemy, but, not finding his observations sufficient, he cut the cable, passed over the heads of the enemy, and finally descended in the State of Maryland. He then telegraphed the valuable information he had collected to McCLELLAN. General FITZ JOHN PORTER made an ascension at Fair Oaks for the purpose of testing information sent out by the aëronaut. He had the balloon hauled down, ascended himself, and found the exact reverse of what had been reported to him to be true, as he had suspected. During the same war, also, the basket was for the first time put in communication with the ground by means of a wire running along the cable. This was done by Aëronaut ALLEN, who sent a dispatch to President LINCOLN, from the "Enterprise" hovering over Washington.

Several of our general officers made ascensions during the late war. General PORTER went to a good deal of trouble to familiarize

himself with balloon observation. General BUTTERFIELD and Captain CUSTER also made ascensions; the latter observed the evacuation of Yorktown.

The use of balloons in our service was discontinued after the battle of Chancellorsville. Captain GLASSFORD, Signal Corps, U. S. Army, in an exhaustive article on the use of balloons during the War of the Rebellion, published in the *Journal of the Military Service Institution* for March, 1896, attributes this to a large extent to the fact that there was at the time no means of rapid communication with the ground. The nature of the terrain, most of which was covered with forests, also interfered with observation.

It appears that one of the principal causes of inefficiency was the fact that the observers, who as a rule were members of the Aeronautical Corps, were not military men. They were, therefore, unable to interpret what they saw, and their reports were to a certain extent unreliable. During a battle the officers of the army, of course, were with the troops, so that at a time when information was most needed it could not be depended upon. Obstacles of the greatest military value were either not observed, or else not reported because their value was not appreciated.

At Fredericksburg General BUTTERFIELD, who had started on an ascension to settle an important question, was called down to take command of his corps and make an assault. He states that the short ascent he had made was of the greatest value to him in impressing the topography of the country on his mind.

The Confederates also made an attempt to use balloons. They experienced great difficulty in obtaining the necessary silk, an interesting account of which is given by General LONGSTREET.

Besides the direct value resulting from observation, balloons also had an indirect effect in interfering with work by the enemy on intrenchments, the existence of which he intended to keep secret. Construction was, of course, suspended and the men hidden while the balloon was making observations.

After a lapse of thirty years our government has acquired another balloon, which is in charge of the Signal Corps, thus utilizing the advantages which come from military knowledge, experience, organization, and discipline. The balloon, which is of goldbeater's skin, made several ascensions at Fort Riley, Kansas, several years ago, and was then removed to headquarters Department of Colorado for continuation of the experiments.

The Germans, after their fruitless effort before Strasburg in 1870, paid but little regard to this question until the decisive results of

the French maneuvers again attracted their attention. A school of aerostation was, however, established in 1884 under the direction of Major BUEHOLZ, and some ascensions were attempted at the maneuvers near Cologne. The ascensions were renewed at the siege of Mayence, in 1887. The Germans have especially occupied themselves with the means of combating balloons. They have also made experiments with luminous balloons, lighted by means of an interior electric light, to serve as signals, or to light up the ground to a great distance by means of an electric projector under it.

By this means a night attack could be executed, the enemy being in the light and the attacking party in the dark. We do not hear much from the Germans on the subject; it is not improbable that they are seriously experimenting with it.

Experiments in visual telegraphy have been the subject of deep study in Russia since 1884; the experiments were made by means of an arc regulator suspended under the balloon and connected with the ground by conductors.

The English have had since 1879 a company of military aeronauts and a workshop for the construction of captive balloons at Woolwich Arsenal. They derived a good deal of advantage from military aerostation during the Egyptian campaign of 1885.

The transport in the air of projectiles intended to fall upon the troops or fortifications of the enemy was tried by the Austrians at the siege of Verona in 1849. Two hundred small free balloons, each loaded with a bomb, and with match kindled, were let loose in the month of June. But, carried by contrary currents, the aerial flotilla came back to its point of departure, and the bombs exploded over the heads of the Austrians. They, however, got off with the scare.

All the European powers have to day a more or less considerable amount of material of military aerostation, generally copied after the French.

The material is organized by the French as follows: It is divided into three parts, namely: the fixed part, the movable part, and the part necessary for ascensions. The fixed portion is the park, which is composed of the following buildings: A hydrogen manufactory, a varnishing room, a house for the wagons, a shed for the inflated balloons, another for chemicals, a building for pumps, reservoirs of water and basins to receive sulphureted water. The hydrogen is manufactured from sulphuric acid and iron turnings, or chipped zinc. The acidulated water enters the bottom of the generator, traverses a column of iron turnings, and escapes, after ex-

haustion, by a waste way. The gas produced by the reaction ascends in the generator, and after being cooled in the washer, in which a strong current of cold water is circulating, passes through the dryer, which contains quicklime. The movable part comprises six wagons. They carry windlasses, rigging, hydrogen tubes, two steam engines, motors and dynamos for electric lighting. One of the wagons is used to transport balloons already inflated. The compressor carriage conveys a boiler, a steam engine with double cylinders, three double-acting pumps, which bring the hydrogen to a pressure of 200 atmospheres, a refrigerator and a purifier.

The tube carriages convey each eight vessels charged with hydrogen. With these tubes the inflation of a balloon is almost instantaneous on any part of the ground. The part for ascensions is composed of balloons, netting, cables, baskets, ballast, field glasses, maps, photographic apparatus, compasses, barometers, thermometers, telephones, call horns, etc.

Without going into the details of the material, we can see that it is quite an extensive outfit.

CAPTIVE BALLOONS.

The captive balloons are of three models:

1. The normal balloon, 530 cubic meters, can carry two men.
2. The auxiliary balloon, 260 cubic meters, carries only one man.
3. The gasometer, 60 cubic meters, is used for the partial re-inflation of the other balloons, which will be necessary after a few days' use.

The balloons are of plain pongee silk coated with varnish, and have an opening at each pole, one for the valve, and one for the connecting hose. By means of the valve the balloon may be partially or completely emptied. The connecting hose is an apparatus of security, which acts in the same way as the escape valve of a steam engine; it forms a flap which allows the gas to escape when the interior pressure increases as the balloon ascends, but opposes the entrance of air. The netting is of cotton. The cables are of hemp, and contain the telephone wire imbedded in the strands.

FREE BALLOONS.

The free balloon has a capacity of 900 cubic meters. This increase of capacity permits a heavier load and a longer time of ascension, so that the aërostat will certainly pass the positions occupied

by the enemy. The duration of ascension is a function of the quantity of ballast that can be carried. A balloon has a constant tendency to come back to the ground. After it has reached the zone of equilibrium, radiation and the escape of gas through the material of the balloon diminish the lifting power. In order to make it rise again we throw out ballast. The balloon then swells out again on account of diminution of pressure, and does not stop in its ascent until it is completely full, at which moment the gas begins to escape at the lower orifice. It attains in this way a second zone of equilibrium, higher than the first, for the balloon is lighter. These phenomena of ascent and descent are reproduced without interruption during the whole course of a voyage. When there is no more ballast to throw out the balloon gradually comes to the ground. The free balloons are made of cotton.

It is difficult to obtain any information concerning the construction of the dirigible balloon. We know, however, that it is cigar-shaped, and carries a motor of light construction, which probably burns naphtha. In a perfect calm it attains, as already stated, a velocity of twenty feet per second. Thirty feet is necessary to enable a balloon to return to its point of departure in about eighty per cent. of the cases arising. This is equivalent to twenty miles per hour. However, the anemometer would have to be consulted before starting, unless we were willing to take the chances of slower currents in the higher atmosphere. The director at Chalais is straining every nerve to bring the velocity up to the requirements. We, of course, do not know what direction these experiments are taking, but it is probable that lightness and increased power are being sought through the use of aluminum. Let us hope that Major RENARD will succeed in finding a practical solution of this grand problem laid down by MONTGOLFIER 110 years ago.

THE ATTACK OF BALLOONS.

The enemy has every interest in destroying engines of such great utility. We have to consider two cases: the attack of free, and of captive balloons. If the free balloons start at a suitable hour and travel at a sufficient altitude they are beyond all reach. The start ought generally to be made a very short time before daylight.

The Germans fired at the free balloons which cleared the walls of Paris. They even devised a small gun which was attached to a carriage and intended to follow balloons rapidly. The results were

almost nothing. But, if free balloons can avoid the enemy's projectiles by observing certain precautions, it is not so with captive balloons, whose elevation is necessarily limited. Numerous experiments by the English, Germans and French, show that projectiles of infantry and artillery do not seriously damage aerostatic material. The balloon may be pierced, and it descends; but the fall is neither rapid nor dangerous. The *aéronauts*, if not themselves reached by the projectiles of the enemy, will probably arrive at the ground safe and sound. As the regulation of the aim would not take a long time, we must not unduly prolong our stay in the air. Photographic reconnaissance should take the place of reconnaissance with telescope and sketching materials. An ordinary photographic apparatus with a focal distance from eight to twelve inches sees everything that the human eye itself could see, and nearly in the same way and with the same apparent dimensions. The sensitive plate has a considerable advantage over the eye in that it preserves a complete and ineffaceable image of the smallest details of the objective perceived. It affords the most valuable means of studying afterwards details which have escaped the eye of the observer or have disappeared from his memory. The useful range of aerostatic photography cannot exceed about a mile and a half; that is, the observer ought to be able to approach within a mile and a half of the details he may desire to fix.

The captive balloon being a constant object of aim for the enemy's artillery, and even for his infantry, reconnaissances from a balloon during sieges ought to be exceedingly rapid. Instantaneous photography helps to reduce the duration of ascensions to a minimum. Special captive balloons without passengers, furnished with photographic chambers operating automatically as soon as the *aérostat* attains a given height, have been operated in England since 1884, and give most satisfactory results.

But the application of the system of *aéronautic* photography to all kinds of balloons presents certain difficulties which practice has not yet been able to overcome. The result has been the same with an apparatus which the operator, remaining on the ground, puts in motion by means of electricity.

Aerostatic photography with an operator has made such progress that the instantaneous plates obtained from a balloon are as fine and clear as the plates of the same kind made on the ground. Since 1887, Major FAIBOURG, charged with the photographic department of the geographic survey of the French army, has obtained in two free voyages and in some captive ascensions a large number of very

clear and complete plates. The application of aerostation to photography is entirely of French origin. Photography from a free balloon constitutes the simplest and most complete means of reconnaissance for a besieging army. The besieged use the captive balloons.

A very interesting article by Professor BACHE, of the Coast Survey, on Photogrammetry was recently published. The author makes excellent suggestions as to the processes to be adopted in surveying by means of balloon photography. His method seems to be a combination of surface and aerial surveying; that is, certain distances are measured on the ground, and the balloon does the sketching, as it were. It must be remembered that a photograph represents objects as they appear, not as they are, and that only the objects orthographically below the instrument will be accurately represented on the plane of projection.

The dirigible balloon will be the surest and most convenient auxiliary of instantaneous photography. It will enable the army *in the field* to make photographic reconnaissances of the ground, and of the enemy in the positions he occupies.

LUMINOUS BALLOONS.

The besieged ought to have at their disposal the means of lighting up the field of fire during the night, for the enemy will probably endeavor to take advantage of darkness to open trenches and establish batteries, as well as to execute the most important movements of men and material.

The projectors of Colonel MANGIN have been recognized as superior to luminous balloons. The projector is a sort of cylindrical box about a yard in diameter, with a parabolic mirror at the back. Light is furnished by a voltaic arc between two carbons. The apparatus is placed upon a carriage mounted upon spindles, the mode of suspension permits it to turn in all directions. A second carriage bears a dynamo operated by a steam engine.

Summing up in conclusion, the employment of balloons in war constitutes a novelty, all of the results of which cannot be estimated or foreseen. The balloon of COUTELLE was nothing more than an observatory overlooking the field of action, but was subject to such violent oscillations as to render observation difficult. This, together with the difficulty of transportation and inflation, caused the directory to abandon it.

The captive balloon, with the aid of the telephone, gives infor-

mation necessary to the conduct of a battle more rapidly than mounted messengers. Instantaneous photography has given new precision to reconnaissances made by direct observation, and has corrected the latter by permitting the subsequent study of details. The range and precision of cannon having increased enormously, balloon reconnaissances during sieges must be made rapidly, and on account of the danger to aeronauts it would be desirable if panoramic photographs could be taken by an apparatus working automatically, or set in motion by electricity from the ground.

Free balloons serve to force lines of investment, and to make reconnaissances above positions of the enemy.

Luminous balloons, considered with reference to visual telegraphy and illumination of the field of fire, have not given satisfactory results in telegraphy, and are recognized as inferior to the MARGIN projector for the other purpose.

The definite conquest of the realms of the air, as well as that of the interior waters of the ocean, will probably render the close of our century illustrious. It is difficult to foresee the effect of the dirigible balloon in war upon land and of the submarine boat upon naval warfare. Will the balloon only be a photographic observer and a messenger, or will it carry fire and death in its basket? Shall we see two balloons charge each other, and will aerial navies struggle until one of them sinks in a shipwreck of death? Will the navigation of the higher regions fold the two worlds in a new embrace? Will it open the way to other Columbuses, who desire to plant their flags at the Poles, and thus deprive the earth of its last secrets? Is not the submarine boat destined to plant its torpedo in the side of the ironclad, as the norwhal plunges his sword in the flank of the whale? Will it be a messenger forcing the blockade of ports? A champion dashing into the depths of ocean for new fields of combat? The future holds in reserve these two great secrets which the French have partially solved with the balloon "La France" and the submarine boat "Gymnotus."

THE FOURTH CAVALRY IN THE YOSEMITE NATIONAL PARK.

BY LIEUTENANT S. E. MCCLURE, FIFTH CAVALRY.

ONE of the most important steps which has been taken by our government in the direction of preserving the forests with which nature has so bountifully provided this country was the passage of the act, approved October 1, 1890, setting aside the Sequoia, General Grant and Yosemite National Parks, all in the State of California, and all now under military control. The area of these is 2,024 square miles.

The Yosemite Park comprises forty-two townships of the Mount Diablo base line series, a total of over 1,500 square miles. This tract is nearly rectangular in shape and is thirty-six miles wide, by an average of forty-two miles in length. The geographical center lies about twenty-eight miles nearly southeast of the intersection of the 120th degree of longitude west, with the 38th parallel of latitude north.

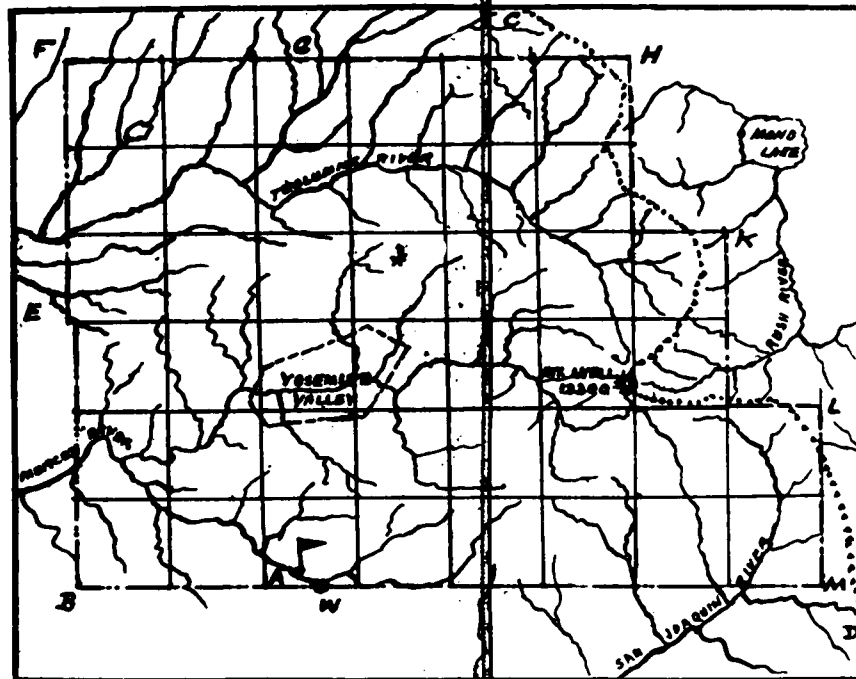
Near the center, and having an area of about fifty square miles, is the Yosemite Valley proper. It belongs to California, it having been presented to that State by the United States, in 1866.

The Interior Department had already learned the value of soldiers in policing the reservations, and a guard for the three parks was soon asked for. Captain A. E. Wood became the first "Acting Superintendent" of the Yosemite Park and arrived, with his Troop "I," Fourth Cavalry, early in May, 1891, at Wawona, on the southern boundary of the reservation. There were many serious difficulties encountered and those who knew Captain Wood before his death will realize that the right man for the place had been selected. Possessed of an indomitable will and an exhaustless supply of energy, efficient, fearless and firm, he soon became the terror of the law-breakers.

These were included in five classes, viz: Miners, hunters, campers, ranchmen and sheep men. The miners gave the least trouble of any, their trespassing being confined to the locating of new mines, to which they could never procure a title, and the killing of an occasional deer or bear.

The hunters committed great depredations on the game, and it was very difficult to prevent this, as they came in during the winter while the troops were absent. At the time the reservation was set aside they had almost destroyed the game of that region, but, under the fostering care of the military, it is now on the increase.

Campers defaced many natural objects and, through carelessness or wantonness, caused many fires. Where they obeyed the regula-



THE YOSEMITE NATIONAL PARK.

A—Camp A. E. Wood. W—Wawona.

CD—Main chain of the Sierra Nevada.

AB—30 miles.	By usual routes.	AH—70 miles.	By usual routes.
AE—47 miles.		AK—56 miles.	
AF—75 miles.		AL—66 miles.	
AG—80 miles.		AW—65 miles.	

tions they were generally treated with every courtesy and consideration and were not considered trespassors.

The same may be said of the ranchmen. These comprised the settlers who, either legally or by squatting, had taken up land within the Park limits before it was set aside. Such men generally owned some small place and grazed their cattle and other stock on the public land within a radius of several miles about their respective cabins. To determine who were bona fide settlers and to make them keep their stock within their own fences was one of the hardest problems which confronted the new superintendent.

The fifth class of trespassers, the sheep men, committed more depredations than all the others put together. They knew the country thoroughly and, as there were no reliable maps of the Park at first, they were often able to elude the detachments sent after them. When once caught they take their medicine with good grace, since they belong to a class against whom every man's hand is raised, and seem to realize that they have no legal right to drive their flocks over the great public domain. They are usually Portuguese of the most ignorant class and often do not own the sheep which they have in charge. All grass, flowers, shrubs and young trees are destroyed by their hands, and they often start disastrous fires in order to burn off the heavy undergrowth which impedes the progress of their flocks. Such were some of the men with whom Captain Wood had to deal upon his arrival.

The first summer was necessarily devoted mainly to "learning the ropes." Some work was done and a few bands of sheep were run out; but not much could be accomplished until the best camp site was selected, the ranches located, the real settlers separated from the squatters, the country partially explored and the boundaries approximately determined. The region was one of unusual ruggedness, and the learning of the trails, fords and passes was an extremely difficult task.

A temporary camp was located one-half mile north of the southern boundary of the Park and one mile northwest of Wawona, Cal., on the south fork of the Merced River. This camp afterwards became permanent for the following reasons: It was the nearest point that could be obtained, forty-three miles away. The climate was pleasant during the greater part of the season, the elevation being only 4,000 feet. Fresh beef could be procured at Wawona, and forage and other supplies could be delivered there at reasonable rates. It was also on the main line of travel of tourists and campers visiting the Yosemite Valley. The objections were, that

there was but little grazing and that the camp was not centrally located. The latter fact greatly multiplied the labor of patrolling, since it was forty to seventy-five miles to the points along the borders where depredations were usually committed. A glance at the rough sketch accompanying this article will show this disadvantage very plainly.

The Park is divided into four great water-sheds, that of the Tuolumne River, that of the Merced, that of the San Joaquin and its branches and that of the Rush River. These streams all start from the vicinity of Mt. Lyell, 13,300 feet, and they and their tributaries cut the reservation up into a series of rough cañons and ridges over which scouting is extremely difficult, it being usually necessary to carry supplies by pack mules. The lines of travel may be classed into 190 miles of roads, 680 miles of trails and 400 miles of cross-country routes—a total of about 1,270 miles. Half of this should be patrolled every two weeks. Add to this the riding and the foot-scouting that ought to be done at the sides of these routes, and some idea can be obtained of the enormity of the task to be performed. Yet, during the first five years, only one troop of cavalry, with one ambulance, two escort wagons and ten pack mules was sent for this purpose. This force was, of course, inadequate, but it rendered a good account of itself.

Owing to the rather severe winters and the fact that no stables or barracks have ever been built at Wawona, the troops return to the Presidio of San Francisco early in each season. This is unfortunate, as during the absence of the military the poachers swarm in and destroy much game, the weather not being cold enough to keep them out.

In May, 1892, Captain Wood arrived for his second tour of duty, and everything having been gotten in running order the summer before, he now opened a vigorous campaign against violators of the Park regulations. Here another difficulty confronted him. Trespassers could be removed, but there was no penalty attached to their evil doing. They could and often did return to their depredations as soon as released at the Park boundary. To partially overcome this, the act of removal was often made as inconvenient as possible to the offender. For example, a man caught in the southeastern part of the reservation might be ejected at the northwestern corner, at a distance of 125 miles from the point of capture. But this method of procedure was productive of much extra work and guard duty for the captors, and was not used to any great extent except when some old offender was to be taught a lesson.

Nothing was done to remedy this trouble until quite recently, when the act, published in General Order No. 15, A. G. O., March 15, 1897, came into effect. This gives the "Acting Superintendent" considerable power, and the only drawback in its working will be the time and expense of getting law-breakers before the proper courts.

Captain Wood was a third time in charge of the Park in 1893, and he began the work of stocking the lakes and streams with fish. He died on April 14, 1894, and was succeeded by Captain G. H. G. GALE, who, with his Troop "C," Fourth Cavalry, arrived at Wawona on May 24, 1894. His first official act was to name the camp "A. E. Wood," in honor of the gallant soldier who had so long occupied it. Captain GALE soon recognized the necessity for a good map of the Park. Soldiers who knew the terrain from previous scouting could go anywhere, but new men coming in were almost at sea without guides in the many rugged cañons of the northern and eastern parts of the reservation.

The new superintendent at once set to work to remedy this. The Park was divided into several sections and hektograph maps of these, in outline, were made. Each officer and non-commissioned officer in charge of a detachment had one of these, covering the region into which he was sent, and upon which he made corrections and filled in new details. It took but a short time to discover that the existing maps were unreliable in almost every particular. After returning to the Presidio in November, 1894, the author of this article compiled, under Captain GALE's direction, a fairly good map of the reservation, but as he was unable to visit all points in one summer, this work was still far from what it should have been. The result was, that when Captain RODGERS with his Troop "K," Fourth Cavalry, was sent to Wawona in May, 1895, the author accompanied him with a view to revising the map. Captain RODGERS afforded every facility in his power towards accomplishing this end, and Lieutenants BENSON and SMEDBERG, Fourth Cavalry, gave a hearty cooperation in the work. The second map was completed in March, 1896, and has been found to be of valuable assistance during the past season. It will probably answer all purposes until a survey, which is much needed, can be made.

It was not until 1895 that the full magnitude of the labor of properly policing the Park was realized, and adequate steps taken to systematize the work. The full benefit of the experience and mistakes of previous years was then reaped for the first time. Trails now run to every nook and corner of the reservation, and, though some of them are rough and others even dangerous for horses

and mules, still a few hundred dollars spent in improving them would greatly simplify the matter of patrolling. Since the establishment of the Park one of the principal aims seems to have been to avoid spending a cent of money on its improvement. No work has been done on trails except such as could be done by detachments passing over them from time to time; no barracks have been constructed; no stables built; no surveys made; and, until recently, no laws enacted to enforce regulations.

Against all these and many other difficulties that little band of cavalry has labored each year faithfully, intelligently and efficiently. Witness these words, spoken by Prof. JOHN MUIR before the Sierra Club in San Francisco, November 23, 1895:

"When I had last seen the Yosemite National Park region, the face of the landscape in general was broken and wasted, like a beautiful human countenance destroyed by some dreadful disease. * * * This year, I am happy to say, I found these blessed flowers blooming again in all the fineness of their wildness. * * * nearly every trace of the sad sheep years of repression and destruction having vanished. Blessings on Uncle SAM's blue-coats! In what we may call homeopathic doses, the quiet, orderly soldiers have done this fine job, without any apparent friction or weak noise, in the still, calm way that the United States troops do their duty. UNCLE SAM has only to say, 'There is your duty,' and it is done. * * * A very suggestive flock, not of sheep but of shepherds and their dogs, were seen this summer crossing the Yosemite National Park. Nine Portuguese shepherds and eighteen shepherd dogs were marched across the Park from the extreme northern boundary, across the Tuolumne Cañon and the rugged topography of the Merced Basin, to the southern boundary at Wawona, and presented as prisoners before Captain RODGERS, who had charge of the troop guarding the Park. These shepherds submitted to being driven along over hill and dale day after day as peacefully as sheep, notwithstanding they had a little previously been boasting of their fighting qualities and the surprising excellence of their guns. * * * But when they were calmly confronted by a soldier, armed with the authority of the United States and a gun of much surer fire than theirs, they always behaved well and became suddenly unbelligerent. Occasionally a flock would be found in some remote, hidden valley of the Park, attended by three or four shepherds, so that a watch could be kept on the movements of the soldiers from the heights around the camp. But sooner or later they would be caught and made to obey the laws, for every year the whole Park is faithfully policed.

"In my wanderings I met small squads of mounted soldiers in all kinds of out of the way places, fording roaring boulder-choked streams, crossing rugged cañons, ever alert and watchful; and knowing as we do the extreme roughness of the topography of the

Park in general, our thanks are due these quiet soldiers for unweariedly facing and overcoming every difficulty in the way of duty; and always it is refreshing to know that in our changeful government there is one arm that is permanent and ever to be depended on."

These are glowing words, but they are well merited. The non-commissioned officers and privates are entitled to their share of them, too. It is on them that the brunt of the work has fallen. It is they who have lived in camp six months of each year without any but the most meagre comforts; who have subsisted on bacon and beans, rather than break regulations, even though game was plenty all about them; who have made many lonely bivouacs in the rain and snow, without tents or other cover; who have with great labor ascended high peaks to look for the dust of moving bands of sheep; who have led their horses down into rugged cañons, thousands of feet deep, only to lead them out again on the other side; who have fought the awful forest fires; and lastly, who have spent many weary nights of guard duty over captives whom they were, on the coming day, to watch and drive to the next night's camp. Let these devoted men have the full credit for their faithful and arduous services.

In May, 1896, Colonel S. B. M. YOUNG, with Troops "B" and "K," Fourth Cavalry, arrived at Wawona. Colonel YOUNG had early determined on a rigid enforcing of the rules, and having with him two troops, fully equipped with wagons and pack-mules, he was enabled to carry out his intentions. One of the troops had been there the year before and knew the region thoroughly; hence, there was no lack of good guides. In addition to the main camp, a sub-post was also established near the western boundary on the Big Oak Flat road, which is the main highway leading into the Park from the west. In previous years the smallness of the force at Wawona had not admitted of this disposition. By this arrangement Colonel YOUNG was enabled to do away with a considerable portion of the patrolling in the western part and concentrate his energies in the more mountainous regions. His policy was much the same as that of his predecessors, except that he came a little earlier and stayed considerable later (November 24th). He thought that troops should arrive even earlier than the middle of May. He was in favor of building bridges over the large streams at important points. Heretofore the high water had often interfered with detachments getting over. Desperate chances were sometimes taken, as for example, in one instance, when an officer took eight

horses and three mules in safety over a large sheep log which spanned a mountain torrent forty feet in width and extremely rapid.

Colonel Young was strongly opposed to any reduction in the size of the Park; he recommended that a survey of it be made; he asked that legislation be enacted to impose penalties on violators of the law; and he gave all the assistance in his power to the distribution of trout to the waters of the reservation. During his tour over 400,000 small fry were sent out from the hatchery at Wawona. This hatchery was established by the State in 1895 and was under Mr. A. G. FLETCHER of the Fish Commission the first year. He devoted all his time and energy to making it a success. It was built by WASHBURN BROTHERS, the proprietors of the Yosemite Stage and Turnpike Company. Their coöperation with Mr. FLETCHER and the assistance of the troops have combined to make the work accomplished in this line very satisfactory.

The following is a general outline of the method of policing the Park. Most of the work was done by patrols, consisting of from five to ten men, usually, though not always, under the command of an officer. One of the soldiers in each detachment was generally able to tack on a shoe if one were lost. Their orders are to drive out and scatter all sheep, to arrest all herders, to disarm all campers and tourists, to take in charge all persons found hunting or fishing without permits, to see that all ranchmen have their stock within their own fences, to repair bridges and trails where needed, to escort stock of cattlemen to and from land of theirs within the Park limits, to arrest all persons caught defacing any natural objects, and to extinguish forest fires. The last of these is one of the most difficult of all. The fires occur every year in the latter part of July with such regularity as to lead some to suppose that they are due to natural causes. Be this as it may, they are formidable enemies to subdue when they once get well started in the thick carpet of the pine needles, trash and leaves which cover the ground on which these forests stand. Fires may break out at other times than in July, but they can almost always be traced to some carelessness. For those soldiers in camp drill is kept up right along at the rate of at least one hour per day. Another duty which consumed the time of the troops was target practice, which has taken place every year but one. The time generally selected was August and September. The range was a level, treeless meadow, about fifteen miles north of the main camp and at an elevation of 7,800 feet. In the vicinity are thousands of acres of succulent grass. The horses were

always taken up when the shooting began and were herded each day over these beautiful pastures. Pistol practice completed the list of duties.

This article would be incomplete without a brief description of the great center of attraction of the Park—the Yosemite Valley. This is one of the grandest wonders of the world. Its uniqueness consists in the great number of objects of natural scenery collected in a comparatively small space. The entire valley and its surrounding cliffs comprises but little more than a township, and yet in this limited area lie over fifty places of interest, any one of which is well worth a journey of a thousand miles to see, and all of which can be visited within a week. Lakes, rapids, thundering waterfalls, great fissures in the earth's surface, bald granite domes, mighty cliffs of over 3,000 feet altitude, all are here united, forming one vast whole, the like of which can be seen nowhere else in the world. No objects of scenery can excel the Yosemite Falls, Bridal Veil Falls and Illilouette Falls when at their best. None can compare with the Half Dome, Cathedral Spires, El Capitan, Nevada Falls and Glacier Point. But grand as all this is, there are other spots that can almost equal it in the Sierra Nevada, rising to the east and north many thousands of feet above the Valley. Among these may be mentioned the Devil's Post Pile, the Great Slide, the Grand Cañon of the Tuolumne, Hetch Hetchy Valley (a miniature Yosemite), hundreds of lakes, thousands of peaks, cliffs, glaciers and cañons. Many of the mountains rise to heights of 13,000 feet, Mt. Lyell 13,300, being the highest on the reservation. The region is one of great ruggedness. The greater part of the Park lies above an altitude of 6,000 feet, and over half is above 8,000 feet. Small glaciers lie at the foot of the large peaks. Timber runs up to 11,500 feet. Above that is grass for another 1,000; then snow and rocks. When traveling with animals no forage is needed. There is grazing almost everywhere above altitudes of 5,000 feet. Beautiful meadows lie hidden among the forests and extend up the mountain sides far above the timber line; thousands of streams come trickling down from the snowbanks and glaciers, and swelling as they unite, go tumbling over beds of boulders on their way to the sea.

It is the cavalryman's paradise—food and drink for his horse everywhere. Though the cold of spring and autumn may be biting, though the life may be lonely, though the work may be difficult—still, happy is the soldier whose lines fall amid these scenes of grandeur and sublimity, where nature has put forth her mightiest efforts.

THE LAST FIGHT OF THE SIOUX WAR OF 1867-77.

BY LIEUTENANT JOHN F. MCLAIN, NINTH CAVALRY.

THE winter of 1876, following the CUSTER massacre, witnessed unusual military activity on the Yellowstone. General N. A. MILES, then colonel of the Fifth Infantry, was placed in command of the forces left in that section of country when the greater part of the troops that had been busy during the summer campaign were withdrawn for the winter.

General MILES's command consisted of his own regiment and part of the Twenty-second Infantry, under Major ELWELL S. OTIS.

The hostile Sioux that had broken up into numerous small bands and scattered all over the country immediately after the Little Big Horn fight, and had by reason of doing so eluded the vigorous pursuit made by Generals TERRY and BROOK, had a merry time of it in keeping out of the way of General MILES, who chased and followed them back and forth across the Yellowstone about a dozen times, keeping them constantly on the move, giving them no rest until they found it to their advantage to go into the agencies and live off the bountiful provision made for them by our merciful and forgiving government.

Aside from those hostiles that had crossed the line into British territory, the only ones known to be out was a small camp of about three hundred, made up of the discontented of nearly all the hostile tribes.

To drive in or to catch and punish this band, General MILES organized a campaign in the spring of 1877. The troops engaged in this duty were four troops of the Second Cavalry, being the same squadron that CUSTER declined to take with him on his march up the Rosebud to his death the summer before, believing his own twelve troops strong enough, four companies of the Twenty-Second Infantry and one company of the Fifth Infantry as train guard.

On May 1st the command left the Cantonment at the mouth of Tongue River and marched up that river until on the 4th, about noon, the column was halted and preparations were made for dinner. Just about the time it was prepared orders were passed along to hurry and get the packs ready; we were going to leave the wagons, as information had been brought in by the scouts that precluded the possibility of taking wheels. It didn't take us long to get the "packs" ready, as they were to carry nothing but ammunition and rations.

The march was resumed across to the Rosebud, almost at right angles to the direction in which we had been marching. We crossed the Rosebud a little before sunset and continued the march all night, and the sun of the next day was well up in the heavens before we halted for a short rest and breakfast.

During the night we had passed over quite a raise in the hills west of the Rosebud, known by the Indians as "The Big Hill." At times it seemed that we could hear the rushing of water a long distance below us, and that a misstep by a horse would hurry his rider into the unknown. This hill was crossed at night as a precaution against being seen by any of the hostiles that might be out hunting in the hills.

The command was guided by half-breed "JOHNSY" BROQUIER and "HUMP," a Cheyenne warrior; they knew their business and were determined to keep their promise to General MILES, to place his command on top of the hostile camp without the Indians knowing it.

All day May 5th we marched through the hills west of the Rosebud, passing camp after camp of the hostiles. Many of them presented evidences of having been recently occupied, these evidences being fresher with each succeeding camp. May 6th was nearly all spent the same way; we knew that we were getting closer and closer to our quarry; it didn't need the warnings and assurances of our scouts to enlighten us; the deserted camps spoke only too plainly of our proximity to the hostiles.

The camps gave no signs of hurried departure, which fact bespoke either an ignorance on the part of the enemy of our near presence or a confidence and willingness to meet us, when and where they thought best. We felt satisfied that our nearness was unknown to them even if they were aware of troops being out after them.

About 2 o'clock on the afternoon of the 6th the column was halted, messages were sent to the subordinate commanders which soon caused them to gather with the General at the head of the

column. In a short time orders were given for the cavalry to take two days rations in their saddle pockets, and each troop to take one pack mule with two thousand rounds of ammunition, the infantry to remain with the pack train and follow the trail of the cavalry as speedily as prudent.

The cavalry cut loose from the infantry at a good stiff jog, keeping it up until about 8 o'clock, when it went into bivouac in a "pocket"; strict and positive orders were given against striking matches or making a light of any kind.

The General called his officers together and informed them that the hostile camp had been definitely located and that he intended to "jump" it at daybreak next morning; to do this it would be necessary for the troops to be in the saddle about midnight, and directions were given to that effect; the plan of the coming fight was outlined and dispositions made, contingent upon the Indians standing and fighting. At midnight the command was quickly and quietly aroused, each and every man keenly alive to the importance of making no noise that might be carried on the midnight air to the enemy and give the alarm.

It needed but a few minutes for the troops that had been campaigning in the Sioux country for several years past to get into shape and form column. As soon as everything had been reported up, the column started at a good sharp trot and kept it up for about twenty miles, when we swung down out of the hills into the valley of the Rosebud. It was one of the most exhilarating experiences I ever had; all nature seemed awake and appeared to have put on newer and fresher charms to greet us and speed us on our way.

It was not until we were about to turn into the valley of Muddy Creek that rein was drawn; the hostile camp was then but a few miles ahead of us. To be ready for any emergency a brief halt was made to adjust saddles and tighten girths. Troop "H," Lieutenant L. H. JEROME commanding, was in advance, and was told off to take the herd; in this he was to be assisted by Lieutenant ED. CASEY, Twenty-second Infantry. Troops "F," Captain TYLER, and "G," Captain WHEELAN, were to compose the fighting line, while Troop "L," Captain NORWOOD, was in support.

How we did go galloping up that valley, now troop front, now in column of fours, the changes in formation made necessary by the windings of the stream. The camp was struck at about 4 o'clock on the morning of May 7th; every man in the command seemed to partake of the spirit of the General in whom they had so much

confidence, and felt that upon the result of this fight depended whether or not the Sioux would remain "good."

The hostiles disappointed General MILES somewhat, as they did not wait to fight for their "homes and firesides" but took to the hills. The General was equal to the change of conditions; he quickly turned the leading troop (TYLER'S) up a "draw" to the right; pushed the next troop (WHEELAN'S) through the village to a corresponding position on the other side of a hill facing the village; NORWOOD'S troop was quickly deployed, dismounted and advanced through the village and up the hill. Upon this hill the Indians had massed and NORWOOD would never have gotten up if TYLER had not first been in position to get in a cross fire and thus occupy the attention of at least a part of the Indians. The hill was so steep that it was as much as the men could do to creep up it without having to fight at the same time.

As soon as the camp had been attacked General MILES had it made known to the hostiles that they could surrender and be properly taken care of. LAME DEER and IRON STAR, the two head men of the camp, seemed desirous of taking advantage of this offer, and approached to within a few yards of General MILES. LAME DEER placed his gun on the ground as an earnest of his good intentions, and IRON STAR seemed about to follow his example, when one of the citizen scouts near the General fired at the Indian; immediately IRON STAR fired at the group with the General, and LAME DEER, grasping his gun, stepped back about five yards, and taking deliberate aim fired directly at the General. How the bullet missed the one it was fired at is one of those mysterious things that happen in all battles. The Indian was not more than ten yards from General MILES when he fired, and the bullet hit a soldier of "H" Troop, who was inline with the General, behind him, in the breast, killing him instantly.

The audacity of the move and the suddenness with which it took place, coupled with concern for the General's welfare, so occupied the attention of those with the General, that the two chiefs made good their retreat to the hills, only to die there. Although "F" Troop was pouring into them a heavy fire, the Indians fought stubbornly, and it was no easy task for "L" Troop to get a foothold on the hill, but it succeeded in doing so, and LAME DEER was killed within a few minutes thereafter. IRON STAR saw that his comrade had received his death wound and tried, in the face of a hot and continuous fire, to drag him away, but the troops were pressing them too closely, and he was obliged to abandon his friend, though

he did it reluctantly. The trend of the hills was off in the direction of where "G" Troop was, and as the Indians followed them, they were brought right under the fire of that troop, and IRON STAR was killed there, within thirty yards of the place he had to leave his chief.

From that time until the hostiles finally got down into the valley of the Rosebud, the fight was a running one, the Indians making stands at every place presenting good opportunities of checking the advance of the troops, to cover the retreat of their families.

JEROME and CASEY "jumped" the herd and captured it. The boys whose province it was to put the horses out to graze had just done so and were returning to camp, when the troops were upon them. Had we been ten minutes earlier or ten minutes later in attacking the camp, we would not have been so successful in getting the herd; as it was, the Indians got away with not more than a dozen horses. The captured herd consisted of about 600 head of fine horses, and were used to mount the Fifth Infantry.

The infantry reached us about noon.

Many times during the day a few Indians would appear upon some one of the many hills around the camp, and after firing a couple of volleys into us, would scamper off. Fortunately, there was but one of these volleys that did any harm. A soldier of "H" Troop was engaged in frying some meat, having his frying pan over the fire, when a bullet shattered his arm, making him drop his pan, which he did with the exclamation: "D—n it, there goes my bacon."

During the night the camp was protected by a chain of sentinels entirely encircling it, and an almost incessant firing was kept up from dark to daylight, which had its influence in deterring the Indians from making a break through the camp to stampede the herd, for it is very probable that had they found a part of the line not responsive to their challenge of fire, that part would have been visited in force.

The valley was narrow, with high commanding hills on either side. The Indians in numbers were covering those behind us, watching our every movement, and it required good judgment to get the command out of the valley down into the broader one of the Rosebud, with the large herd of captured horses, without serious trouble, and it had to be done by "backing out." The Indians were ready to take advantage of mistakes and to pounce upon us, but the opportunity longed for did not present itself.

This was the last of the fights in that long series incident to the Sioux War. The defeat of the Indians was most complete. Every-

thing they owned, aside from what little they had on, was abandoned in the wild rush for the hills when they heard the near approach of the troops. It removed forever from their minds the erroneous impression that they were superior fighters to the troops. Their entire camp was destroyed, together with large stores of dried meat, and all at the expense of four soldiers killed and one officer and five soldiers wounded.

SCOUTING IN ARIZONA, 1890.

BY LIEUTENANT JAMES W. WATSON, TENTH CAVALRY.

IN March, 1890, a Mormon freighter was murdered by Apache Indians on the road between San Carlos and Fort Thomas in Arizona. Detachments were sent out from these posts to apprehend the murderers. After riding most of the night the two detachments met about sunrise near the scene of the murder. The detachment from Fort Thomas was under Lieutenant CLARKE of the Tenth Cavalry, with Tenth Cavalry soldiers of his own troop; and the one from San Carlos was under Lieutenant WATSON of the same regiment, and consisted of Indian scouts and Fourth Cavalry soldiers. CLARKE was a typical cavalry officer, an expert rider, who could do anything with a horse, energetic, slashing, bold to the point of utter recklessness, and fond of field service. Chief among the scouts and most faithful of them all, and one of the ablest and pluckiest, was ROWDY, then a sergeant. He was young in years—only about twenty-eight then—but old in Indian war, and loved campaigning and fighting and killing even better than he loved whiskey. He was very much loved, and also feared, by his brother scouts, and had great influence over them. Among the Fourth Cavalrymen was Sergeant DANIELS, a Texan, who had been a cowboy. A braver, cooler and more genuine cavalryman than Sergeant DANIELS never rode a horse.

The trail of the murderers was soon found, taken up, and followed by the united forces. The murderers had taken with them the two large horses of the dead freighter, and their large tracks aided the scouts very much in following the trail, which led up the bare, rugged sides of the Gila range of mountains. Sunset found us about fifty miles on the trail, which was going in a northwestern direction.

The day's work had given us some important information.

We found from the trail there were five of the murderers. We found also that the murder was not one of those sporadic ones so common then among the Apaches, resulting from a tizwin drunk, but it was simply the first act of a regular outbreak. The party was a regular war party, who had renounced their allegiance to all constituted authority and had gone on the warpath. The freighter happened to be the first white man they had run across so far, and they had simply killed him on general principles and in accordance with the code of the warpath. It was supposed, when we left our posts, to be merely the result of a tizwin drunk and that we would find the murderers somewhere about their camps. For this reason, we had only one day's rations with us. But our information put a new aspect on affairs. We were now on the beginning of a trail that would probably lead all over Arizona and New Mexico and into Old Mexico. We had only half rations for the next day. The question of rations, however, did not cut much of a figure, as we would most likely get near some military post and could send in. In the meantime there were plenty of cattle in the valleys and deer in the mountains, and the trail would, no doubt, lead into some ranch where the hostiles would go to get fresh horses.

The prospects of a spring campaign were viewed with pleasure. CLARKE was overjoyed to get in the field again. The soldiers were delighted to get out of drill and fatigue duty. After supper the scouts lit their cigarettes and, gathering around their camp fire, discussed the situation. ROWDY, on such occasions, was a most interesting and entertaining talker to his brother scouts, as would be shown by their faces; now grave and fierce, now convulsed with laughter. On this occasion he told them how it was most likely we would get down into Mexico and how we would probably have a fight with the Mexicans, who had put him in jail once in Captain CRAWFORD'S time. The scouts were much interested, for they all had old scores to settle with the Mexicans. The abundance of mescal (Mexican whiskey) down there and the ease in getting it was no doubt another attraction Mexico had for them. Indeed, Mexico had a peculiar fascination and attraction for all scouts and many cavalrymen. There was something to appeal to all temperaments and dispositions down there. It was a foreign country, full of novel and interesting sights for an American. There was mescal in abundance. There were all kinds of gambling games, and scouts were great gamblers. There was always a first-class show for a fight with the Mexican irregular troops. So the prospects of a long ride over Arizona and New Mexico and probably into Old Mexico

were hailed with delight, and the fact of having no rations in no way dampened the feeling of exultation.

A scout or a cavalryman of the Plains is never more at home than on the wide prairies or in the rough mountains of that country. It is his element, his home. He is very likely to get lost or "rattled" in a large city, and perhaps not find his way back to his hotel at night, but he will never get lost or rattled on plain or mountain. As long as his horse and carbine are in good condition, he feels at ease under all circumstances. The boundless, pathless plain, and the rough and rugged mountains, peak after peak and range after range—it is all his loved and special domain; and the young cavalry officer with a good command of trusty Indian scouts, or scouts and soldiers, and a roving commission over this vast country, feels that he is monarch of all he surveys.

These are our realms—no limits to their sway;
Ours the wild life in tumult still to range
From toil to rest, and joy in every change.
Oh, who can tell? Not thou, luxurious slave!
Not thou, vain lord of warlike prowess and ease!
Whom slumber soothes not—pleasure cannot please.
Oh, who can tell, save he whose heart hath tried,
The exulting sense—the pulse's maddening play
That thrills the wanderer of that trackless way?
That for itself can woo the approaching fight,
And turn what some deem danger to delight;
That seeks what cravens shun with more than zeal,
And where the feeble faint can only feel—
Feel—to the rising bosom's inmost core,
Its hope awaken and its spirit soar?"

At daylight next morning we were in the saddle and trotting along the trail. It was plainly making for the rough country in the Sierra Ancha mountains. Towards noon one or two recruits, who in some way got in the detail, began to play out. They were utilized to send into San Carlos, then about thirty miles distant, for rations. By figuring on the time it would take them to get in and where the trail would take us by that time, and then figuring again on where the trail would take us the next day, and the time it would take rations to get out—a kind of indeterminate equation, to speak mathematically—it was possible to fix on a place where rations could be sent to meet us without our having to wait for them. We knew the country well, and could figure very closely on the way the trail would have to go. It took us within two miles of the place designated, which we reached a little before sunset next day; the rations, however, had not arrived. Here we got our

first meal for the day, having killed a beef and having obtained about half rations of coffee and salt from a ranchman who lived near. Just as we were pulling out, about sunrise next morning, Sergeant CHEATHAM, of the Tenth Cavalry, with a small detachment, emerged from a little side cañon and fell in in our rear with the much desired rations, just in the nick of time, not even a halt being made. He had left San Carlos at 11 o'clock the night before and had made a night march to this point of forty-five miles. The last half of this was over a mountain trail, a hard road to travel at night. The old fellow looked very tired and worn as he rode up, but his indomitable nerve and pluck carried him on forty-five miles more this day—a continuous ride of ninety miles from 11 o'clock at night to sunset next day.

The country this day was of the roughest description. The trail led up and down rocky mountain ridges not far from perpendicular, where it was extremely difficult to lead the horses—for we had to lead them nearly all day—and the poor animals would become rattled and seemed to gaze with piteous and pleading eyes at their leaders, as if imploring not to be forced over such a fearful country. It was a day that tested hearts and lungs to the uttermost, and if anyone had been along with a weak heart or lungs that day he would surely have succumbed.

In the afternoon we got down to the bottom of Salt River Cañon, which here presents the striking and awe-inspiring features of the Grand Cañon of the Colorado. The hostiles had here got into a place so rough they could not use their horses any more, and in accordance with the customs of the warpath had killed the poor animals that had carried them so far. From here on the trail was on foot, which made it much more difficult to follow. For several hours it was lost entirely. The scouts became disheartened and discouraged, and would sit down or lie down and rest instead of looking for the trail. Appeal had to be made to their sensibilities. Rowdy was fond of notoriety, and he was told how all the papers would talk of him if we captured the hostiles, how he would be praised for his good work, even in Washington; how all the people in Arizona would know of him and thank him; and last, but not least, of the large reward, in money, the scouts would get if the murderers were caught. The appeal had the desired effect, and they went to work again with a will, getting down on their "all fours" and working along like so many fox-hounds. At last, after three or four hours of slow, patient work, the trail was picked up

on the banks of the river, in the sand, and we slept on it again that night down in the somber depths of the Salt River Cañon.

At dawn next day Rowdy, with the best trailers among the scouts, took up the trail on foot, for, after the hostiles got on foot, horses could follow it no longer. Indeed, few soldiers or white men could go where the scouts had to go. The remainder of the detachment, with all the animals, had to work their way around as best they could to where the cañon opened out, about fifteen miles below. This point was reached about 1 o'clock, and the scouts, whom we had not seen since they left in the morning, had not yet arrived. They were somewhere in the rough country behind us that we had gone around. We were watering our horses in the river, when suddenly the distant echoes of a rifle shot were heard in the mountains behind us, then another, then another. It meant the scouts had come up with the hostiles. Next was seen the dim outline of a human figure on top of a high ridge a mile or so distant waving his arms. It did not take long to get to the top of the ridge. After a short dash over brush and boulders the horses were left at the foot of the ridge, and everyone clambered on foot up the steep and rocky sides. Sergeant DANIELS was the first man on top. The waving figure was Rowdy. He was already in fighting costume, that is, entirely naked except his breech-clout. The other scouts hurriedly got themselves in the same savage but warlike dress, taking off even their moccasins, so their feet would have firmer hold on the rocks, and tying their long hair back behind their heads to keep their eyesight always clear.

Dispositions were soon made for the approaching fight. The result was to put the hostiles' position in the center of an equilateral triangle and a group of about seven soldiers or scouts at each vertex. So arranged, the fire from each group into the hostiles would pass between the other two groups. If the hostiles should make a break to get out they would have to pass between two groups and be exposed to their fire as well as the fire from the third group. The hostiles were hidden away in a clump of rocks and bushes about one hundred yards from each group. There was no possibility of their escape. The main problem was to get all of them without losing any of our men, all of whom were securely sheltered behind rocks. The far-reaching voice of a scout was used to call down to the hostiles, telling them they could see for themselves there was no possibility of escape, and if any of them wished to surrender they would be allowed to do so. The leader called back, "If you want us come down and get us," and added some uncomplimentary

remarks about the Agent. The order was given to "commence firing," and very soon three converging showers of bullets were pouring into the hostile position. The hostiles immediately returned the fire and, at first, their puffs of smoke came with vigor and rapidity, but soon slackened down and came only at intervals. The whole field of action was filled with whizzing and zipping bullets which, hitting the rocks, would glance off in all directions. The "whiz" of the bullets was more sharply distinct than the report of the carbines. No one was in sight. Only the puffs of smoke showed where the firing came from. The hot fire of the three groups was raising a cloud of dust, leaves and broken fragments of rock about the hostile position; the mountains and hills around reverberated with the rapid reports of the carbines, and the whole valley became filled with the smoke and every variety of "whiz" from the flying bullets. A French general said of the charge of the Light Brigade at Balaklava, "It is magnificent, but it is not war." So all this smoke and din and whizzing of bullets was a very fine sight, and magnificent, too, on a small scale, but neither was it war, because it was not bringing us any results in the shape of dead hostiles. The fire that would break out from them now and then showed they were still as much alive as ever. It was necessary to draw the lines closer around them. Two of the groups united and worked up under cover of the rocks or any kind of shelter to within fifty yards of the hostile position. We were fighting Apaches, and we fought them according to their own tactics. Their cardinal principal is, "Kill as many of your enemies as you can, but don't be such a fool as to get killed yourself." All we could see were the puffs of smoke from their position. So all they could see of us were puffs of smoke, and we had the great advantage of being able to move around, while they could not.

Our new position did not help us much. The closest scrutiny did not reveal the least glimpse of a hostile. After some random firing from this position a small party of about ten scouts and soldiers, including CLARKE and Rowdy, taking advantage of all cover, made a rush which took them right among the rocks of the hostile position. Here was a large rock, or boulder, approximately about the size of a freight box car, but of a rough and irregular shape. We were on one side of this rock and the hostiles were on the other and not more than forty feet distant. CLARKE, who was always ahead in dangerous places, was the first to clamber up this rock and peep over on the other side. After looking around for some time he got a glimpse of a patch of red skin. Two shots fired

at this patch of red skin did not cause any kind of movement, from which it was concluded the hostile was already dead. And so it was found afterwards. A bullet had entered his right eye and gone through his head. He had been killed by one of the hundreds of bullets, in the act of firing, no doubt, as was indicated by the position of his rifle. Rowdy, who had got on top of the large rock discovered another patch of red skin which he made out to be an arm. He fired at this and in return three bullets spattered against the rock close to his head. Rowdy peeped over again and this time he made out the left side of the same hostile. He aimed with great deliberation and the shot brought several bullets in return, but soon groans were heard from the wounded hostile. Rowdy, as he squirted a mouthful of tobacco juice over the rock, remarked, "I guess I got that feller that time." But the wounded Apache was game. He was discovered again through the foliage and rocks, this time a small part of his leg showed just above the knee. Another bullet struck him, about six inches above the knee, shattering the bones of his leg. The nervy fellow, wounded to death as he was, roused up enough strength to send back several bullets in rapid succession which spattered against the rock near our heads. The last bullet had, however, given him his mortal wound and ended the fight. He called up to us that he could not fight any more, and said he had told the others to surrender, as their case was hopeless. He was chief of the band. The others soon came out of their hiding places and surrendered. One was wounded in the arm. One was found dead, as previously mentioned. The chief, a handsome young fellow, was shot in the left arm, had two ribs broken on his left side—Rowdy's two shots—and the bones of his right thigh were shattered into fragments. We tried to carry him back to camp—an extremely difficult undertaking over such rough country, and it was then about dusk. Rowdy, who was always very practical in all matters, remarked, "I don't think we'll ever get that feller up that hill; I think we better kill him." The poor fellow was suffering the most intense agony, and begged us to kill him. Even in these supreme moments he would break out now and then into snatches of an old Apache war song. We did all we could for him, but to no purpose. Death soon put an end to his sufferings. None of the hostiles escaped. Our success was complete, and was owing mainly to the good work of the scouts in trailing, and, above all, to the bulldog tenacity and faithfulness of Rowdy. None of us were injured, which was due to the fact that we used the hostiles' own tactics against them.

Rowdy got everything that was promised him that fearfully tiresome day down in Salt River Cañon. He got a medal from Congress. He and the other scouts got the reward from the Governor of Arizona. He made hosts of friends in Arizona. And, what pleased him probably more than anything else, he got his name in every paper in Arizona and New Mexico. Rowdy was an original and interesting character. He had some virtues of a high order and many vices. He was unswervingly faithful to his friends and terribly faithless to all others.

He would kill a wounded prisoner to save the trouble of getting him to camp, but would cry like a child on saying good-bye to a friend.

THE HORSE'S FOOT.

BY M. J. TREACY, VETERINARY SURGEON, EIGHTH CAVALRY.

UNTIL recent times veterinary literature has been remarkably barren on all subjects excepting the foot and shoeing. It was natural, perhaps, that these subjects should excite considerable interest; considering their vast importance. The first thing which strikes the observer is the remarkably small size of the equine foot in proportion to that of the body. Comparing the horse's foot, so far as size is concerned, with our own, the advantage lies in the majority of cases on the side of the biped. The most interesting fact which physiology demonstrates is, that though the equine foot presents a small circumference, in reality it encloses a vast area, due to the anatomical arrangement of its part. The amount of moisture contained in the horn of the foot is somewhat considerable, and the rate at which it evaporates is quite extraordinary.

If portions of the frog be enclosed in a bottle, in a short time the interior becomes bedewed with moisture. The use of this moisture is to keep the hoof elastic and prevent it from becoming brittle, and the agencies which are at work to assist this are a coating over the wall of a thin, varnish-like layer of horn, which can be seen in the un mutilated foot, and in the case of the sole and frog, by the layers of exfoliating material which accumulates, as the result of shedding the superficial layers. These all prevent evaporation and should be preserved.

We are bound to recognize that horn containing but little moisture is in an abnormal condition; it is ragged and brittle; nails driven into it cause it to crack; and that elasticity on which so largely depends the natural shape and usefulness of the foot becomes impaired and destroyed. A museum specimen of the hoof will clearly illustrate our meaning. In its dried condition it is so brittle that if dropped it will fracture like a piece of glass. Place this foot

in water for a few days and it comes out as fresh and elastic as though it had just been removed from the foot of the owner, instead of being an old museum specimen. All this horn has done is to imbibe water, which has entered its minute canals by capillary attraction, and the brittle substance now becomes yielding and elastic. We can now see how important elasticity is to the hoof, and when we consider that a horse trotting has to pound the earth with sledge-hammer like blows, and therefore the dreadful series of concussive shocks to which the foot is exposed during work would inevitably lead to its destruction by fracture or otherwise unless this wise provision existed. Clinically, we are aware that fractures do occur in the hoof from violence.

Let the advocates of small steel plates or light shoes remember that moderately heavy shoes radiate or destroy those dreadful concussive shocks to a very great extent; this is particularly well known to practical horsemen, who will invariably apply heavy, wide-webbed shoes to horses slightly tender in their feet; and in my opinion all saddle horses ought to be shod in front with shoes of not less than thirteen or fourteen ounces in weight, properly distributed, for above reason.

No man in his senses will undertake a long walking tour over rough country in his dancing pumps.

The objects to be attained in shoeing are: 1st. To protect the hoof from wear and tear, incident to travel; 2d. To radiate, moderate or destroy those dreadful successive concussive shocks of the foot against the ground which obtains in all its rapid gaits; the quicker the gait the greater the shock.

The removal of the varnish layer of the wall, and cutting across the horn fibres by the unnecessary use of the rasp, leads to considerable destruction; however, in the most brittle foot that portion of the horn nearest to the vascular structures still maintains its elasticity. The frog contains the greatest amount of moisture, the wall the least.

The hoof may be regarded as a duplicate structure, one being a complete counterpart of, and fitting into the other. The internal one is spoken of as "the sensitive foot," the external one "the horny foot." The physiological interest in "the sensitive foot" lies:

- 1st. In the arrangement of the blood vessels.
- 2d. Anti-concussive provisions.
- 3d. The means by which the enormous body weight is supported.

4th. The remarkable manner by which the area of the foot is increased, without adding to the surface.

These will be explained in turn.

1st. *Vascular Mechanism.*—Taking the blood vessel arrangement, we recognize that the enormous amount of blood sent to the foot is chiefly for the purpose of growing the needful amount of horn. There is hardly any part of the body so vascular; even the pedal bone is a highly rarefied structure, like so much pumice-stone, to afford passage and protection to the numerous blood vessels.

Lying as the foot does, furthest away from the circulatory center, added to which is its position at the lowermost part of the body, we are led to inquire, why it is that the blood is able to circulate through it so thoroughly, and if other means are at hand for assisting the force of the heart in facilitating the circulation. Such means we do know exist. The arterial blood pressure in the foot is high, for we have gravity assisting the heart's action, and powerful elastic walls to the vessels. But though the contraction of the left ventricle is sufficient to force back the blood to the right ventricle from any part of the body, it is doubtful whether this force would be wholly sufficient to empty the foot of venous blood and keep the considerable plexus of veins full.

This venous circulation is, however, assisted by two important movements in the foot, viz: the expansion and contraction of its posterior upper half, and the alternate descent and elevation of the pedal bone, under the pressure of the body.

There is no physiological point which probably has given rise to more controversy than the elasticity of the foot, but it is not only amply provided for but positively proved within recent years. Its provision exists in the elastic nature of horn, and the existence of the large elastic cartilages at the posterior and lateral parts of the foot, and also the important fact that though the internal parts of the foot are solid anteriorly, yet it is soft and yielding posteriorly.

The amount of movement occurring in the foot under the influence of body weight, increases with the velocity at which the horse may be traveling. It is small at a walk, and still less when he is made to throw his weight on one foot by lifting the opposite foot; even with this simple test, special and delicate instruments are capable of registering this movement and moreover of measuring it. There is no difficulty in seeing the movement imparted to a column of fluid circulating in those parts, for if we divide a plantar vein, and make the horse walk, each time the foot comes to the ground expansion occurs, and the jet of blood considerably increases, and

when the foot is taken off the ground the jet of blood is reduced. We must accept as a demonstrated fact, that this venous circulation is largely facilitated by the expansion and contraction of the posterior part of the foot. During expansion the blood is driven upward, and during contraction the relaxing veins aspirate the blood into their interior.

So perfect are those changes that there are no valves in the veins of the foot, and none are found until near the middle of the pastern. To assist the circulation, the large venous trunks at the posterior-lateral part of the foot are in close connection with the lateral cartilages, and some of them even pass through their substance. It will be understood from the above why want of exercise will cause swollen limbs in horses.

THE SENSITIVE LAMINÆ

We have now to consider the means by which the weight of the body is supported within the foot. It is universally recognized that this is carried out by the union of the horny with the sensitive laminae. That the enormous weight of the horse's body should be carried, or rather slung, upon these delicate slips of sensitive material on one hand, and corresponding slips of horn upon the other, is perhaps the most remarkable feature of the physiology of the horse's foot. We know how fine the union is; we know the extreme difficulty of separating these two parts, even by mechanical means, in a state of health, and we recognize the delicate structure of the parts yielding this firm yet flexible union.

The horse's weight is supported in the foot by the dovetailing of 500 or more sensitive laminae, with 500 or more horny laminae, this union being made more complete by each primary sensitive and horny lamina containing 100 or more secondary laminae. The laminae afford an immense surface of support which is longest at the toe, shorter at the quarter and shortest at the heel; but though the slinging surface is so much shorter at the quarters and heels, yet its strength is increased by the direction in which the body comes upon it. Instead of bearing the weight on the length of the laminae, as at the toe, it bears on therewith in such a manner that where we had, say one lamina at the toe, there are twenty at the heel; in other words, the laminae which are vertical at the toe become more oblique until they become almost horizontal at the heel. In front these laminae are attached to the pedal bone, but laterally and posteriorly to the elastic cartilages; in other words, where expansion and contraction of the foot becomes greatest.

A horse's sole carries little, if any, weight. This has been experimentally proven over and over by removing that organ; its margin alone—that adjoining or in contact with the wall, assists in supporting the body weight, this latter being slung, as it were, on the laminae by their attachment to the pedal bone and hoof respectively. When we remember the sole is concave, it will be clear it has some other function than that of weight-bearing to perform: its function is to protect the sensitive sole and pedal bone. The folding up of these horny and sensitive leaves in the foot in the manner described has another function besides that of merely supporting the body weight and rendering the union firm. It is clear that by folding up this amount of material the surface of the foot is enormously increased. In other words, by this arrangement the foot has been kept within small proportion without affecting its stability. A book of 500 pages may, by placing one leaf above another, be made to occupy a bulk represented by a few inches, but if each page be laid out separately on the ground and made to touch each other, the surface covered would be considerable. This is precisely what occurs in the horse's foot. The laminae, by this singular arrangement, increases the foot surface and yet keeps it within reasonable bounds.

MOELLER has estimated that it is equivalent to eight square feet, while GAVES's estimate is eleven square feet. The bearing surface of each foot being equivalent to say, eight square feet, thus affording a total area for the pedestals of thirty-two square feet. The physiological function of the leaves of the foot is demonstrated by pathological observation. Inflammation of these leaves (laminitis, or founder) occurs either from overwork or from the horse standing too long in one position; in either case they get strained and resent it. The practical value of exercise to horses, which for any reason have to remain idle, cannot be disputed, this exercise overcoming the tendency to congestion of the laminae, from strain or gravitation. Previous to the advent of corrals being attached to each troop stable foundered horses were quite frequently seen. Now a case of laminitis is a rarity. Nevertheless, troop corrals did not come into existence without considerable opposition from the "non-progressives," like stall partitions, which are still to be seen in some troop stables, for no more logical reason but that our "great-grandfathers used them," for they create darkness, filth, non-ventilation, reduced vitality from vitiated air, and add very much to the labor of the stable orderlies, interfere with the inspection and grooming of the horses and drying of stall floors; and the contrast of stables with

and without stall partitions will appeal to common sense alone in favor of the latter. Horses in the field seem to get along very well in their absence. Of course, one or two stalls might be retained for vicious or restless animals, and their partitions ought to be liberally perforated with three inch auger holes from top to floor. I speak from long experience in stating that horses suffering from respiratory diseases recuperate very slowly when kept within stalls, partitions and on dirt floors, with the consequent gravitation of excreta, etc., etc.

How the foul, stinking mass, thus generated, in which horses are compelled to stand, can result in the so-called benefit to their hoofs has always been to my mind a difficult problem to find a solution to. If hard, impermeable flooring is injurious to horses' hoofs then seventy-five per cent. of domesticated horses ought to suffer, but they do not, if the hoof is not mutilated in shoeing. I am a firm believer in dry, hard floors and surface drains, dirt floors are literally and practically dirty floors, and the cause of rheumatism, respiratory diseases, hoof troubles, thrush, canker, contraction, filth and vitiated atmosphere, etc., etc. If any doubt existed as to the function of the laminae in supporting the weight of the horse's body we have only to refer to the process which obtains in them as the result of disease, laminitis being frequently followed by a separation of the horny from the sensitive laminae, when the body weight not being properly supported, the pedal bone under the influence of this pressure is actually forced through the horny sole.

ANTI-CONCUSSIVE MECHANISM.

The arrangements which exist to save the foot from concussion are numerous. We have in the first instance the highly elastic and India rubber-like horny frog. Second, the fibro fatty or plantar cushion. Third, the elastic cartilages of the foot. Fourth, the elastic posterior wall. Fifth, the descent of the sensitive foot within its glove—the horny foot. The descent of the sensitive foot has been as strongly denied as the expansion of the posterior wall, but there exists no difficulty in demonstrating it. The fore foot comes to the ground flat or frog first. In the slower paces flat; the faster the gait the more apparent is the fact that the heels first touch the ground. The frog from its peculiar physical position, is not only adapted to prevent the horse from slipping and to give him ground grip, but also to save the entire limb from concussion. This is the reason why it comes instinctively to the ground first, as concussion to the anterior part of the foot is prevented by a slight up

and down movement betwixt the laminae and the pedal bone, through the medium of the extensive layer of elastic tissue found at this point. As the weight comes on the foot the pedal bone slightly descends, to rise again when this weight is removed. As the pedal bone descends the sole on which it rests also slightly descends and comes nearer the ground, which is one reason why the horny sole is concave instead of flat. This descent avoids concussion in the same way that it is easier to catch a base ball with a retreating movement of the hand than by rigid opposition.

THE FROG.

The function of the horny frog and its peculiar physical features have already been alluded to. The manner in which it protects the important navicular bursa is also no insignificant part of its function. The soft and elastic condition of the horn of the frog has been attributed to certain perspiratory glands which are found in this region. How far they contribute to the elastic condition of the frog is not clear, especially as the surface over which they are distributed is of a very limited area. The frog is peculiar inasmuch as it needs for its perfect health contact with the ground, or in other words, to be level with the heels of the shoe or bare foot, as the case may be. Protrusion beyond those limits will result in injury to the structure above it; in fact, I have seen horses injured by sticking ignorantly to the theory, "Don't cut away the frog," by persons who should exercise more intelligence and common sense. As well might a nail protruding from a boot heel into the human foot be allowed to remain and cripple its owner. We know particularly that frog pressure is more or less essential to the healthy foot, and that many foot diseases are cured by its restoration alone, and that the sole will not tolerate ground contact for any continued length, especially on rough or hard roads.

"THE WALL."

From what we have previously said, it can be seen that it is on the wall of the hoof that the horse's weight is supported. On examining the horny wall we find that it is thickest at the toe, thinner at the quarter and thinnest at the heel. It is thickest at the toe owing to the great wear and tear to this part. As the frog is the first to touch the ground, so is the toe the last to leave it, and it is from this latter point that propulsion is given to the body. The toe wall seems to grow faster than the heel wall apparently, and it

is the tendency of the entire wall to grow forward and downward, thus continually producing an increasing obstacle to perfect equilibrium, which should be removed at no longer intervals than four or five weeks at farthest. Neglect of this operation is the cause of the great majority of diseases of the feet and limbs. The object of the wall of the fore feet becoming thinner as they proceed backwards, is to allow for expansion under body weight. For this reason nails should not be driven into the posterior half of the walls of the fore feet, but they can be driven with impunity from toe to heel of the hind feet, for the reason that the wall increases in thickness from toe to heel in the hind feet. Shoe manufacturers are well aware of this, and consequently punch the nail holes further backwards in hind shoes. Hind shoes are not desirable for fore feet on this account. When so used the posterior nail holes should not contain nails. Two physical conditions have to be provided for in the walls of the fore feet, viz: elasticity of the posterior half and toughness of the anterior portion. The posterior parts of the fore feet first receive the body weight, at least in the fast paces. The expansion of these parts save them from destruction under those circumstances, and the various anti-concussive provisions which exist are considerably assisted by the fact that the walls are thinner at the heels than elsewhere, and so yield outwards; but besides being thinner, the heel wall contains more moisture than the toe wall, and this ensures its elasticity. The younger the horn, viz: the nearer to the coronet the more moisture it contains, the further away from the coronet, or nearer the ground, the less moisture it holds, and consequently the more resisting and tougher it is at this part. The anterior part of the wall is longest vertically, therefore the toughest, because it is much older than the heel horn, contains less moisture, and is consequently harder, etc. The heel wall is some months younger than the toe wall and much thinner, therefore contains moisture, and consequently is more elastic and less tough. The age of the wall is therefore an important factor in the wear of the hoof. The horn of the quarter is older than that of the heels, that of the toe older than that of the quarter. This excellent provision against wear and tear admits of considerable friction where it is most required, viz: betwixt the ground and toe, and allows of the expansion of the younger and moister horn of the heels. The expansion of the heel wall is aided also by the elastic lateral cartilages, which bulge outwards each time the frog has ground contact. At the heels the walls are inflected inwards and forwards to form

the bars, which run for some distance under the foot towards the apex of the frog.

The bars are part of the wall and their function is the same, viz: to support weight and resist wear and tear. The elastic movements of the foot must now occupy our attention. The mechanism which brings this about has already been touched upon; it now remains to briefly describe the changes in shape which the foot undergoes as the result of body weight. When the weight comes on the foot it is received on its posterior part, viz: the heels, bars and frog. The elastic posterior wall is pressed outward by the frog being forced to expand laterally betwixt the ground and navicular bursa. The expansion can be plainly seen at the posterior part of the coronet, for at the moment of expansion the bulbs of the heel at the coronet, sink under the body weight and consequently come nearer the ground, and as a result of this the anterior coronary edge retracts and the pedal bone slightly descends through its elastic connection with the sensitive lamina, pressing the sole down with it. Under those conditions the blood pressure in the veins of the foot rises and consequently the vessels are emptied. When the weight is removed from the foot these blood vessels fill, the frog retracts, the posterior walls contract and become narrower from side to side and the bulbs on the heel rise, at the same time the anterior edge of the coronet goes forward, the pedal bone and sole ascend.

LATERAL CARTILAGES.

We have dealt with certain functions of these bodies. Let us now summarize our knowledge of their uses:

1st. They form an elastic wall to the sensitive foot and afford attachment to the sensitive lamina.

2d. As the foot increases in size these cartilages carry outward the sensitive lamina which are attached to them and thus secure them from injurious pressure. Large venous trunks pass through and are in intimate connection with these elastic cartilages, and the movements of the latter assist in the circulation. The function of the lateral cartilages has light thrown upon it by disease, when they, through inflammation, become converted into bone, constituting that disease known as "side bones," thus destroying their elasticity and creating a very intractable form of lameness seen in cavalry horses.

NAVICULAR BURSA.

The pedal bone presents a remarkably small articulatory surface, much smaller than the bone which rests upon it. In order to increase the articular surface an additional bone here presents itself known as the navicular bone; by this means the corona rests on an articulation which is rigid anteriorly and flexible posteriorly. Under the yielding navicular bone passes the perforans tendon which solely supports it under body weight. The compression to which it is thus exposed by the weight from above and pressure of the tendon below is the principal factor in the causation of that very serious, common and intractable disease known as "navicular arthritis," or coffin joint lameness.

When the foot comes to the ground the body weight comes first on the flexible articulation of the pedal joint, viz: the navicular bone and its supporting tendon, the corona is then rotated in such a manner that the weight of the body is transferred to the pedal bone and through it to the sensitive lamina.

Wherever we look we find the same provisions maintained for an elastic posterior and a rigid anterior part. Such are the physiological features of the equine foot which are eminently calculated to facilitate circulation and destroy concussion. It will be thus seen that it is not a crude block of insensitive matter, to be mutilated and injured at the sweet will of every ignoramus who assumes a knowledge of it (and it is simply a matter of astonishment to observe the confidence with which the average man will assert his superior knowledge of the horse and his diseases, and in fact attempt dictation on this subject to persons who have made it a lifetime study), but a most wonderfully constructed apparatus, possessed of qualities which are not found in any other part of the body or in any other animal.

In constructing the equine foot, nature seeks to do more than merely protect the extremely delicate and exquisitely sensitive structures contained within it from injurious contact with the ground. This redoubtable difficulty is comparatively insignificant in comparison with the other tasks assigned to it. It was necessary that the lower extremity of the equine limb should be an organ endowed with the acutest sense of touch for the instantaneous perception of the consistence and inequalities of the ground over which it moves; and whilst it possesses this quality in the highest degree, it is also indispensable that it should be gifted with the properties, apparently incompatible, of resistance, pliability and lightness to the extent necessary for the support and progression of the whole

body, in addition to the rapidity essential to the propulsion, the elasticity and suppleness needful to avert reactions and jars, and the durability and rapidity of renovation demanded by incessant wear and tear. Here we have a combination of requirements whose simultaneous existence in one organ might almost be deemed incompatible, so opposite do they appear, viz: insensibility with a delicate sense of touch, resistance with lightness, rigidity with elasticity, and suppleness with durability. Foot lameness is only too frequent, but if it were not for the various mechanisms we have attempted to describe, it would not be possible to work a horse one hour. It is no argument against hoof expansion that it is almost imperceptible, small as it is in the slower paces more particularly, yet it suffices to convert what would be a rigid, unyielding block into an elastic and yielding one, and at a gallop or rapid trot this expansion must be considerable, probably more than double what it was under the slow gaits.

The evils of shoeing can be as easily recognized as its necessity. By bearing in mind the functions of the various parts of the foot we can certainly reduce these evils to comparatively narrow limits, and in a few words we will state what constitutes physiological shoeing:

1st. The reduction of the wall to its proper proportions, such as would obtain through friction had no shoe been worn and the horse seeking his living, viz: reduce the shoe surface until the white line which connects the sole and wall is plainly visible from heel to toe.

2d. Fitting the shoe accurately to the outlines of the foot—not altering the latter to fit the shoe. Rasping the crust to fit the shoe not only renders the horn brittle, but is a direct loss of bearing surface; but abnormal conditions, such as crooked feet, long toes, etc., must be remedied by removal of portions of the wall.

3d. Leaving the wall intact, so far as the varnish layer is concerned; the practice of rasping the wall and under the nail clinches destroys the horn tubes and allows of so much evaporation from the surface of the horn, that the walls become brittle.

4th. The sole, except its shoe surface, not to be removed by knife or rasp. It cannot be too thick, being there for protective purposes; therefore the thicker and stronger it is, the better protection it affords to the structures above it.

5th. The bars not to be removed or interfered with except the shoe surface alone. They are part of the wall and intended to carry weight. The shoe should rest upon them.

6th. The frog to be uncut and allowed ground contact where possible. The frog cannot perform its functions unless on a level with the heels of the foot or shoe as the case may be. If it protrudes beyond these dimensions it should be lowered.

7th. The pattern of the shoe is immaterial, so long as it is true and level bearing and rests evenly on the wall, sole and bars and has sufficient weight to assist in radiating concussion: not more than six nails in each shoe evenly distributed, as nails destroy horn: these should not be driven higher than needful, for high nailing means "hoof ruin" sooner or later. Rasping the horn under the nail clinches is a pernicious habit that horseshoers persist in, notwithstanding the fact that it injures the horn and actually weakens the hold of the clinches.

Such briefly are the conditions which fulfill physiological shoeing. The old saw, "Fit the shoe to the foot," is not applicable until abnormalities in shape are first removed, typically shaped hoofs not being the rule by any means but the exception.

8th. The horse is unfortunate in being the only possessor of feet and teeth which are in a continual state of growth. No sooner is a horse's foot reduced to its proper proportions than it commences to materially interfere with his stability and equilibrium by its continued growth downward and forward. More bad results and hoof diseases arise from this one cause, than all others combined, and that is: long retention of shoes and allowing barefooted horses to run for long periods with their hoofs untrimmed. Whether shod or barefooted, the horse's foot requires the monthly attention of the horseshoer. The result of the neglect of this useful and necessary practice can be daily and plentifully seen, such as crooked feet, long toes, high feet, vertical walls, contraction, sidebones, quarter crack, navicular disease, thrush, high heels, scratches, brittle hoofs, ringbones, and all forms of lameness. Furthermore, a hoof thus neglected for a few months never, in my experience, regains its original healthy and physiological condition.

Finally, it must not be forgotten that the hoofs of the grain-fed horses grow considerable faster than those of his grass-fed brother, irrespective of the fact that the latter has to rustle for his living, thus giving his hoofs the necessary amount of wear and tear to keep them in proper shape.

PROFESSIONAL NOTES.

MODERN REPEATING FIREARMS.

Progress in the arts pertaining to the manufacture of arms has not been content with the production of magazine guns, but attention has been devoted to a self-loading system in firearms, to which the designation "self cockers" has been applied, although this expression does not entirely cover the subject. In the technical field we shall never be able to dispense with foreign words entirely, and in the case under consideration international usage in that branch of the arts which deals with the manufacture of arms has combined on the term repeating firearms (*Repetirwaffen*). As this expression is universally understood, the use of a German word does not appear to be absolutely necessary.

It is not our intention to take a survey of the wide field of modern repeating firearms, but rather to examine a particular weapon, which will be all the more interesting to officers as it is now being exhibited in the main building of the Berlin Industrial Exposition by the well-known firm of LUDWIG LOEWE & Co., who explain the details thereof to all who may be interested.

The weapon we refer to is the repeating pistol of the Borchardt system. Its construction involves a movable barrel, and the recoil of each shot opens the breech, draws and ejects the empty shell, cocks the firing bolt, pushes the cartridge, which has come up from the magazine, into the chamber, and closes the breech, so that after each shot the pistol is ready to be fired again.

In these few words the whole program of the Borchardt repeating pistol is expressed. In its construction there are five principal parts, namely:

1. The butt, which with the trigger-guard and lock-case forms one piece, called the handle piece (2).
2. The barrel (1), attached to the forked frame (34), which leads into the lock-case.
3. The breech-block (41), with its firing bolt (43), knee-joint (47) to (49), springs and attachments.

4. The discharge mechanism (10), consisting of a trigger (10), a sear (35), safety plug (7), etc.

5. The magazine D. The illustrations herewith will serve to elucidate this description.

Examination of the separate parts of the pistol shows that the barrel, which is made of the best steel, has a calibre of ".3012" practically the same as our carbine, with four grooves, making one turn in ten inches.

The barrel is screwed into the framework which is connected with the lock-case. The recoil of discharge drives the barrel and the framework to which it is secured—which also contains the mechanism for closing the breech—directly to the rear in prolongation of the axis of the bore, suitable projections sliding in the grooves of the lock-case.

At the end of the forked frame there is a connecting pin (56) fitted in like an axle. The rear limb of the knee-joint, lying between the arms of the forked frame, swings about this pin, and its projecting ends pass into a slot in the lock-case, thus limiting the movements of the barrel. In order to protect the connecting pin against lateral displacement, the slot is covered with plates (24). The rear end of the knee joint carries three friction rollers, and is made large enough to fit in the space between the walls of the lock-case.

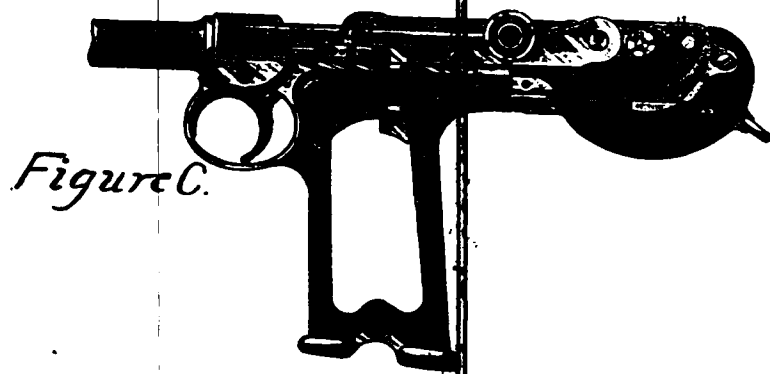
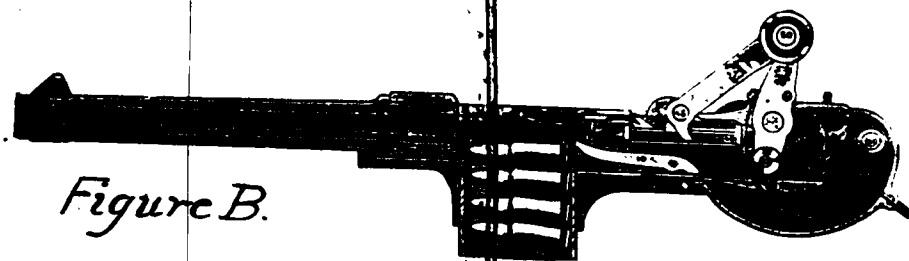
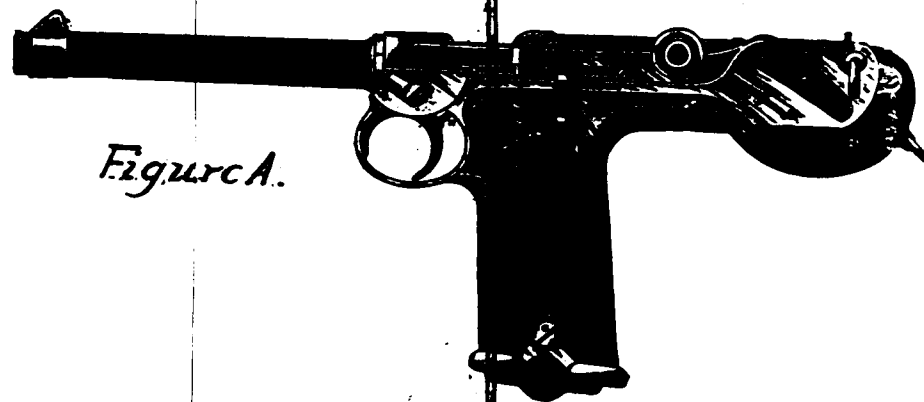
The middle of the knee-joint, which rises when the pistol is opened, straddles both arms of the forked frame (34), and has a knob on the left side by means of which the mechanism can be opened by hand. On the right side there is a catch lever which, when the mechanism is closed, snaps over a hook riveted to the gripe.

Thus we see the rear link (49) of the knee joint securely attached by means of the connecting pin, the middle, however—and with it the joint proper which rises—free for movement. The fore end of link (47) is attached to the breech-block (41) by a hinge joint, so that when the knee-joint rises the breech-block makes a horizontal movement to the rear, guided by grooves in the forked frame, into which two ribs on either side of the breech-block fit.

The left rib of the breech-block is itself grooved in the direction of its length, so as to make room for the nose of the sear (35). The firing-pin lug comes into this groove; when the breech-block is pushed forward this lug is engaged by the nose of the sear and the firing-pin is cocked.

The firing-pin (43) is a hollow cylinder with lug, as stated. In the hollow we find the firing-pin spring, the rear end of which rests against the screw-plug (42), closing the rear end of the breech-block.

The front end of the breech-block is countersunk to receive the cartridge. On top there is a spring extractor with claw, and at the bottom a slot for the spring ejector (14), both of these devices come into play as soon as the breech-block moves to the rear, that is, is drawn back by the knee-joint.



The rear end of the lock-case is closed—with exception of the apertures necessary for springs—by means of the curved piece (19). Through two ears at the extreme end of this curved piece a screw is passed which serves to secure the cover for the spring which is inserted between the walls of the lock-case, and also to maintain the closing spring in its proper position. The shorter arm of this spring rests against the lower wall of the lock case, it is then bent over a bolt secured to the spring cover and passes forward in a long curve, the distal end hooking over a stirrup at the end of a swinging hamper attached to the rear link (49) of the knee-joint.

A second spring—the recoil spring—is secured at the rear of the lower portion of the lock-case by means of a pin. The front end of this spring is bent upwards.

The repeating mechanism of the pistol operates as follows:

When the pistol is fired the barrel, the frame to which it is attached, and the hinge mechanism move backward (118 inch) pushed by the recoil until the friction rollers of the knee-joint come in contact with the curved butt piece and by its shape are forced downward. In this way the knee-joint is raised at its middle hinge and the breech-block, as already stated, is drawn back, the empty cartridge shell impinging on the ejector (14), is thrown out after having been withdrawn from the bore by the extractor at the very beginning of these movements.

The momentum of the movable parts produced by the recoil overcomes the tension of the firing pin spring and the closing spring, so that the recoil spring which catches the friction rollers has but little to do to take up the remaining forces. For this reason the pistol causes only a very slight blow to the hand of the person firing it.

As soon as the momentum, produced by the recoil, has been expended in opening the parts, the return activity of the compressed springs goes into operation.

The closing spring, assisted at first by the recoil spring, straightens out the knee-joint, the breech-block shoves the cartridge, which has come up from below, into the barrel, which is also moving to the front again, and the lug of the firing pin is held by the nose of the sear, with the firing-pin spring compressed. These movements take place so rapidly that the eye is unable to follow them.

The sear makes the necessary movements at the same time, so that immediately after the automatic closing of the breech the weapon is ready to be fired again.

The ammunition for this repeating pistol consists of loaded metallic cartridges with primer in the base. The cartridges are forced up from the magazine, inserted into the gripe by the pressure of a spring, and placed in front of the breech-block as soon as the latter in opening has reached its greatest distance to the rear; and after insertion in the chamber of the bore and closing of the breech-block the piece is discharged by pressure on the trigger, which releases the firing-pin.

The magazine (D), is made of sheet metal. It is inserted into the hollow gripe from below and is held in place by the spring holder (8), which is situated on the left side of the lock-case. A slight pressure on the holder releases the magazine so that it can be drawn out from the bottom of the gripe and a filled case inserted in its place.

The zig-zag spring formerly used in the magazine has been replaced by two spiral springs, and the metal walls have been indented, thus strengthening the magazine. Details of the magazine are shown in Figure D.

The cartridges are held in position against the pressure of the spiral springs by lips of the lateral walls of the magazine, which partially cover the rear half of the upper cartridge. The rear portion of the upper end of the magazine is rounded off somewhat, so that the breech-block in going forward can take the top cartridge from the lips of the magazine and push it into the bore.

The spring of the magazine-holder also reaches under the safety-bolt (7), which is situated in a groove cut in the left outer wall of the lock-case. When the safety-bolt is down its upper end is flush with the edge of the lock-case. To place the pistol at "safety" the bolt is pushed upward over the rear arm of the sear, behind a projection thereon. The sear is thus prevented from giving way upward, and at the same time the barrel and the trigger are secured, and opening of the knee-joint is prevented. Both the safety device and the magazine-holder are conveniently operated by the thumb of the right hand. The rear sight is attached to the upper surface of the curved piece of the lock-case; the front sight is fixed on the barrel near the muzzle. A long line of sight is thus obtained which permits very accurate aiming.

The handling of the Borchardt repeating pistol is extremely simple, and taking it apart and putting it together again does not produce any difficulties. To load the magazine, seize it with the left hand, push the cartridges under the projecting lips with the right hand, assisted by pressure with the index finger of the left hand on the cartridge about to be inserted. The greatest load consists of eight cartridges. The magazine is placed in position by inserting it into the opening of the gripe and pushing upward until the magazine-holder seizes it. A slight tap with the left hand against the bottom of the magazine will usually cause the holder to snap into place.

The barrel is loaded by seizing the knob of the knee-joint and pulling back until the breech mechanism is completely open (Figure B), and then releasing the knob. Pressure from the large closing-spring, which was compressed when the mechanism was opened, will push the top cartridge into the bore. The weapon is now loaded, cocked and ready to be fired. The pistol is fired by the usual pressure on a trigger. After each shot the pistol remains loaded and cocked. If we do not wish to fire the whole number of cartridges the safety device is pushed up with the thumb.

To take out the magazine, press on the button of the magazine-holder with the right thumb and withdraw the magazine from the bottom of the gripe. This can also be done when the pistol is at "safety," and by means of the holes in the walls of the magazine the number of cartridges remaining therein may be ascertained.

We shall now go into some detail as to the features of this pistol.

The weight of the pistol with a barrel 6".06 long is 2½ pounds; with a barrel 7".48 long the weight is 2½ pounds. The magazine weighs 1.94 ounces; the loaded cartridge 155.1 grains; the cartridge shell 71 grains; the steel-coated bullet 77.1 grains; the powder about 7 grains. The length of the cartridge is 1.38"; the caliber is .30"; the number of grooves is 4; initial velocity, taken at eighty-two feet from the muzzle, is 1,312 feet. (For hunting and target pistols special barrels and ammunition are used.)

When we come to consider the properties of the repeating pistol of the Borchardt system we observe, in the first place, that its exterior form causes surprise because it is unusual and appears strange. Thus the rear part with all its mechanism lying behind the gripe and projecting over the wrist, is especially striking. This is an important feature in the *mêlée* and in street fights, and constitutes an advantage which the Borchardt pistol possesses over all revolvers and pistols the rear end of which terminates with the gripe. For in the *mêlée*, when we desire to knock the pistol out of an opponent's hand, we endeavor to deliver a blow on his right wrist which will generally cause the weapon to drop to the ground. But with the Borchardt pistol this is impossible, for the lock-case with its mechanism completely protects the wrist—an advantage which certainly is not of small value.

But when we take up this weapon and fire with it our surprise is increased because of its many ballistic and other properties, which cause the construction to appear as a truly remarkable one, since it seems to satisfy all the conditions of a useful military weapon.

The various experiments made with it have shown a very flat trajectory as well as small horizontal and vertical deviation.

The accuracy of the weapon is increased, moreover, by the comparatively long distance between the sights and the very slight recoil. It is favored, rather than injured, as we are prone to believe, by the movement of the barrel to the rear, for the barrel is constantly opposed by the uniform resistance of the springs acting as a counterpoise, and the movement of the weapon is always in a direction coinciding with the axis of the bore. Numerous practical experiments have fully established this favorable fact.

When we desire to change our aim rapidly from one object to another, the central location of the center of gravity becomes a matter of importance; in this weapon the unfavorable effect of a preponderance of weight in front of the gripe existing in other pistols is entirely removed. This is of great value in mounted

practice at the faster gaits, especially at the gallop, as is the custom in America where only one-tenth of the allowance of ammunition for pistol practice is used dismounted, the remainder being fired from the back of the horse.

Precision in loading contributes to the accuracy of the weapon. As a perfectly fine-grained powder is used the accuracy of loading can be adjusted to within one-twelfth of a grain.

The ballistic effect of the bullet is considerable; at eleven yards it will go through two men, one standing behind the other. Or it will penetrate twenty $\frac{1}{16}$ inch for boards set up with half-inch spaces between them, or a swinging steel plate $\frac{1}{4}$ inch thick. At 550 yards it will still enter over two inches into fir.

The facility with which the repeating pistol is handled is noteworthy. The weight of the weapon is small (23 pounds), the cartridge is light, the recoil is scarcely perceptible, and the rapidity of fire is incredible, almost like lightning. Twenty-four shots can be fired in ten seconds, provided the firer has two filled magazines at hand, for the magazines can be changed in two seconds. In the operations of removing and replacing the magazine and of removing the safety device the pistol is retained in the right hand. A comparison with the instructions necessary for loading and unloading the ordinary cylinder revolver will establish the great advantage of the repeating pistol in rapidity of loading.

The rapidity of fire is of the greatest interest. The question arose: What is the limit of the rapidity of fire of this weapon? Not how fast can the firer shoot it, but of what rapidity of fire is the pistol capable without failure in the mechanism.

To answer this question an experiment was made with a target consisting of a broad strip of paper attached to rollers. The pistol was placed in a vise and the trigger was so arranged that the pistol was fired automatically as soon as the breech-block was closed after each shot.

The details of this experiment are as follows: Calibre of pistol, .3012"; length of bore, 7".48; weight of the bullet, 77 grains; weight of the Walrode smokeless powder charge, 7 grains; rate of movement of the paper strip, 20.5 feet per second; distance between the first and eighth shot holes, 6.46 feet; time required for the eight unaimed shots with automatic trigger pull = $\frac{3}{32}$ = .3134 of a second. As there are seven intervals of time between the first and eighth shots, each shot followed its predecessor at interval of $\frac{.3134}{7}$ = .0448 of a second time, that is, at the rate of $22\frac{1}{4}$ shots per second, or of 1,340 shots per minute.

Repeated experiments conducted in the presence of the writer of these lines showed that this is not a case of theoretical calculations, but of undeniable facts.

Objection might be made that such enormous rapidity is valueless, because of no practical use to the marksman. Of course no man is able to fire as rapidly as an automatic machine, yet the rapidity here developed proves the excellence of material and accu-

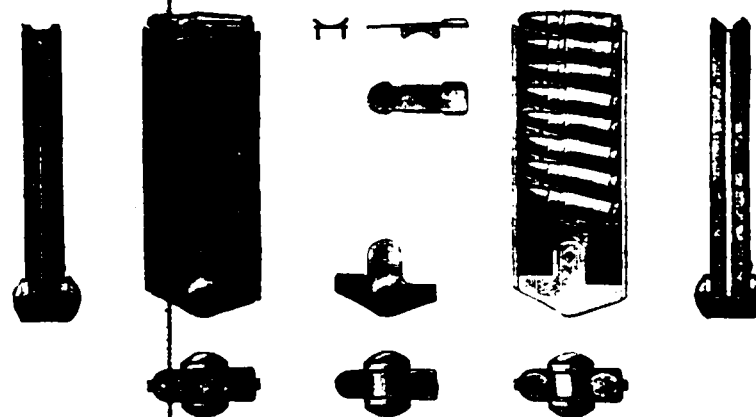


Figure D



Figure E.

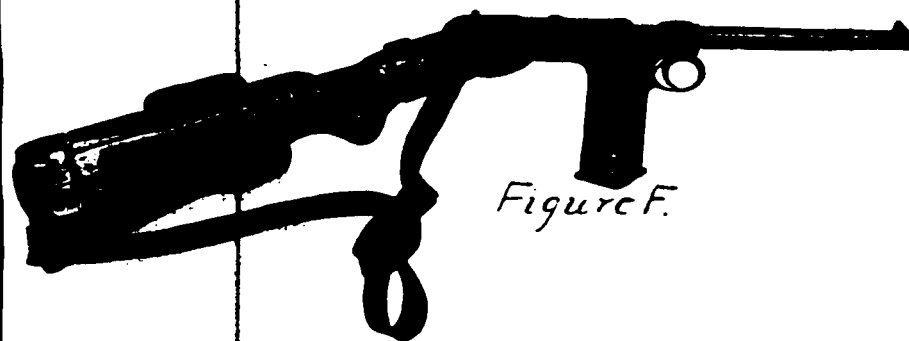


Figure F.

rate working of all parts of the mechanism, and justifies the conclusion that in the most rapid fire of which the marksman is capable with the Borchardt repeating pistol miss fires are practically impossible.

In an experiment of this kind the pistol was placed in a vise about one yard above the floor. The first shot was fired by pulling back the knob of the knee-joint to the fullest extent and then quickly releasing it. The eight shots produced almost a single, somewhat prolonged sound; the opening and closing of the mechanism could not be observed from the rear, but only by standing at one side. The empty cartridge-shells were thrown out vertically, and the first empty shell was heard to strike the board floor long after the eighth shot had been fired.

These facts are given simply to furnish proof of the faultless working of the mechanism, and hold good whether the series of shots are fired in rapid succession or after prolonged intervals. The reason of this lies in the fact that the mechanism does not become fouled in firing; all the gases have disappeared through the muzzle and there is no pressure in the bore when the breech-block is opened. It is therefore impossible for any residue or unconsumed powder to be driven into the opening mechanism, and thus all fouling is avoided. In case of exposure of the parts to moisture, dust, etc., they worked as satisfactorily as before.

The separate parts of the pistol are not very numerous and are of solid construction throughout; moreover, they are exchangeable, and taking apart and putting together does not take much time. It is kept in order in the easiest way imaginable; a drop of oil on a piece of wadding or soft rag is sufficient to wipe and lubricate the mechanism after prolonged practice in shooting.

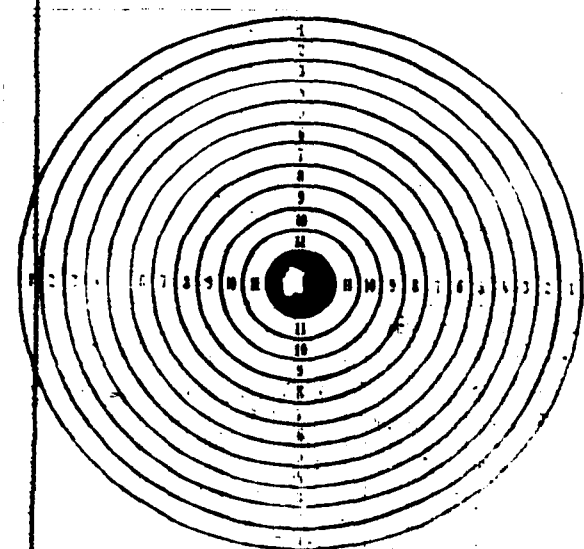
The spare parts are kept in a small case, which can be carried like a hand-bag; it contains a jointed wiping rod, a screw extractor and a block of wood to hold the breech-block open. All the parts are of course made of the best materials. An extremely valuable feature lies in the possibility of using the pistol as a carbine, for which purpose a stock is provided, so that the usual aim with the cheek resting against the stock may be taken.

On the march the pistol is strapped to the stock with two small straps and placed in a leather holster, which is carried by means of a strap over the left shoulder, the weapon hanging behind the right hip. In proximity of the enemy the two parts are unstrapped and the stock is secured to the pistol by a swallow-tail attachment tightened by a screw, an operation which is easily and quickly accomplished. The weapon thus converted into a gun remains attached to the carrying strap. The firer can then seize the gun stock with the right hand, bring it to the shoulder and pull the trigger with the index finger of the left hand. Even with right-handed persons this causes no difficulty; it is scarcely noticed that the finger of the left hand is used to pull the trigger, and the fact that the right hand is used only to hold the gun to the shoulder without attention to the

trigger, is found to be agreeable rather than otherwise. Accuracy of aim is increased thereby.

Attachment of the stock to the pistol is shown in Figures E and F.

In Figure E we see the left side with the cheek piece attached to the stock; whereas in Figure F the leather holster fastened to the right side of the stock for the reception of the detached pistol is shown.



— Figure H. —
Diameter of Target 12.3
Bull's Eye 1.5
Number of Shots 8

It is by no means intended that the Borchardt repeating pistol should completely displace our somewhat out-of-date army revolver, for not all the troops armed with a revolver would need a repeating pistol. The price, 140 marks, of the complete pistol with all the attachments and parts, including stock and holster, would indicate rather limited use in the army, although in the manufacture of large quantities a reduction in price is to be expected. But cavalry officers, mounted messengers, and military cyclists would, with the Borchardt repeating pistol, be much better equipped for self-defense, in case they are thrown on their own resources, than with the army revolver. This pistol must also be regarded as an incom-

parable weapon for all officials armed with firearms, such as policemen, revenue officers, foresters, prison guards, etc.

To complete this article we state that the Borchardt repeating pistol has been practically tested by an Austrian technical committee in Vienna, by the Naval Small Arms Board at Newport, and by the Small Arms Proving Commission at Spandan-Ruhleben. — *Militär-Wochenblatt*, Nos. 84 and 85 of 1896. Translated by Lieutenant J. T. Dickman, Third Cavalry.

Through the courtesy of Captain R. K. EVANS, Twelfth Infantry, late military attaché at the Court of Berlin, we had the pleasure of examining the Borchardt pistol and of testing its accuracy, penetration, rapidity of fire and range. It is a beautiful piece of mechanism, and we believe that it will easily satisfy all the claims made for it in the above article.

We reproduce a target made by Captain EVANS in the shooting gallery of the manufacturers, LUDWIG LOEWE & Co., of Berlin. Distance, fifteen yards; diameter of bull's eye, one and one-half inches; pistol attached to stock.

J. T. D.

A FIELD EXERCISE AT FORT LEAVENWORTH.

During the past year the Japanese press announced, at various times, that the future maneuvers in that country would be executed under conditions approximating more closely to the realities of war than any that have hitherto been carried out in European armies. The character of the innovation contemplated is clearly indicated in the following extract:

"The chief of the General Staff, desiring that the exercises of this year be not an idle show, has decided that on each maneuver day a certain number of companies and batteries shall be directed to execute, for short periods of time, actual firing with ball cartridges. This firing to commence upon receipt of the order therefor, no matter in what position the designated unit might be, care being taken to keep the selected moment a secret."

This measure was discussed in the superior war council of Japan where the maneuver regulations embodying this feature were compiled. The maximum number of ball cartridges to be fired is specified with great minuteness. The reason upon which the council based acceptance of this proposition was the necessity of having infantry thoroughly broken to fire discipline, so that they might gain thorough confidence in the efficacy of their own fire, and at the same time know how to take advantage of all the features of the ground to escape the effect of the enemy's fire.

The report of the Japanese Chief of Staff terminates as follows:

"The instruction of our army demands the sacrifice that the introduction of actual firing into the exercises carries with it. A little blood spilt in time of peace, opportunely, will economize rivers of blood which would be shed by our infantry in battle against Europeans armed with improved weapons."

We shall not go into the possibilities of this innovation. It seems as if the many troubles of the unhappy umpire are to sustain a further increase, and that in future both sides will pour hot-shot into him, actually as well as verbally.

It will no doubt be some time before cis-atlantic imitations of warfare arrive at the above degree of realism; in the meantime, with all due regard for eutaneous entirety, much valuable instruction of a practical nature may be imparted in field exercises conducted according to well established methods. The frontier as a school having disappeared, there is no other way of illustrating and fixing in the minds of our young officers the elementary principles governing the handling of troops in campaign.

Book knowledge in most cases is so evanescent that it may safely be asserted that a few practical exercises, properly conducted, produce a more lasting impression than months of theoretical plodding. The following are the more important sources of the benefits to be derived from field exercises with troops:

(a) The duties of the commanders before the exercise.

1. Repeated careful reading of the problem, map in hand.
2. Careful study of the ground involved in the problem.
3. Accurate conception of the situation on both sides.
4. Measurement of distances on the map and calculation of the time required by the enemy's troops, as well as our own, to march certain distances.
5. Deliberation concerning the measures likely to be adopted by the enemy.
6. Formation of a clear and precise plan.
7. Working out of a suitable disposition of the troops.
8. Drawing up and issuing of the necessary orders governing the actions of the subordinate commanders.

(b) Duties of commanders during the exercise.

1. The proper time for starting the troops from their parade grounds having been selected, the commanders cause the necessary calls for their formation to be sounded.
2. The troops are then marched to the designated rendezvous in the proper manner.
3. The subordinates are assembled and the exercise is explained to them; the necessary orders are then issued. The instructions of the director will ordinarily indicate whether orders may be issued before leaving garrison or not until arrival at initial points of the exercise.
4. Tactical handling of the troops when approaching the enemy and in his presence. All subordinate commanders, and the troops, are benefited at this stage of the exercise.

(c) *Duties of commanders after the exercise.*

Reports, with the usual sketches, messages of subordinates, etc., are required to be rendered within twenty-four hours.

(d) *Discussion.*

After the exercise the officers who participated are assembled. The director states the problem, explains its various features, indicates a solution, and criticises the solution of the commanders. Opportunity is afforded to ask questions and to enter into a brief discussion of various phases of the exercises, after the movements have been represented on a large map or blackboard.

The benefits which may thus be derived are too obvious to require more than mere mention. A few moments may suffice to illustrate, practically, whole pages of "Security and Information." Inexperienced commanders, when suddenly confronted by an emergency, are likely to be seized with that indefinable feeling of helplessness which in peace maneuvers is the cause of wrong commands and awkward movements, and in time of war is the prelude to flight. Practice in handling troops, and the habits of forethought brought out in these field exercises will, in naturally quick minds, go a long way towards cultivating that mental state of instant readiness which is one of the characteristics of genius. On the principle of the runner who wears slugs of lead in his shoes while exercising, in order to be lighter on his feet on the day of the test, the young officer who has had opportunities to command relatively large bodies of troops, will handle his company or platoon with comparative ease.

At some of our schools for officers, such exercises now form a considerable part of the course of instruction. As an illustration of what is being done in this line at the most important of our service schools, we reproduce the following rules and exercise:

RULES FOR FIELD EXERCISES AT THE U. S. INFANTRY AND CAVALRY SCHOOL.

1. The statement of the general idea is furnished to the umpires and to commanders of opposing forces.
2. Special instructions given to either commander are not communicated to his opponent, but are furnished to the umpires.
3. Umpires wear a white band on the right arm. Spectators are expected to wear one on the left arm.
4. The decision of an umpire must be prompt, irrevocable, and at once obeyed. No umpire should allow himself to be prejudiced for or against either side.
5. The opposing forces are designated as the Blue and the Brown. The Blue, including officers, wear the regulation uniform with forage caps. The Brown wear canvas fatigue coats and campaign hats, their officers wearing campaign hats.

6. Before leaving the parade grounds, rifles, carbines, pistols and cartridge belts will be inspected by the officers to see that no ball cartridges are taken.

7. Whenever the senior umpire judges it necessary to suspend movements he will cause a trumpeter to sound "Recall." This signal will at once be repeated by all trumpeters. All forces will cease firing, halt and remain in their positions until the signal "Attention" is given for resuming operations, which signal is repeated by all trumpeters. The "Recall" followed by "Officers' Call" will signify that the exercises are at an end.

8. The trumpet signals, "Recall," "Attention" and "Officers' Call" will not be ordered by any other officer than the senior umpire. The signals "Cease Firing" and "Halt" may be ordered by any umpire and are applicable only to such portion of the line as he may direct.

9. The similitude of actual warfare will be maintained as far as possible. An unmeaning fire is forbidden.

10. Forces advancing under fire which in actual battle would cause their annihilation will be ruled out of action by an umpire.

11. If forces be halted in close order under severe fire the umpire rules out of action such numbers as he deems proper.

12. Officers usually dismount at 600 yards from hostile fire unless they be cavalry officers engaged in mounted action.

13. Umpires place any officers out of action who remain mounted at a halt within 300 yards of hostile fire, or, if on foot, remain standing unsheltered within that distance.

14. The actual collision of opposing forces or individuals is a punishable offense in these exercises. When attack and defense have reached the stage just preceding the crisis, the senior umpire suspends all movements.

15. Civilians passing must not be stopped; therefore, neither party should question them about the other's movements.

16. Private grounds off the reservation will not be entered without permission.

17. Blank cartridges must not be fired at less than 100 yards from the supposed enemy.

18. All officers see that the men do not fire without command, excepting when thrown on their own responsibility, as a scout, sentinel, or member of a patrol; that they do not fire after the command "Cease Firing"; that they never fire while moving; that they always take careful aim with the elevation ordered.

19. Officers commanding organizations see that the number of rounds fired is limited to that which is sufficient to denote the position occupied or the object to be attained by fire.

20. Firing in the immediate vicinity of haystacks and buildings is forbidden.

21. Cavalry charges stop at 100 yards from the supposed enemy.

22. If a cavalry commander, intending to use fire action, allows a mounted opposing force to approach prepared for charging with adequate strength and within 200 yards of his position, before his own troops are formed for firing dismounted, the advantage will be awarded to the mounted party unless the ground is manifestly unsuited to charging. If adequate dismounted fire is opened upon a mounted party within 500 yards, the advantage will be awarded to the dismounted party.

23. When the flank of a position is turned, unless a change of front with sufficient force is executed in time to meet it, the turned party must fall back to a new position. If the turning party throws an adequate fire upon the flanks of its opponent in line, the umpire rules out of action as many men, or such forces, as he deems proper.

24. If a party interpose between an inferior party and the main body of the opposing force, without being subjected to a superior fire from the main body, the intercepted party must surrender. If the interposing party be caught between the simultaneous attack of the main body and the intercepted party, the interposing party must surrender.

25. A scout or member of a patrol fired upon within a range not over 150 yards and ordered to surrender by superior numbers must comply with the order at once. He must surrender if summoned within 100 yards by one opponent who has the drop on him. If fired upon at a distance greater than 150 yards he will escape unless an umpire rules otherwise. Enlisted men violating this rule will be followed and identified with a view to preferring charges under 62d Article of War.

26. A column fired upon by artillery at less than 1,800 yards must deploy. Umpires will allow an exception when the commander judges accurately that the ground affords shelter to the force.

27. Each commander will submit a report of operations at such time as may be designated. He will call upon his subordinates for such reports as he deems necessary to accompany his own.

28. An officer will be detailed to accompany each command as topographical officer. He will prepare a map of the field and submit it to be forwarded with the report of the commander. This applies also when detachments are necessary to a considerable distance from the main force.

29. Should an officer claim that the ruling of an umpire is erroneous he must give his reasons in writing.

30. The decision in regard to advantage obtained or lost in the operations as a whole, and remarks on the action of commanders, will be made after the reports have been received.

UNITED STATES INFANTRY AND CAVALRY SCHOOL. DEPARTMENT OF MILITARY ART.

Field Exercise No. 5.

GENERAL IDEA.

A Blue army, deficient in cavalry, is operating towards the south along the west bank of the Missouri River, and has reached Kansas City; it depends on the Missouri Pacific Railroad for its supplies. Raiding forces of Brown cavalry and guerillas make it necessary that the railroad be strongly guarded.

SPECIAL IDEAS.

Blue.

The commander of the Twentieth Regiment of Infantry is ordered to protect the Missouri Pacific Railroad tracks on the military reservation of Ft. Leavenworth. The section between the prison brickyard and the Rock Island bridge has been fortified and will be held by the Third Battalion of the regiment.

Start: 1 P. M.

Brown.

A raiding force, composed of the First Squadron, Sixth Cavalry, and some guides, is ordered to destroy the Missouri Pacific Railroad tracks, trestles, etc., on the military reservation of Fort Leavenworth. The portion between the prison brickyard and the Rock Island bridge is known to be secure against attack.

Rendezvous: On Sheridan's Drive, near rock quarry, at 1 20 P. M.

SOLUTION OF THE PROBLEM.

The Blue commander drew up the following general plan:

To occupy the northern portion of the line strongly at points where cavalry could operate, at the same time sending scouts well to the front to give warning of the approach of the enemy, and keeping the track well patrolled.

To occupy the southern part of the line with a considerable force near the reservoir and at points where roads lead down to the track, holding positions commanding the track, and arranging for cross-fire on exposed portions. All culverts and trestles to be guarded by small detachments to prevent destruction by patrols or individuals slipping through the line. All available means of observation to be utilized.

He accordingly drew up and issued the following order:

FIELD ORDERS
No. 1.FORT LEAVENWORTH, KANSAS, April 15, 1897.
12:40 P. M.

Distribution of Troops:

(Twentieth Regiment of Infantry.)

First Battalion (Lieutenant HUGHES), north of brickyard.

Second Battalion (Lieutenant PRICE), Rock Island bridge to North Leavenworth.

Third Battalion (imaginary), from brickyard south to Rock Island bridge; position is fortified.

I. The enemy, composed of cavalry and guerillas, is in the vicinity of Fort Leavenworth, Kansas, threatening the destruction of our line of communication, the Missouri Pacific Railroad.

II. The regiment will protect that portion of the line which is on the military reservation of Fort Leavenworth.

III. At 1 P. M. to-day the regiment will assemble.

The First Battalion will protect the track from the brickyard to the northern limit of the reservation, a distance of 700 yards. The Second Battalion will guard the track from the Rock Island bridge to the southern limit of the reservation, a distance of 2,300 yards. The Third Battalion (imaginary) is supposed to hold fortified positions between brickyard and Rock Island bridge.

IV. I shall be in the vicinity of the Rock Island bridge.

J. R. LINDSAY,
First Lieutenant, Eighteenth Infantry.

Verbally to assembled commanders.

Let us now look at the plan of the Brown commander:

Plan of Attack for the Brown Cavalry Squadron in the Solution of Field Exercise No. 5. (This plan is subject to change.)

On arrival at rendezvous, after a careful explanation of the problem, six officers' patrols of six men each will be sent out to locate the position of the guard left by the Blue army. The terrain and position will be divided equally among the patrols.

Three of the patrols will be sent east and southeast to explore the flanks and front of the position from the Rock Island bridge to Leavenworth, for the purpose of locating their forces on that part of the line, with orders to return and report.

Three similar patrols will be sent north, northeast, and north northeast, to discover the enemy's strength and position on that part of the line, with orders to return and report. More careful explorations will be made to the north, with the idea of attacking in that direction.

The patrol sent to the extreme southeast of the line will not be expected to join the squadron on account of the distance it has to travel, but will be given high explosives, with orders to blow up a portion of the track between Corral Creek and the town, secretly, if possible.

The patrols will be given one hour to make their reports. The

high points on Sheridan's Drive will be occupied at once by patrols, at a gallop.

When the patrols have reported, the squadron will move at a trot, under cover, to the most vulnerable point of the enemy's line. When the squadron has approached as near as it can mounted, three troops will dismount for fighting on foot. The remaining troop will try to turn the enemy's outer flank, mounted, and then dismount in an attempt to gain the railroad and blow it up or disable it.

The Brown commander therefore issued the following order:

ROCK QUARRY, SHERIDAN'S DRIVE,
NEAR FORT LEAVENWORTH, KANSAS,
April 15, 1897 — 1:20 P. M.DETACHMENT ORDERS
No. 1.

Order of March.

Advance Guard:

Troop "K," Second Lieutenant CHAYTON, Fifth Cavalry, commanding.

Main Body at 200 yards:

Troops "F" and "B," and Troop "C" except one platoon (First Lieutenant STEVENS, Ninth Cavalry, commanding).

Rear Guard:

One platoon, Troop "C," Second Lieutenant REEVES, Fourth Cavalry, commanding.

I. The Blues have left a strong guard to protect the Missouri Pacific Railroad. It is open to rail only between the northwest corner of the military reservation and the prison brickyard, and between the Rock Island bridge and the southeast corner of the reservation.

II. Officers' patrols will find the enemy and report point most favorable for successful attack. Reports will all be made before 2:30 P. M., and all patrols will return here by that time, except one exploring Corral Creek south to Leavenworth; this patrol will send back report. In case squadron has to leave present position, guides will be left to conduct patrols to their troops.

III. The advance guard of the squadron will be ready to move at 2:35, and main body at 2:40 P. M.

The three leading troops, under command of Lieutenant STEVENS, will, on reaching position indicated by squadron commander, dismount to fight on foot under cover, and, after allowing ten minutes for the flanking detachment to gain its position, advance on the enemy.

IV. The fourth troop, including rear guard, commanded by Lieutenant REEVES, will remain mounted, and will take the trot until they gain enemy's flank and rear, when they will fight on foot, and cover working party.

V. All commands will be given by signal.

VI. Horses will be left under cover with guard.

VII. I will be with advance guard until squadron dismounts, and then with flanking detachment.

Lieutenant STEVENS will command front attack.

J. M. STOTSENBURG,
First Lieutenant, Ninth Cavalry.

Verbally to assembled officers.

DISPOSITION AND MOVEMENT OF THE TROOPS.

The Twentieth regiment of infantry was formed at 1 P. M., and the battalions started at once for their respective sections. The companies of the First Battalion took positions as follows: One company a few hundred yards north of brickyard; another a little north of prison cemetery; a third near the point where the Mill-wood road first touches the railroad; the fourth at slough crossing north of the track. These positions are shown on the map herewith. The companies of the Second Battalion were posted at favorable points in the southern section, but as no demonstrations except by a few patrols were made against them, a map of that section is not furnished.

The Brown force halted on Sheridan's Drive near the rock quarry (about 600 yards south of the one shown on the map) at 1:20 P. M. After the problem had been explained by the commander, officers' patrols started out at once, with orders to regain the squadron by 2:30 P. M., and the squadron was placed under cover down the eastern slope of the hills. When information as to location of the enemy had been received, the squadron, under cover all the way, moved towards the north. Its trail is shown on the map. Three troops dismounted near the SCHAEFFER house and deployed on the edge of the bluff; the other troop marched around North Hill, and then dismounted. All these movements were made without being discovered by the enemy. One platoon was sent to the southeast to detain a possible advance by the enemy from that direction. More than three troops of cavalry were thus brought within 150 yards of the isolated company of infantry at slough crossing before the Blues became aware of their presence. The advance of the third company, after firing commenced, is shown in shaded lines.

COMMENTS.

The leading idea when this exercise was devised, was to impress upon the participants the great advantage to an infantry command of having some cavalry for purposes of exploration and rapid conveyance of messages and orders. In this case exploration on the part of the Blues was defective much more so than the commander had intended. The Browns were thus enabled to bring a superior force against an exposed part of the line, which, under the circumstances could not have been reinforced in less than ten minutes. The Blue company behind the railroad embankment at slough crossing was in a very exposed position. It had no means of retreat to the rear as the high water almost touched the feet of the men. If part of the Brown force had crossed the track south of their position, the Blues would have been enfiladed on both flanks and cut off.

In the tactical execution of the final attacks some errors were committed which we shall not discuss here. Enough has been given to show that such exercises may be made both instructive and interesting.

J. T. DICKMAN,
Lieutenant, Third Cavalry.

U.S. INFANTRY AND CAVALRY SCHOOL.

DEPARTMENT OF MILITARY ART.

MAP

OF

FORT LEAVENWORTH, KANSAS.

AND VICINITY

COMPILED FROM THE BEST SOURCES

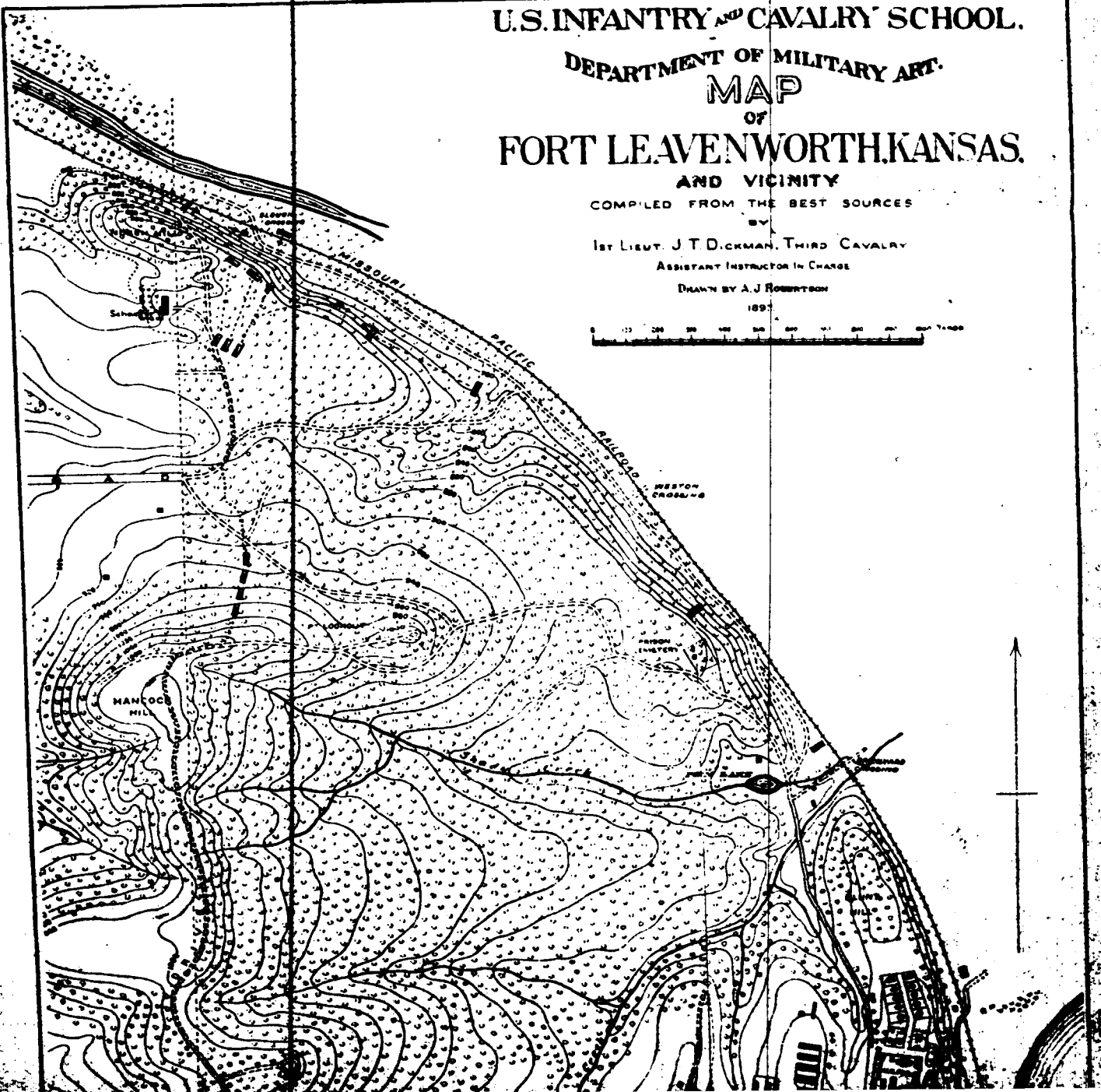
BY

1ST LIEUT. J. T. DICKMAN, THIRD CAVALRY

ASSISTANT INSTRUCTOR IN CHARGE

DRAWN BY A. J. ROBERTSON

1891



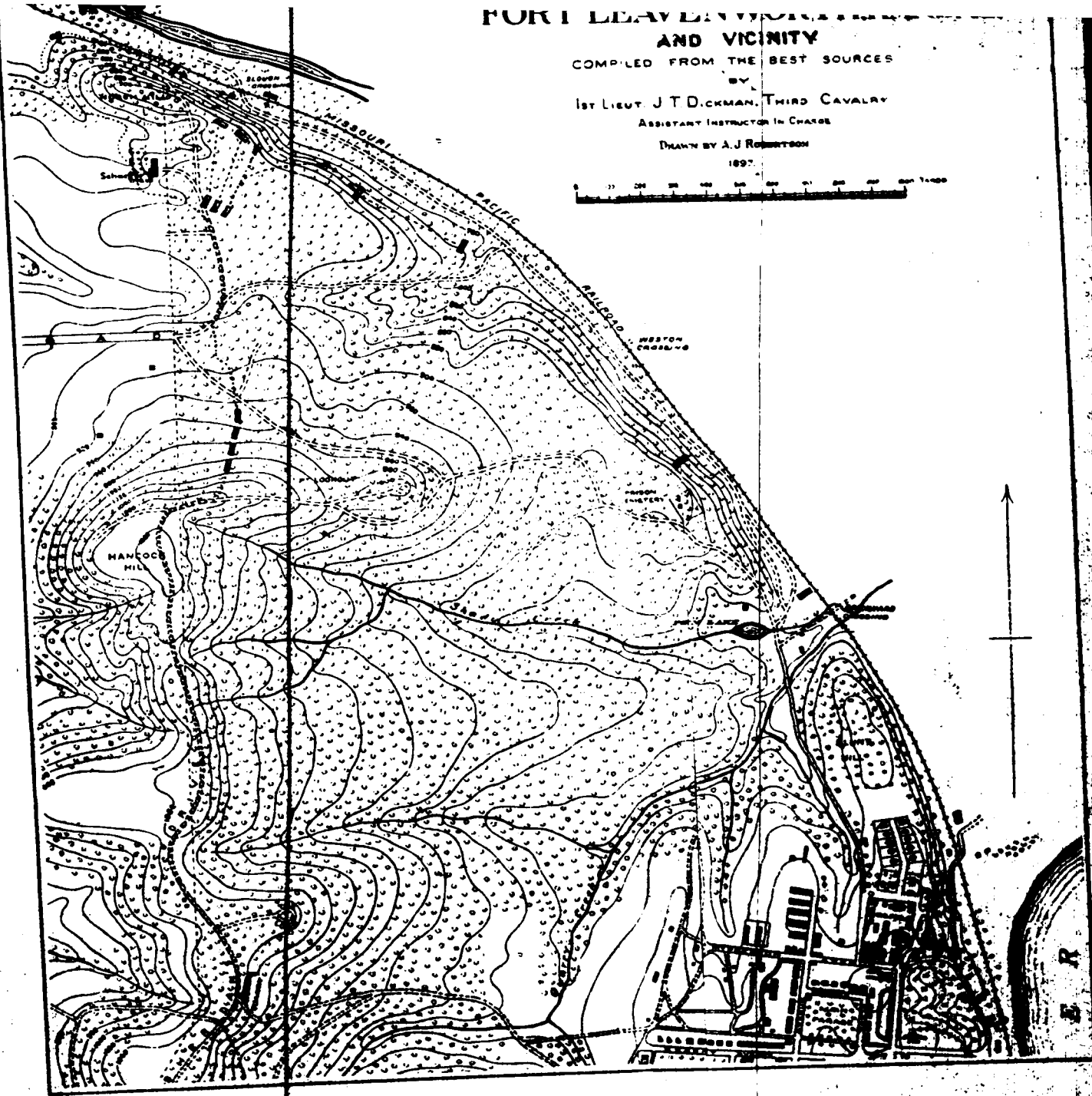
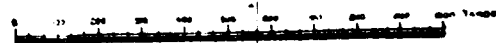
FORT LEAVENWORTH AND VICINITY

COMPILED FROM THE BEST SOURCES

BY
1ST LIEUT. J. T. DICKMAN, THIRD CAVALRY
ASSISTANT INSTRUCTOR IN CHARGE

DRAWN BY A. J. ROBERTSON

1897



FIELD EXERCISE AT FORT RILEY.

RULES FOR THE GOVERNMENT OF FIELD EXERCISES AND COMBINED
MANEUVERS AT FORT RILEY, KANSAS.

In order that field exercise and combined maneuvers may be carried out in as realistic a manner as possible, all duties will, as far as practicable, be performed precisely as they ought if the assumed conditions actually existed.

In carrying out these exercises the following general rules will be uniformly observed:

(a) The opposing forces will be designated as the "Blue" and the "Brown." The former will be attired in the regulation uniform, with forage caps or campaign hats. The latter will wear brown canvas fatigue suits and campaign hats.

(b) Where topographical and road sketches are required, the scale will usually be three inches to the mile.

(c) All troops will march fully armed and equipped, and will carry ten blank revolver and ten blank carbine or rifle cartridges.

(d) All instructions issued for exercises will be marked in the upper left hand corner "Course of Instruction, Cavalry and Light Artillery School, Exercise No.—" (giving serial number of exercise). The instructions for those exercises in which the artillery participates will be marked "Combined Exercise No.—" etc. All reports, itineraries, sketches, etc., submitted pursuant to said instructions will be marked in a similar manner in the upper left hand corner, and be signed at the bottom. When reports are accompanied by sketches made in Field Note Books, a reference will be made on bottom of report showing in which volume of F. N. B. the accompanying sketch will be found.

(e) An officer will be detailed to accompany each command as topographical officer. He will prepare a hasty sketch of the field of operations and deliver it to the senior umpire.

(f) Before leaving the Post the cartridge belts of all soldiers who are to take part in any exercise will be carefully inspected to see that no ball cartridges are mixed with the blanks. Whenever exercises are to begin at designated positions a second inspection will be made upon arrival at positions. *These inspections must be made with extreme care and by officers.*

(g) Officers and non-commissioned officers in all exercises will see that patrols, flankers, scouts, videttes, etc., are properly instructed and take advantage of all cover available.

(h) Officers must appreciate that it is their duty to avail themselves of all cover possible for their commands. Whenever necessary to expose them it will be done at a fast pace and in the most favorable formation.

(i) Spectators must not go ahead of the advance party of either side, nor gather in positions liable to mislead combatants.

(j) Commanding officers should not specify, except in general terms, where and how batteries should be brought into action. The exact spot and manner should be left to the battery commander, upon whom rests the responsibility for the proper handling of his battery and for violation of proper principles.

(k) During the exercises, when the artillery is firing on cavalry, a yellow flag will be displayed by the battery; a white flag when firing on dismounted cavalry or infantry, and a red one when firing on the enemy's artillery.

(l) In case troops are ruled as "out of action" by the umpires, before the termination of the exercise, they must proceed as rapidly as possible to take position with their reserve or battery, sending notice without delay to their commanding officer of the action taken. While proceeding to the rear under these conditions a white flag or handkerchief will be displayed.

(m) To give juniors an opportunity to command, officers will sometimes be "excused from participation." In all cases officers so excused, unless detailed as umpires, will attend as spectators.

(n) Reports, comments, maps, etc., pertaining to the exercises will be kept in the office of the secretary of the school. All are invited to examine and read them.

(o) All members of the command are positively forbidden to carry on their persons or with field pieces, or to have in their possession, any fixed ammunition or ball cartridges of any kind whatsoever, while taking part in or attending the field exercises.

Umpires.

(a) Each umpire will wear a white band on his left arm.

(b) Firing by opposing parties will be discontinued at sixty yards, and umpires will then make a decision.

(c) Umpires should be early on the scene in cases of cavalry attack, as otherwise it might be difficult to judge. In adjudging the result, the situation of the enemy, the execution of attack, and the consideration of the respective strengths is important.

(d) Whenever phases of the exercise require suspension of the movements in any part of the field the umpire recognizing the necessity will at once cause a trumpeter to sound "Cease firing," "Halt," "Attention." The signal will at once be taken up by the other trumpeters belonging to the same body of troops, and all concerned will cease firing, halt, and remain in their positions until the signal "Commence firing," "Forward," is given. The signal for the suspension and resumption of movements will be sounded as above, whether there be any firing or not.

(e) The actual collision of opposing forces must be prevented under all circumstances. When an exercise has reached the stage just preceding the crisis of the fight, it is evident that nothing short of the actual conditions of battle could really decide the question of victory or defeat. At this stage the signal for a suspension of

movements will be given by the commandant of the school or one of the senior umpires, and the relative dispositions of the opposing forces will be carefully noted. The exercise will then be at an end.

(f) Umpires, while endeavoring to give correct decisions, should give them promptly. This rule is necessary to avoid awkward pauses and misunderstandings in the course of the exercise.

(g) Whenever a condition is brought about or action is had which, in real warfare, would be productive of results, a decision should be rendered accordingly by an umpire. If several umpires meet, the senior in rank should give the decision.

(h) Decisions of umpires being made by authority of the commandant, must be accepted. Should an officer deem them erroneous or unfair, he may appeal, giving his reasons at assembly, for discussion.

(i) Umpires should carefully avoid giving information or advice or making suggestions to combatants. They should not precede the advance parties of either side, and should also be careful not to disclose the locality of troops attempting concealment, by exposing themselves in that vicinity. Though umpires are attached to a particular side, they should not in their reports refer to "our" side or "their" side. To avoid confusion, the words "Blue" and "Brown" should be used to distinguish the opposing forces.

(j) The chief umpires will assemble their subordinates for discussion and report at such time during the afternoon of the day of an exercise as they may elect. The chief umpires will submit written reports to the secretary of the school before tattoo of the same day.

Patrols.

(a) If fired upon within 150 yards by dismounted men, scouts, or the members of a patrol in advance, riding rapidly or otherwise, will be considered captured.

(b) Should a deployed patrol be fired upon within 200 yards by a dismounted patrol on its flank, the flanker on the side nearest the enemy will halt and be considered captured. Unless much superior in numbers to the attackers, the remainder of the patrol will retire rapidly. In other cases the result and loss will be determined by the umpires.

Cavalry.

(a) Cavalry charges must stop at eighty yards from the enemy.

(b) Cavalry standing to receive a charge must be declared defeated.

(c) Should cavalry, although somewhat inferior in strength, succeed in delivering an attack upon cavalry while deploying, it should be judged victorious.

(d) In a cavalry vs. cavalry charge, no maneuvers should be made so close to the point of contact as to endanger the steadiness and order necessary in the delivery of the shock.

(e) In cavalry vs. cavalry of comparatively equal strength, and in proper formation, the victory should belong to the side last bringing up a formed reserve.

Dismounted Cavalry or Infantry.

(a) When exposed to a dismounted or infantry fire which is less than 800 yards away, bodies of cavalry can appear in attack formations only. Any flank movement made in the open, without cover, when so exposed, must be decided to the disadvantage of the cavalry.

(b) When unprepared and attacked by cavalry on the flank, dismounted cavalry or infantry, even though somewhat superior in strength, should be considered defeated, provided the attackers be not discovered until they are within 400 yards.

(c) If, before beginning to fire, a dismounted cavalry or infantry force, even though somewhat superior in strength, allows a cavalry opponent to attack in line within 300 yards, the advantage ought ordinarily to be awarded the mounted party. A screened approach and surprise is an important element.

(d) If a well directed and sudden volley be delivered at short range, by dismounted cavalry or infantry under cover or concealed, it should demoralize the party surprised to a great extent.

(e) Over a zone swept by dismounted fire at less than 800 yards, troops can move backward or forward and in attack formations only. An uncovered halt made for any length of time within this zone would necessitate an umpire's decision.

(f) When a flank is turned, the defenders must fall back, or execute a change of front, before the attacking party has delivered a heavy fire at a range of 500 yards or less.

Artillery.

(a) Cavalry cannot move as a walk when exposed to the fire of artillery which is less than 2,500 yards away.

(b) When cavalry attacks artillery in front, the charge must be made in extended order, and the escort should be attacked at the same time by cavalry in close order.

(c) When on the move, or when unlimbering or limbering up, unprotected artillery is at the mercy of a cavalry attack. Guns in action have to fear for their unsupported flank.

(d) A column fired upon by artillery at distances less than 2,500 yards must deploy or move at a rapid gait. In applying this rule, umpires will make an exception when the terrain is such as to afford shelter to the troops, or to interfere with the effective use of the artillery.

(e) Artillery cannot come into action under dismounted or infantry fire within 800 yards, excepting under favorable circumstances; behind effectual cover, for instance. This, however, would not prevent it from accompanying advancing lines under cover of

their fire, to a decisive attack, but it should not be able to unlimber at all within 600 yards of an enemy.

(f) At ranges of 1,000 yards artillery can hold out against dismounted skirmish fire, but should strong skirmish lines succeed in approaching to within 600 yards of the guns, without the latter being sufficiently protected by dismounted cavalry or infantry and proper cover, the artillery must retire promptly or be judged unfit to move.

(g) Artillery can not move into action against artillery already in action at less than 1,200 yards, unless enabled to do so by effectual dismounted or infantry fire or by ample cover.

General.

(a) When approach is gained without discovery to within less than sixty yards, captures will be made by giving the command. "Halt!" "Surrender!" No shots will be permitted at such short ranges.

(b) All officers taking part in the exercises will be assembled at such time as the commandant may designate. The chief umpires will then make their reports, after which the exercise will be discussed. The commandant will designate the hour for adjutants and orderly officers to report for orders pertaining to the next exercise.

(c) Commanding officers of the opposing forces are expected to utilize the afternoon of the day preceding the exercise in the study of the problem, terrain, etc., and in the instruction of their subordinates in matters pertaining to the solution of the problem.

GENERAL SITUATION.

A Western Division (Blue) is operating against an Eastern Division (Brown) in the vicinity of Topeka. The Western force depends upon the U. P. R. R. for supplies.

*SPECIAL SITUATION.**

Blue.

At 9 A. M. October 21st, Captain KERR with
Five companies Twentieth Infantry.
One squadron Sixth Cavalry.
Two batteries field artillery,

is guarding that section of the railroad from the Republican River bridge to Ogden. Assistance from other sections of the line cannot be counted on. A raiding party of the enemy is reported to have crossed the Big Blue River at Stockdale.

Brown.

At 9 A. M. October 21st, Captain McCLEARNAND is bivouacked at Four Mile Creek, acting under the following orders:

*Each commander was furnished with the "Special Situation" only for his own command.

PROFESSIONAL NOTES.

ARMY OF THE EAST, TOPEKA, KANSAS,
October 20, 1896.

FIELD ORDERS
No. —*Distribution of Troops:*

Captain McCLEARNAND,
Eight troops of cavalry,
One battery light artil-
lery,

- I. The communications of the enemy between Ogden and the Republican River bridge near Junction City appear to be weakly guarded.
- II. Captain McCLEARNAND will disable the railroad for several days in that vicinity.
- III. The detachment will report at headquarters not later than the fifth day.

By command of Colonel ARNOLD.

SCOTT,
A. A. G.

Memorandum.—The troops will move from Four Mile Creek at 9 A. M.

This duty is assigned to first and second squadrons and one battery light artillery.

ORDERS OF COMMANDER OF BLUES.

IN THE FIELD NEAR FORT RILEY, KANSAS,
October 21, 1896—7 A. M.

DETACHMENT ORDERS
No. 1.*Distribution of Troops:*

Guarding railroad.

First and second com-
panies Twentieth In-
fantry.

First battery of artillery
and detachment of
cavalry.

Reconnaissance.

Advance cavalry.

First, second and third
troops Sixth Cavalry.

Advance guard.

Fourth troop Sixth Cav-
alry.

Main Body.

Second battery artillery.
Third, fourth and fifth
companies Twentieth
Infantry, less one-half
section.

Rear guard.

One-half section fifth com-
pany Twentieth In-
fantry.

- I. A raiding party of Browns has crossed the Big Blue River at Stockdale probably with a view of destroying the railroad.
- II. One company of infantry, a platoon of artillery and a detachment of cavalry will be posted so as to command the approaches to the railroad bridge over the Republican River, near Ogden monument. A similar force will be posted on Sheridan Heights so as to command Three Mile Creek and the railroad as far as Ogden. The Manhattan Road will be patrolled by cavalry from the bridge to Ogden. Small detachments of infantry will be placed on the bridge and at the culvert over Three Mile Creek. The remainder of the command will make a reconnaissance in force with a view of attacking the raiding party.
- III. The troops will be in the places assigned at 9 A. M. this date.
- IV. The train will be left with the first and second companies of infantry.
- V. I will be with the advance cavalry.

B. KERR,
Captain Sixth Cavalry,
Commanding Blues.

PROFESSIONAL NOTES.

ORDERS OF COMMANDER OF BROWNS.

FOUR MILE CREEK, FORT RILEY RESERVATION,
October 21, 1896—8:30 A. M.

DETACHMENT ORDERS
No. 1.*Distribution of Troops and
Order of March.*

Advance guard.

Two troops first squadron,
to be selected by squad-
ron commander.

Main body.

Third and fourth troops
first squadron.

First, second and third
troops second squadron.

Light battery.

Fourth troop of second
squadron.

I. The railroad communications of the enemy between Ogden and the Republican River bridge are reported to be weakly guarded.

II. This command will endeavor to so damage the railroad as to render it useless for several days. If practicable a small detachment will be sent stealthily to destroy the Republican River bridge with dynamite cartridges.

Should the enemy not interpose the main column will move toward Three Mile Creek. If the enemy appear a demonstration may be made towards the Republican River, but the commander will avoid unnecessary separation and he will retire on the main body in good time and without awaiting orders. Advance guards, flankers and rear guards will be vigilant. Rear guards are especially important, and the rear troop will look to this, for if the enemy discover our presence and is able to assemble sufficient force he may endeavor to cut off our retreat.

If not in position on our line of retreat the enemy will not be attacked in force except under the most favorable conditions. If separated from the main body it is intended to attack his cavalry vigorously, but at all times subordinate commanders will endeavor to avoid becoming so seriously involved as to bring on a general engagement unless so directed by the C. O. If the railroad be reached, the bluffs to the rear will be held by strong detachments.

The importance of cover must not be forgotten; every officer will be on the alert and watch for both artillery and infantry fire; our line of retreat will be preferably towards Riley Center via the lane immediately west of the Milk ranch and the commander of the leading squadron will throw out two troops to cover the movement of the pack train. If this route be not feasible, then by the Estes gate and Governor Harvey road, and as a last resort towards Clay Center, via the Republican River road.

Whenever necessary, the advance guard will promptly provide for the passage through wire fences.

III. The main body will move at 9 A. M.

IV. The pack train, under charge of the guard, will approach under cover to the vicinity of the Estes gate, and will join the main command on its retreat at the first opportunity.

V. The commanding officer will be with the main body.

By order of Captain McCLEARNAND.

S. P. ADAMS,
Second Lieutenant, First Cavalry, Adjutant.

REPORT OF UMPIRES WITH THE BLUES.

The force of Blues consisted of one battalion Twentieth Infantry (five companies), one squadron Sixth Cavalry, and Batteries "A" and "F," Second Artillery, all under the command of Captain J. B. KERR, Sixth Cavalry.

Captain KERR's command was distributed in accordance with his Detachment Order No. 1.

Soon after 8 A. M. Captain KERR marched his squadron of cavalry, three companies of infantry and one battery of artillery, up One Mile Creek, and at 9 A. M. took up a position near Morris Hill, his line facing north and covering the Estes road. At 9:15 information was received that two troops of Browns were moving east on the Estes road; at 9:20 firing of the advance guard was heard on the Estes road; at 9:30 main force of Browns was observed marching east on the divide; at 9:40 scouts of the Browns appeared to the right of the Blues' position; at 10 the Browns appeared in considerable force on Estes road; at 10:08 the main force of the Browns was apparently moving east. The Blues then moved from their position on and near Morris Hill and marched to Sheridan's Bluff and took position on Sheridan Heights facing north and northeast, commanding Forsyth's Drive and the railroad in the direction of Ogden. This position had been occupied since 9 A. M. by one platoon of artillery and one company of infantry belonging to the Blue force. Captain IRONS, commanding the company of infantry, had placed a detachment at Three Mile Creek trestle, some distance east of this position. At 10:40 the Blue artillery fired on a detachment of Browns marching in column of fours at 3,000 to 3,500 yards, coming over the divide and moving towards the railroad. At this time three troops of Blue cavalry and three companies of infantry, in great measure concealed by the ridge, moved to their right, to a position covering Three Mile Creek trestle. At 10:50 four shots were fired by artillery at a troop of Browns, range 1,400 yards. The troop was marching apparently in column of fours; injury to Browns probably small. At 10:55 Brown artillery opened fire on the Blue battery at 3,000 yards. The six guns of the Blues concentrated their fire on Brown battery. At 11:55 Brown battery fired upon Blue infantry marching as skirmishers near the crest of the ridge occupied by the Blues. Three companies of Blue infantry and three troops of cavalry dismounted were then marched to the

right to cover the trestle, the mouth of Three Mile Creek valley and the railroad in the direction of Ogden. At 11:12 the Browns appeared in considerable force near the mouth of the valley and was exposed to the fire of artillery at 1,500 to 2,500 yards, infantry at about 700 yards and dismounted cavalry at short range. Several small detachments of the Browns marched to the vicinity of the railroad. These detachments were ruled out.

Six or eight men of the Browns succeeded in reaching the culvert east of the trestle without being fired upon at short range. They could possibly have dynamited this culvert. Finally all the force of the Browns that had advanced to the mouth of Three Mile Creek valley were ruled as having been so much disabled by the fire of artillery, infantry and dismounted cavalry as to be incapable of further efficient action at this time.

The railroad bridge over the Republican river and approaches were guarded by a company of infantry and platoon of artillery, posted on the ridge in the vicinity of the Ogden monument. A half section of infantry was placed near the bridge. Nothing appeared excepting four Browns mounted; two volleys were fired at them by the company of infantry, range about 800 yards; they dispersed and two of them proceeded in the direction of the bridge, and in passing the half section of the infantry near the bridge twenty or thirty shots were fired at them, the last shots at twenty yards distance. It was considered that the attempt on the bridge was futile. At 11:48 a troop and a half of Blues and a platoon of Blue artillery came from the extreme right of the Blues, and took position on the ridge near the Ogden monument. This terminated the maneuvers. So far as observed it was not discovered that any material injury had been done to the railroad by the Browns.

REPORT OF UMPIRES WITH THE BROWNS.

The Brown force was assembled in a concealed position on Four Mile Creek in the vicinity of Dixon's ranch, where the orders of the commander hereto appended, marked "A," were published.

The main body moved at 9 A. M., passing eastward through the wire fence on the Governor Harvey road.

Videttes were thrown out; the squadron of Captain KINGSBURY made a demonstration to the right, developing a small force of Blues. At this time the squadron of Captain SIBLEY was directed to move through the low ground towards the left, swing around across the Milk Ranch road and endeavor to gain the line of Three Mile Creek. This was done, the battery following, and subsequently they were joined by the squadron of Captain KINGSBURY after the demonstration referred to was withdrawn. The enemy's scouts were observed on Morris and the adjacent hills, but no considerable force of Blues was observed until the Brown force reached a point north of Forsyth Drive, about three-fourths of a mile west of Three Mile Creek, when they were seen on the eastern portion of Pawnee Heights and the

lower bluff on Three Mile Creek. One troop under Lieutenant ARNOLD was here directed to proceed under cover to the line of Three Mile Creek to endeavor to reach the railroad, and shortly after another troop under Lieutenant SUPLEE in support of this movement. Infantry fire was then opened by the Blues on the low bluff immediately west of Three Mile Creek, and the Blue artillery opened at 10:40.

The Brown battery was now brought up under cover and fire opened upon the two positions of the Blue battery, which were taken partly in flank, and which did not reply for some minutes. Lieutenant FURLONG with his troop had received orders to cross Three Mile Creek in the vicinity of White's ranch and if possible, without exposure, gain and destroy the railroad in the vicinity of Ogden; this was accomplished at 11:23, as per report appended, marked "B."

Lieutenant ARNOLD reached the mouth of Three Mile Creek by a circuitous route north and outside of the reservation without apparently attracting any attention at 10:03. Here he dismounted and led through the thick brush to the open ground, where, after lying concealed for ten minutes and sending out individual scouts, some of whom were captured, he made a dash across an opening of 200 yards, in column of twos at a run with fifty yards between twos. In this dash he passed under fire of a force of Blues concealed to his right at 150 yards, and was ruled out with all his men, about one-half troop. The remaining men of this troop (scouts and videttes) made their way in the brush to the culvert 300 yards east of the bridge over Three Mile Creek and destroyed this culvert without opposition; here was met two men of Troop "C," Second Cavalry, who had previously wrecked the same culvert. These twelve men then followed the railroad towards Ogden one-fourth of a mile, and disabled the road again under cover of a bank, and from this bank delivered later a destructive fire at a company of Blues scaling a bluff at 300 yards distance.

This company of Blues (Captain FOSTER) after scaling the bluff, where he lost ten per cent., received a fire from ten men of "K," First Cavalry, on his left flank at 700 yards, refusing one platoon on his left. Captain FOSTER received an enfilading fire at 200 yards from Troop "C," Second Cavalry, which had crept up unobserved on the bluffs in his rear; here he lost fifty per cent. of his remaining men. The remainder of the company fell back to the ravine below, suffering from the fire of the Browns on the railroad. He was followed up by Lieutenant SUPLEE's Troop "C," Second Cavalry, and was adjudged to have lost his remaining men. As it was thought that a portion of the Brown force had either succeeded in reaching the railroad or had destroyed it, it was decided to withdraw the remainder, and recall was sounded at 12:05 P. M.

From the time of starting from Four Mile Creek the force was kept well under cover, and is believed not to have been seen except perhaps for a distance of 150 yards at a point slightly west of the

Milk Ranch road, where the battery was masked by the cavalry column.

It is thought that the Brown battery, or at least one or two guns, should have been left in their last position, for the range having been obtained two excellent targets presented themselves, one a detachment of cavalry and infantry on a knoll in the middle of the valley below, and again at least two troops of cavalry moving in column on the bluffs to the right, about 2,200 yards away. These were not in any way molested.

It is uncertain as to how long the railroad would have been disabled by damage done.

OUTSKIRTS OF OGDEN, 11:40 A. M.

Captain McClelland, Commanding Raiding Party.

SIR:—Pursuant to your instructions I have succeeded in reaching the railroad; reached it at 11:23, quarter mile west of Ogden.* Crossed Three Mile Creek unobserved, and have been unmolested. Got wagon here. Blew up railroad track near river; got farm house wagon and took rails short distance to river and dumped them in. Destroyed enemy's supplies collected here. After doing all damage possible will join you by road running north from Ogden, coming by way of Milk Ranch. The Blue forces are on this side of Three Mile Creek, and heights on this side are unobserved.

Respectfully,

FURLONG,
Commanding Platoon.

This exercise, illustrating a detachment of Blues (five companies of infantry, one squadron of cavalry and two light batteries artillery) guarding the railroad from the Republican River bridge to the stone fence south of Ogden, a distance of a little over five miles, and a detachment of Browns (two squadrons of cavalry and one light battery of artillery) acting as a raiding force attempting to reach and destroy a section of the road, has proven to be one of much interest, and it is believed that all have gained some useful information from a professional standpoint which it will be well to remember.

It is also believed that young officers can be benefited by a further study of the problem on the map, each forming his own ideas of the best solution for both attack and defense.

It is believed that the positions taken by the Blues covered the line of the railroad quite effectually, and that the troops were so disposed that any portion of the line could be reinforced in time to avert any serious disaster. The Brown force was kept well under cover and took the best possible advantage of the terrain to make a wide detour, passing the entire front of the Blues and to a point near the right flank, which was nearly at right angles to the front, without being exposed. From this point the effort was made to reach the railroad, with partial success, as reported by the umpires. It is impossible to say what damage the railroad would have received as the nature of the fire action and contact of the troops was such that only the actual conditions of warfare with the element

* The situation required the guarding of the railroad only as far west as the reservation line at the eastern edge of the village of Ogden.

of time considered, could have determined this question. It is thought that patrols and scouts could have, at certain stages of the exercise, been utilized to better advantage by getting nearer the enemy, watching carefully any shifting of positions and promptly reporting it. It is a question worthy of consideration whether the Blues acted wisely in abandoning entirely their position on Morris Hill, leaving this commanding position subject to occupancy by the enemy. The railroad from Three Mile Creek to the stone fence seemed to be pretty well enfiladed by the artillery on Sheridan Heights, and it is an open question whether or not a battery so placed could not protect that entire portion of the railroad.

As a whole the exercise was very satisfactory.

K. ARNOLD,
Colonel First Cavalry,
Commandant.

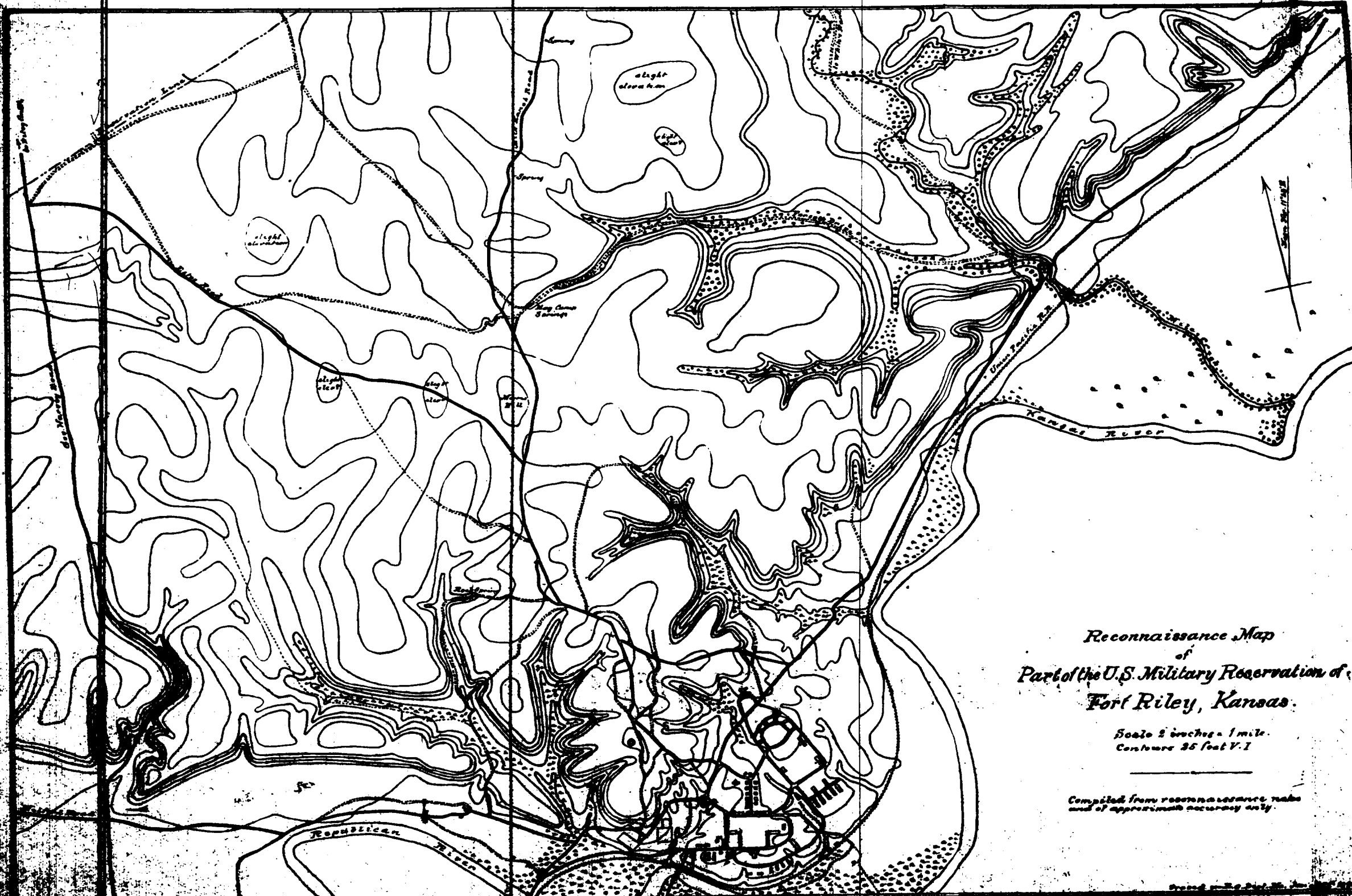
"CAVALRY FIELD HOSPITALS": A SCHEME FOR RENDERING FIELD HOSPITALS CAPABLE OF ACCOMPANYING A CAVALRY FORCE IN THE FIELD.

The necessity for consideration of special medical arrangements, both as regards material and personnel, for masses of cavalry acting independently of an advancing army has not been sufficiently recognized in existing regulations for field service. It is true that, to a very limited extent, the principle has been admitted that a regiment of cavalry or a horse artillery battery does require some modification of the material supplied to other more slowly moving branches of the service, inasmuch as when on the march or on field service, each of these units carries with it a specially designed "cavalry bag" of surgical necessities as part of the regimental medical equipment.

But beyond this there would appear to be no recognition of the immensely important fact that the celerity of movement of the mounted branches and consequent increased distance covered by them are factors which necessitate a greatly modified ambulance system to that which suffices for the relatively slowly moving mass of an army. That this problem has not presented itself in a more pressing form, and has not been satisfactorily dealt with already, depends no doubt on the fact that, in the recent frontier expeditions, such as Waziristan and Chitral, there have been no cavalry operations on a scale sufficient to draw attention to the defects of the present system.

Now, it is laid down in Cavalry Drill, Volume II, that at the commencement of operations, long distances will have to be covered at a rapid rate by the body of cavalry, which is sent on in advance of the army; and, further, that several days' march may separate the cavalry from the main body. This will apply equally in the case of a cavalry division in a European campaign, and of a single brigade operating, for example, as a screen to an infantry division





*Reconnaissance Map
of
Part of the U.S. Military Reservation of
Fort Riley, Kansas.*

*Scale 2 inches = 1 mile.
Contours 25 feet V.I.*

*Compiled from reconnaissance notes
and of approximate accuracy only.*

Drawn by J. B. Smith, 1892.

advancing through an uncivilized country beyond our frontiers. In either case such a force is bound to be independent and to act independently of the main body in the matters of transport and commissariat, and in its ambulance arrangements.

Moreover, the front of such a cavalry screen will extend for many miles, and the screen itself will consist of units (whether squadrons or regiments) separated from each other by appreciable distances; so that the problem of affording even temporary aid to the casualties, which must occur, is a far larger one than appears to have been recognized when the equipment tables now in force were compiled.

Recognizing to the full that, in the case of advancing cavalry, it may be necessary to sacrifice men who are sick and wounded to the exigencies of the service, and this to a greater extent than in the case of the more slowly moving infantry, the question still arises. How far are the arrangements at present laid down in any degree adequate to the fulfillment of the functions of the medical services, viz: rendering aid to the greatest number possible of wounded and sick, sending them back to the rear, and relieving the fighting machine of the encumbrance entailed by the mere existence of men in other than a normal state of health?

To answer this question, let us consider briefly the medical establishment which would accompany a brigade consisting of one British regiment, two native regiments and one battery royal horse artillery.

Each unit would have its regimental establishment, consisting of one medical officer, one subordinate, a very limited quantity of surgical equipment, and a dooly (two doolies in the case of British troops).

It is expressly laid down that this establishment is for the treatment of slight cases, the administration of first aid regimentally, "pending transfer to the field hospital."

There would be also two field hospitals, one for British and one for native troops, for each cavalry brigade.

The personnel equipment of these may be roughly tabulated as follows:

TABLE I.

<i>Personnel and Equipment.</i>	<i>British Field Hospital.</i>	<i>Native Field Hospital.</i>
Medical officers.....	4	4
Assistant surgeons.....	8	8
Hospital assistants.....	47	19
Ward servants, etc.....	About 129	About 129
Kahar establishment.....	80	80
Ambulance mules.....	About 28	About 28
Ambulance drivers.....	112 packages.	92 packages.
Surgical equipment.....	4	4
Pakhal mules.....		

Admirable as this establishment is, both as regards quantity and quality of its component parts, it is evident that its serviceability must depend on its power to fulfill the functions which are its very *raison d'être* and these at the time and place where they are required.

Can any one who has seen a field hospital on the march, with its painfully elongated and heterogeneous line of doolies and kahars, ambulance mules and transport mules, followers of every class and laden camels, moving along at a pace which, slow at first, becomes hourly slower,—can any one who has seen this sight conceive that such a body, however well equipped in itself, could ever be other than an encumbrance to a force, the success of whose movements frequently depends on the rapidity of its advance? How could such a field hospital keep up with a brigade advancing perhaps twenty miles a day for a number of days?

And if this argument applies to the main body of the brigade, how much more is it apparent in the case of the regiment which is thrown forward to supply the advanced squadrons and patrols several miles further ahead, and which daily perhaps comes in contact with an active enemy.

With the best endeavors on the part of medical officers it is on the face of it, *impossible* that under the present system adequate surgical assistance shall be forthcoming when needed.

But is it to be admitted that the mere fact of a body of troops being rapid in movement is to debar that assistance being afforded to its sick and wounded, to afford which the medical services exist? Not at all. The present system must be altered to suit the circumstances of the case. And this can easily be done.

In the first place, there must be a greatly extended recognition of the principle that the medical arrangements for a cavalry force must necessarily be far more mobile than those which amply suffice for infantry. In fact *cavalry field hospitals* must be organized, differing from the ordinary field hospital in every particular requisite to insure the great essential, mobility. If this can be done, as seems possible, without any increased expense, so much the better; but even were considerable outlay incurred to effect the purpose, better that outlay and efficiency than blind adherence to a sealed pattern, and failure at the crucial period.

Suggestions for the Cavalry Field Hospital.

1. The present arrangement into four independent sections is an admirable one. However, since with the existing scale of equipment, any particular section detailed to accompany a small force would be seriously hampered by its large mass of stores, etc., even with the reductions (to be detailed) which might be made in these stores, it would be necessary to leave the more cumbersome articles with the heavy baggage of the brigade. Any part, therefore, of its equipment over and above absolute necessities should be left in charge of one section, which would throughout act as a "base" to

the other three, would act as a reserve of drugs, etc., for them, would as far as possible relieve them of sick and wounded, and leave them free to accompany any unit, such as a squadron or a regiment, when on detached duties. This "base" section could either accompany the main body of the brigade, or come on, as rapidly as possible, with the baggage.

2. *Ambulance Transport.*—This would appear to be the best place to consider this most important question, more especially for the reason that creation of a mobile cavalry field hospital at no extra expense to government is rendered possible only by altering the whole system as at present existing. There are two available modes of transport in a field hospital; for "lying down cases" twenty doolies are provided, and for such as can ride, eighty mules equipped with a new pattern of ambulance saddle. With a body of troops on the march, the majority of casualties will consist of cases of fever, dysentery, and collapse from exertion or heat. These will be carried in doolies for the obvious reason that they could not ride. Besides these, we must consider the possibility of men being wounded, or thrown from their horses, and having to be carried.

It may fairly be concluded, therefore, in the case of a cavalry force, that the majority of cases requiring assistance will be lying-down cases. From march to march the sick of previous days will also have to be carried, until arrangements can be made for sending them back.

To do all this a field hospital has twenty doolies. Each dooly is carried by six kahars, and the total establishment of these is 120.

Now, the dooly-bearer, or kahar, is popularly believed to be an untiring, patient, and, in his own way, skillful beast of burden. This theory has as much truth as most such popular beliefs.

When the Waziristan force was mobilized, the greatest difficulty was experienced in raising kahars, even after depleting regimental hospitals down country. Men were swept in from the bazaars of Mooltan, Ferozepore, and similar places, and after passing a medical examination, were set to carry doolies. Many of these men, when questioned by the writer, admitted that the work was completely new to them. Add to this that even the old-time regular kahar was innocent of the very rudiments of ambulance work proper, and the result may be imagined.

It is in the personal experience of the writer that the average rate of progression of a laden dooly is certainly not above two miles an hour, and this with halts every quarter of a mile or less to change shoulders; however, the kahars frequently either stumble, or from sheer exhaustion let the dooly drop. This occurred, in the case of the writer, twenty-three times in one march.

It is obvious that lying-down accommodation must be provided; so that the dooly establishment would have to be replaced by some other means of transport. This could easily be done.

The establishment of doolies is a very costly item, as the following table will show:

TABLE II.

Cost of Dooly Establishment for a Six Months' Campaign.

	Rs.
1. Cost of free kit for 129 kahars at commencement at (roughly) Rs. 3 a head.....	387
2. Pay for six months at an average of Rs. 8 a month (including batta).....	6,192
3. Cost of free rations for six months at an average of Rs. 2-8-0 monthly.....	1,935
4. Pensions of drivers.....	No estimate possible.
5. Transport of drivers.....	No estimate possible.
Total.....	8,514
Or a monthly average of.....	1,418

This establishment, then, adapted to carry twenty doolies, costs Rs. 1,418 a month, or Rs. 8,514 for a campaign of six months' duration.

In place of these, substitute mules, carrying litters. A cavalry baggage mule does day after day carry as much as three maunds of kit, and this without stumbling; and such a mule will cover long distances day after day, at twice the pace of a laden dooly, on the most meager rations. Compare the cost of substituting mules for doolies, premising that each mule carries a pair of litters.

TABLE III.

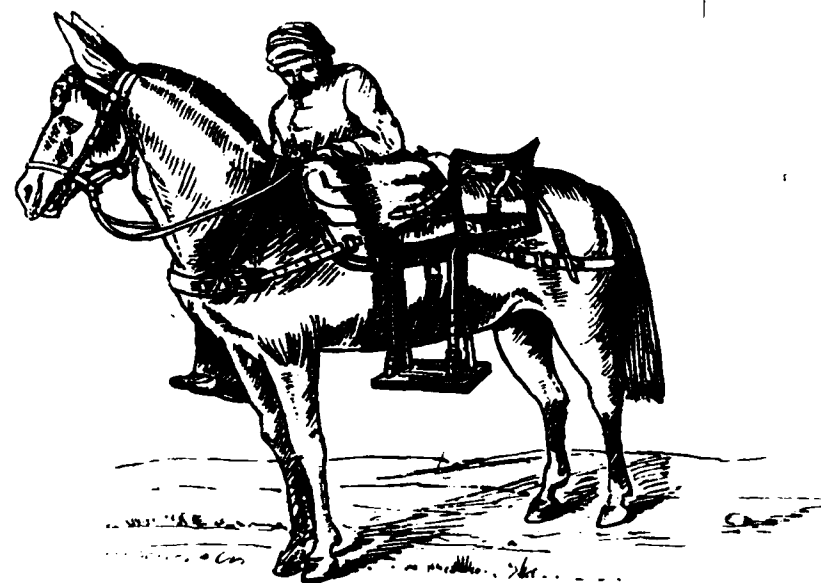
Cost of Litter Mule Establishment for Six Months.

	Rs.
1. Rations of ten mules at, say, Rs. 12 per month.....	720
2. Pay of five drivers at Rs. 9, including batta.....	720
3. Rations of five drivers at Rs. 2-8-0.....	75
4. Free kit of five drivers at commencement of campaign at Rs. 3 a head.....	15
5. Pensions of drivers.....	
6. Transport of drivers.....	
Total.....	1,080
A monthly average of.....	180

Supposing this mule establishment to be doubled, i.e., twenty mules carrying forty litters, with ten drivers, the monthly upkeep should still only be about Rs. 360 as against Rs. 1,418 for the maintenance of twenty doolies, and the pecuniary saving would be Rs. 1,058.

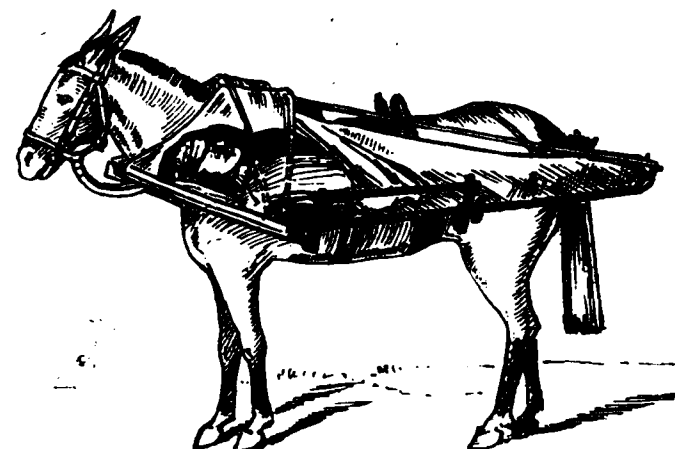
The *Mark III* litter weighs 106 pounds (roughly $1\frac{1}{4}$ maunds) per pair. It is evident that the mule which can carry a laden pair of these, or about five maunds, must be of a finer stamp than the ordinary undersized commissariat mule; mules of the type required, however, are to be found in every mountain battery, and the limited number required for a few cavalry field hospitals should not be difficult to obtain.

As to the initial expense of purchasing the mules. It is shown above that over Rs. 1,000 would be saved monthly by the suggested alterations. In six months a sum of Rs. 6,000 would have been



I. CACOLET FOR CARRYING WOUNDED MEN.

Fitted with cushion, back and waist straps, slings and foot boards (weight fifty-six pounds per pair).



II. HORSE OR MULE LITTER.

Fitted with straps, hood, pillow and apron.
(Weight, 106 pounds per pair.)

saved. Now a mule of the type required can be purchased for from Ra 400—500. Taking the higher price, the saving alone would buy twelve out of the suggested twenty; and it must be remembered that at the end of the campaign these mules would be available for ordinary transport work. So that in the long run government would gain on the transaction.

Finally, of the eighty ambulance mules already allowed, a proportion at least might be equipped with *cacolets*. Many cases of injury occur where men cannot ride, and yet are not bad enough to require a dooly. Cacolets for these would be invaluable; and here again, as each cacolet mule would carry two men, if we can obtain the few larger and more powerful mules necessary, we should increase the carrying capacity of the hospital.

To sum up, the following is the alternative now suggested, and by its side is shown the present establishment:

TABLE IV.

Comparative Table of Existing and Suggested Ambulance.

No. 1. Existing Regulations.		No. 2. "Cavalry Field Hospital."	
1. Doolies..... 20	} Carrying 20 sick.	1. Litter mules.....20	} Carrying 40 sick.
Bearers.....129		Drivers10	
2. Ambulance mules... 80	} Carrying 80* sick.	2. Ambulance mules—	
Drivers..... 24		A.—Cacolet mules.....40	
		B.—As in No. 1†.....40	
Total.....	100 sick.	80	120
		Total.....	160 sick.

* All these would be riding cases, i.e., on the ordinary ambulance saddle.
† Riding cases, as in No. 1.

So that the cavalry field hospital would be able, in an extreme case, to deal with 160 sick and wounded, and each "flying section" recommended above, with forty cases. Finally, in the case of a troop being detached, it would be possible to send with it at least a litter and cacolet mule, whereas a dooly would be conspicuous to the enemy, slow, unwieldy and invariably lagging behind.

3. *Personnel*.—There are too many followers in a field hospital. Though the substitution of ten drivers (for the litter mules) for the 129 kahars would make a very great difference, the defenselessness of the hospital would still exist.

The drivers should be enlisted soldiers, exactly like those in mountain batteries. Had there been fifty armed drivers in the two field hospitals at Wano, instead of 250 defenseless followers, the mortality would have been less and the Waziris would not have

been able to cut up half the hospital transport as they did. The actual expense of having soldier drivers would be very little more than that of the same number of commissariat drabees; while in peace time they could be fully and most usefully occupied in learning stretcher drill, "first aid," etc. It is, perhaps, unnecessary here to point out that a kahar is not trained in any way; and yet on him will devolve the duty of lifting sick and wounded men into doolies.

The whole of the drivers, whether ambulance or transport, would, if armed, form a most useful defense to the hospital; and from the fact of men being soldiers there would be no chance of their not being forthcoming in action, as occurred at Wano, when, after the first volley into the hospital camp, not a kahar could be found, and the medical staff had to bring in the wounded.

4. *Equipment*.—The latest alterations in the equipment of field hospital are excellent in every way. The total number of packages has been reduced, and heavy drugs have been in many cases replaced by lighter or less bulky ones. If only this were extended, and the excellent "soloids," "tabloids," etc., obtainable nowadays, more generally substituted for made up "tinctures," etc., a still greater reduction in weight could be effected.

If litter mules were introduced in place of doolies, a surgical haversack or field medical companion could be carried by each, and boxes No. 3 and 4 done away with.

The stationery is on an unnecessary liberal scale; and two No. 12 boxes, instead of four, would amply suffice for the whole four sections. The same applies to box No. 11. Again, as flying sections could not carry with them all the clothing and blankets allowed in boxes 13 and 17—22 (British field hospital) and 15—19 (native field hospital), the quantity supplied should be halved, two of each only being supplied. In this way, without any loss in efficiency, the total number of packages would be reduced to seventy-two in the case of a British and sixty in a native field hospital.

The tentage for a cavalry field hospital ought to be certainly not more than half the amount now allowed, if the amount of mule transport is not to be very largely increased. A British hospital contains some thirty tents for sick, and a native hospital nineteen, besides some dozen tents for subordinates, drivers, kahars, etc. Tents for the sick could be halved in number, and, if necessary, regiments could temporarily supply tents for the use of their own sick. This, however, is merely a matter of transport.

Operating tables, chairs, and office tables, except one of each, are unnecessary.

5. The transport must be entirely mule carriage. Camels are out of the question. All packages and boxes are limited to eighty pounds weight, and could therefore be carried on mules.

The following table gives a rough estimate of the transport required:

TABLE V.

	British Hospital.	Native Hospital.
1. Number of mules to carry the surgical equipment, as suggested above (roughly).....	36	30
2. Tent mules (roughly) at reduced scale recommended..	10-15	8-12
3. Drivers' and followers' kits.....	6	4

With such a hospital as has been roughly outlined above, it would be reasonable to expect that a cavalry force would be fairly equipped from the medical point of view. No doubt with every improvement that experience can suggest, men will still have to bleed to death unattended in the next big campaign, more especially in advanced squadrons, on patrols, etc.; but when the number of such victims can be reduced by a system of rational, relatively cheap, and certainly more efficient method of transport than at present exists, it would seem to be only fair to the service and to the individual that steps should be taken to bring about that end.—*Surgeon-Captain Bruce Seton, First Central India Horse, in Journal of the United Service Institution of India.*

A PORTABLE RAMP.

The illustration below shows a portable ramp, recently built for the Essex Troop of Newark, N. J., by the Pennsylvania railroad, at a cost of less than \$25.00, and intended to facilitate the loading and unloading of horses when traveling by rail.

The troop had an uncomfortable experience at Trenton, N. J., at the time of dedicating the battle monument in 1894, the men and horses being forced to stand around in the mud and darkness for nearly two hours waiting for their train to back up to the freight platform. There was little consolation in seeing the Philadelphia City Troop go to their train in the yard, get out their private ramp, load up and start for home at their convenience.

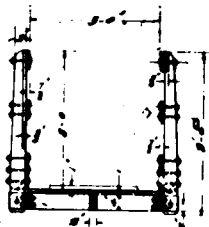
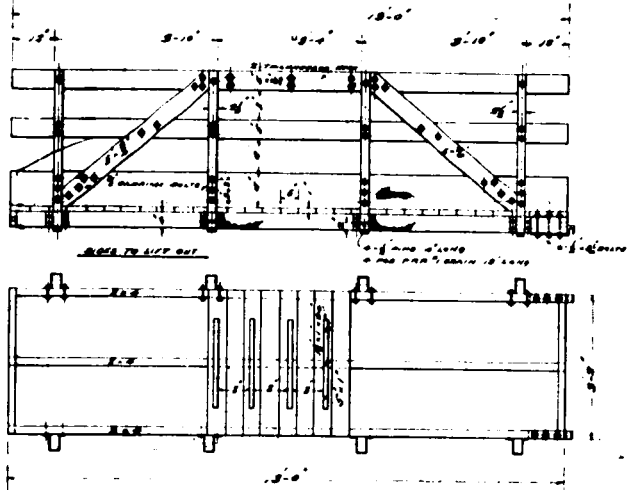
An attempt has been made to improve on a similar contrivance described in the JOURNAL some time ago, and which seemed unnecessarily cumbersome for the purpose both in weight and size, both of which have been greatly reduced without impairing strength, and, it is thought, with added safety for the horses and convenience to the men.

The floor is a framework, 13x3 feet, of beams of spruce, 2x4 inches, connected by cross pieces at the ends, and firmly bolted and mortised together, supporting crosswise planking of one-inch pine, to which are fastened suitable cleats or slats to prevent slipping. Four strong wrought iron stake pockets are bolted along each side of the

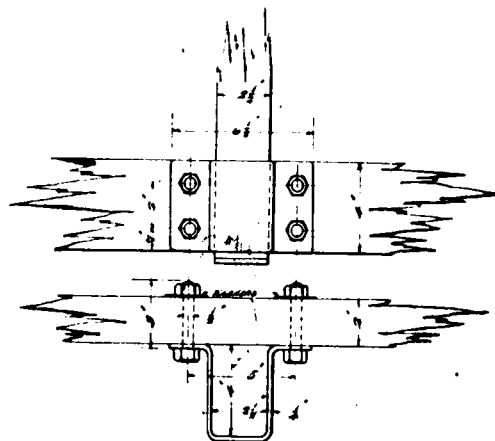
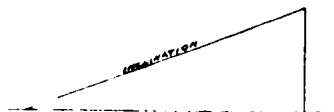
PROPOSED PORTABLE GANGWAY

FOR
ESSEX TROOP.

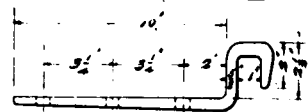
VERBET CITY MAR 19 96



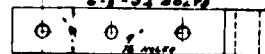
APPROX. HEIGHT 6'-0\"/>



3 STAKEPOCKETS.



6-1-5 1/2\"/>



3 END HOOKS

frame, to hold the side braces. At one end, intended as the upper end in operation, are two powerful hooks which engage the lower guard rail of a car door and hold the structure in place.

The weight of this floor, including all attachments, is about 320 pounds. It can be handled by six or eight men with ease.

Each side rail is also a queen truss, and while weighing only 120 pounds, constitutes a substantial barrier to restrain a nervous, excited horse, as well as a powerful support to the flooring when it is under strain. The sides lift out of the stake sockets and can be easily carried by two men. The horizontal members, of pine, are one nine-inch board, to rest on the floor when in place, and above this two one-half inch boards, five inches wide, as a railing; the verticals are oak stakes, fitting closely into the sockets but not so as to jam.

The reason for trussing the sides is clear when it is noted that each of the two center stake sockets, and also corresponding up-rights fitting in them, is bored for a half-inch iron pin to run horizontally through the socket and upright. The sides are thus secured in place, and are brought into play as trusses as soon as the weight on the floor is enough to bring a strain upon the pins.

The result is a substantial truss bridge of ample power to carry with ease all the weight likely to be put upon it. When taken apart, there are three sections, each about 13x3 feet, which will easily go into the baggage compartment of an ordinary combination car, at a total weight of 570 pounds.

Care has been used in working out details. The lowest side planks are made wide, and give the horse no chance to put his foot in any hole. The narrowness of the ramp insures against turning around; the sides are high and strong enough to guard against balking or backing off. It has been found that the cleats should have been run entirely across from side to side, as there was some slipping because they were too short. A set of folding handles would be convenient for carrying the floor.

The inclination is slightly less than one on three, under ordinary circumstances. Every extra inch of length adds weight and clumsiness, while decreasing strength. A two-inch plank on the ground for the lower end to rest on when in use, would guard against settling into the earth and decrease the steepness sensibly.

This ramp was used for the first time in loading up at Washington, D. C., March 5th last, and it was found very strong and perfectly satisfactory except in one or two minor details. Many officers regard a contrivance of this kind as unnecessary, but it serves a purpose and would have been worth thrice its cost to fifty wet, hungry and tired men, not to speak of the horses, on the Trenton trip above mentioned; for instead of waiting for the railroad company to back their train up to a platform the troop could have marched to the train and have been loaded at once.

While the general plan is my own, it is proper to state that the

details were worked out, strains calculated and working plan drawn under the supervision of M. J. W. BAUGHER, Department of Motive Power, Pennsylvania Railroad Company, Jersey City.

CHARLES WOLCOTT PARKER,
First Troop, New Jersey (Essex Troop).

SOME CHANGES THAT MIGHT BENEFIT THE SERVICE.

It is more than probable that the majority of the officers in our army have the good of the service at heart, and always welcome a change that improves its condition in any way, while on the other hand it is a matter of regret to them when anything occurs that causes a backward step.

Our army as it stands to-day is small compared to the country to which it belongs. It stands, however, as a model for the National Guard, and consequently should be kept in the best condition possible, both as regards its personnel and its equipments. Because it is small, this can all the more readily be done with the proper management and legislation.

The following changes, in my opinion, would all be steps toward the improvement of the service:

First. Do away with the consolidated messes, and turn the buildings into gymnasiums.

Second. Change the leather of the horse equipments, and give the enlisted men an aluminum mess kit.

Third. Make all drills and duty such as to hold a man's interest to the greatest extent.

Fourth. Give the enlisted man a slicker, a different headdress and overcoat.

Fifth. Change the color of the uniform.

1st. Consolidated Messes.—It seems to me to be generally acknowledged that consolidated messes for troops at a post are not a success. No matter how efficient the officer in charge of the mess may be, or how much he may try to please the men, there has always been, to my observation and from what I have heard of the messes at other posts, more or less dissatisfaction. With the individual mess, each organization has its own commander to look after it, and in place of having one officer for the general mess, there are as many officers as there are organizations to look after the men's food. This larger number naturally gives the mess more attention, and, consequently, it gives more satisfaction. The food is served to the men more quickly, and they are always able to have it warm, which is not the case in the consolidated messes. Bad food is one of the causes that leads to desertion. There is no better way to make a man contented than by giving him good food. The ration as it stands to-day, taken in connection with the exchange dividends, if properly handled by organization commanders, should give per-

fect satisfaction. The ration, however, should be made complete and ample in itself, and not made to depend on the exchange dividends.

The buildings now used for general messes at this post (Fort Riley), Fort Sheridan, Jefferson Barracks, Fort Leavenworth, and at such posts as have them, could be turned into gymnasiums, a much needed thing at all permanent posts. It is of the utmost importance that everything possible be done to awake and hold the interest of the enlisted man in his profession. Make the army a thing to be desired by the soldier, a place where he is contented, and it will not only improve its character but also increase its patriotism, and give it a higher physical and intellectual development. Of course the commander of each independent organization can do much towards this end by the proper and judicious handling of his men; but aside from this, a gymnasium with swimming tank and bowling alley at each of the large permanent posts, would be of the greatest benefit.

The average man is fond of athletics, and had he an attractive place to go for exercise when not on duty, and where he could meet and compete with men of other organizations, he would spend much of his time there. He would be a better man for it, both mentally and physically, and the service would also gain by having fewer court-martial cases, and fewer desertions. By far the greater number of military offenses committed by enlisted men, are due to liquor. The men, when not on duty, want a place to go or loaf. They become tired of their quarters, being there more or less all of the time, and the post exchange affords them a place for but little recreation, consequently they wander aimlessly about and, too frequently, get into trouble.

A gymnasium, such as I have suggested, would probably stop much of this. It should be kept open every evening, and I venture to say that a large part of the command would always be found there. The buildings now used for general messes could be easily turned into gymnasiums, and other buildings built for separate organization messes. The matter of expense may be urged against this, but the benefit to the service would more than repay for the amount expended in making the change. Furthermore the buildings could also be used for drill halls. During this spring at Fort Riley, on a large number of days it has been impossible to drill outside. There is no room in the troop barracks where any kind of a drill can be carried on satisfactorily for want of space, and although some drill has always been attempted, much benefit and progress has been lost by not having a suitable place.

Now that athletics and physical training are beginning to have their proper attention in the army, a suitable gymnasium at each permanent post will be more necessary than ever, and should be established.

2d. Leather Equipments, etc.—As has been advocated many times by cavalry officers, the leather part of the horse equipments should be of fair leather, like that used in the California saddles.

This would enable the trooper to keep his equipments cleaned and in much better condition with far less time and trouble, and officers' and men's clothes would not be soiled and almost ruined from the black leather, as now often happens. This is especially true of the white gauntlets which, with the black leather, are often soiled and blackened the first time they are used. The leather of the California saddles is called upon to stand the severest tests of both weather and usage, and stands these tests in a manner which proves how serviceable it would be.

If the tin cup, meat-can, canteen and fork and spoon were made of aluminum, it would be an improvement for two reasons: 1st, They would be lighter than the present ones. 2d, They would be more easily kept clean, would be always bright, and would not rust. The field mess kit now furnished the trooper does not wear well. After using them on the target range in camp last summer for about six weeks, those of Troop "K," First Cavalry, and probably those of the other troops also, were in pretty bad condition. The tin was entirely worn off in many places. The inspector remarked on their condition when here, and seemed to think they were not fit for much more service of any kind. Were they made of aluminum this tin wearing off would be avoided.

If fifteen per cent. nickel steel will not rust, and will answer the purpose, saber scabbards, bits and curb chains should be made of it and furnished the cavalry. The advantage of having these articles in a material that will not rust is worth the expense of making the trial.

3d. *Drills and Duty.* The greatest care should be exercised in ordering drills and duty, in order that the best results may be obtained. A drill or duty should be for one of two objects, namely, for instruction, or for the actual needs of the service. When it is not for either of these purposes, it becomes a drudgery and is useless, and time so spent can be much more profitably used in other ways.

In time of peace, officer of the guard duty, except for a certain period during each year for instruction, is rather detrimental to the service than otherwise. This is particularly the case where there are only one or two officers with a troop. It often happens that both officers may be taken from the same troop for guard, and another officer detailed to take command of it. The latter knows nothing of the methods or progress of that troop, and that day's drill is practically lost. At a post where an officer goes on guard once a week, there are two mornings out of each seven on which he is taken from his drills and other duties, and one of these mornings is spent in the guard house practically doing nothing.

Drills should always be such as to hold a man's interest to the greatest extent, and not made too long, as is sometimes done. The drill regulations contemplate this. Paragraph 22 says: "Short and frequent drills are preferable to long ones, which exhaust the attention of both instructor and recruit." Small arms firing regulations.

paragraph 24, says: "It is essential that the attention of the soldier be obtained and held." A man who goes to drill and puts his attention on what he is doing, and thinks what each command means, will learn more in one day than another who pays no attention, but gets through as best he may, will in a week. With the present drill of an hour in first aid to the injured it is impossible to retain the attention of the men for all of that time. Men should not be made to do too much, as faulty work is the only result. There is an old saying, that "it will keep a man out of mischief to keep him busy." This is partly true, but there is such a thing as keeping him too busy, and giving him so much to do that he slights everything. Paragraph 170, A. R., requires most special duty men to attend all drills and inspections. This should not be, as sometimes it is impossible for a man to attend all drills and perform his special duty properly. The waiters in the general mess at this post, and probably at all posts where there are general messes, should have nothing to do but to attend to their duties in the mess hall. They are up before reveille in the morning, and they do not finish their work until after supper; and there is sufficient work for them each day in the mess hall, keeping everything clean and in order as it should be.

In reference to signaling, the change back to the old Myer code was a bad one. Messages cannot be sent as quickly with it on the heliograph as with the Morse code; and now in order to be able to telegraph and to signal with the flag, torch, or heliograph, it is necessary to know two codes. If the same code was to have been used by both the army and navy, it should have been the Morse code, as long as the Morse code was to be retained on the telegraph. The continual changing from one code to another has a bad effect upon the service. Officers and men who have perfected themselves, often with much trouble, in one, and who took a pride in so doing, become discouraged when they find their work has been for nothing and that they must start all over again.

4th. *Uniform.*—The dress helmet is uncomfortable, hot and heavy, frequently causing headache, and a more suitable head-dress should be furnished. The overcoat of the enlisted man might be greatly improved. The present one affords little protection from either rain or cold. Slickers should be furnished each soldier by the Quartermaster's Department. They are one of the most useful articles of clothing that an enlisted man can have, and would add more to his comfort in wet weather than anything else. At present on rainy days enlisted men around a post may be seen in the greatest variety of protecting garments. Some appear well, some appear slouchy, but there is no uniformity in any of them. A full black rubber slicker, should be included in the soldier's clothing allowance.

5th. *Color of the Uniform.*—A suitable color in grey would be better than the present blue. It is harder to see, and would afford more protection to men in action. A uniform of this color would look better in the garrison after slight wear, than the present blue, and in the field and campaign it would have a much better appear-

ance. It would be hard to find a color that will show dust and grease more than the blue. Appearance in itself is a reason why the color should be changed, but by far the more important reason is that the grey is less visible than blue. It has been distinctly noticed at the fall maneuvers at Fort Riley, how much more distinctly the Blues could be seen than the Browns, both mounted and dismounted. With a dismounted skirmish line of the Browns, it was often hard to tell which was man and which was grass; but generally with the Blues, each man presented a plain and distinct target for the opposing forces to aim at.

With the grey color a man would be almost as invisible as with the brown. A writer, in an article published in *Harper's Weekly* last year, said, "that one day in approaching West Point, he was unable to distinguish a mounted column of cadets until close to them on account of the color of the clothing, whereas had they on the dark uniform, they would have been plainly seen some distance off." With troops on patrol duty, scouting, or as videttes or Cossack posts, or on any duty requiring secrecy, where men are cautioned to see without being seen, the less visible the color of the uniform the more efficiently they can perform their duties, and with the less risk of being discovered. From experiments made in France, grey was shown to be less visible than blue under ordinary circumstances. Other things being equal with two opposing forces in battle, the more prominent color of a uniform worn by one side or the other would give a big advantage at once to the opponents of the side wearing it. It would increase the number killed and wounded on the side to which it belonged, and might easily give their enemies the victory. Certainly this reason is more than sufficient for making the change to the grey color.

S. B. ARNOLD,
Lieutenant, First Cavalry.

SOME SUGGESTED ARMY CHANGES.

Last year the Major-General commanding the army addressed a circular letter to officers of the army, requesting an expression of their views on many matters of great interest and importance to the military service. I will take his questions numbered 3 and 11 as my texts for this paper.

Question No. 3 is: "What suggestion have you to make, if any, concerning the uniform, its requirements and suitability for garrison and field service, fatigue duty, and occasions of ceremony?"

Until a comparatively recent period a text book was used at West Point which said: "The soldier going into battle should put on his full dress uniform. It is an honor due to a brave foe." Nowadays the enemy is treated with less consideration.

In my opinion the full dress uniform should not be worn in battle; neither should it be worn on any other occasion. It should be relegated to the closet of the costumer, and worn only to recall the memories of by-gone times, when BRADLEY-MARTINS of the future

give fancy dress balls. The full dress uniform is not comfortable. The coat is too warm for social occasions, and the helmet is uncomfortable for all occasions. It is an expensive and unnecessary uniform, and for it I would substitute the present undress uniform, without any addition for officers or men dismounted, or any modification except that the present cap should accompany the helmet into retirement, and something like the present campaign hat, but of better material and finish, be substituted for it, for use on all occasions. The use of straw hats, fur caps, fur gloves, etc., to be authorized for certain climates. Both blouses and trousers should be made in two grades, for summer and winter; and in summer the blue flannel shirt, even in garrison, should be authorized, without any blouse.

I am not in favor of a reinforce for the seats of mounted men's trousers. It makes the trousers heavy and uncomfortable, and the cavalryman who rides with a close, firm seat, is more apt to wear out his trousers at the knees than at the seat. When the reinforce does wear out, it is usually patched instead of being cut away, making three thicknesses of cloth and great bunchiness. Then, too, the reinforce adds to the expense.

I would substitute a water-proof, leather-palmed glove for the present gauntlet and abolish the white glove for enlisted men, except for orderlies and on occasions of ceremony. I believe white gloves are not worn on guard or on drill by European soldiers, and they impede the proper handling of small arms when there is any work to be done.

I am in favor of doing away with the boot by both officers and men, and using only the legging on all occasions now calling for boots. I agree with Captain KENDALL, Eighth Cavalry, who says: "The foot gear of all troops should consist of a laced ankle shoe, perfect in material and workmanship, made in a sufficient number of widths and sizes to fit any foot that would be accepted in the recruit."

I would issue, to mounted troops at least, a light rubber coat or slicker, and oil skin overalls, to use when in the saddle in rainy weather in summer, and would substitute a blanket-lined blue water-proof cloth overcoat for cold or rainy weather. Such a coat might not look quite so neat as the present soldier's blue overcoat, but it would be far more comfortable and sensible, in my opinion.

I would make no change in the brown overalls, which should be worn on fatigue and sometime in the field, as at present, and might be worn also at stables by the cavalry in place of the white overalls, thus further reducing the clothing allowance.

In regard to the underclothing I have no suggestions to offer, as I have worn it myself and found it comfortable.

It is believed that the uniform enumerated above, if made of good material, by honest workmen, is durable, economical, neat and inconspicuous, and that, for the purpose of an American army, no better one can be suggested. I would have the officers' uniforms

differ only from the men's, in so far as their individual pocket-books permitted them to indulge in better quality and fit; the distinctive shoulder-straps, chevrons, stripes and other marks of rank, to remain as at present. I would abolish the sword or saber knot as a useless, expensive and superfluous appendage.

Question number 11, in the letter from the Major-General commanding the army, calls for suggestions regarding the camp equipage, tentage and field equipment.

The present method of supplying tentage to the army is unsatisfactory to the line. When a command is ordered into the field, tents are issued by the Quartermaster's Department and are supposed to be in good serviceable condition, but, alas! the first day's camp develops the fact that many of them are full of holes, and some are practically worthless. A return to the old system of issuing tents is recommended, when each organization cared for its own canvas and every captain knew about the condition of each tent that was carried on his papers.

Now, in regard to the kind of tent most desirable in the service, and especially in the cavalry. The weight of canvas is, indeed, a serious drawback to its use and, yet, tents in this country are peculiarly necessary, owing to the severity and uncertainty of our climate in most parts of the United States, and the fact that billeting the troops in the houses of the inhabitants of the country, as is done in Europe, is impracticable with us. The simplest way to reconcile the necessity for tents with the serious drawback of their weight, seems to me to be the adoption of the shelter tent more generally than at present, other tentage to be used only in permanent camps. The prejudice which appears to have existed against the use of the shelter tent heretofore in our service, was largely owing to the fact that its name was a misnomer, for, owing to the poor material of the alleged canvas, the old shelter tent really afforded no shelter. Its meshes might exclude mosquitos, but water went right through it. But the new shelter tent is an improvement. It is usually water-proof and is accompanied with the necessary poles, pins and fastenings. The pole is hardly strong enough, but can be readily strengthened by the handy trooper.

I am in favor of brown canvas for tents, and for the shelter tent would use a heavier canvas than the present one is made of, or else paint the present canvas with some water-proof preparation. The fact that the complete shelter tent has to be divided between two troopers is a drawback, since necessity often arises for detaching a man from his troop and even from his squad. I would let half the troop carry the complete tent, dividing the burden, if necessary, on alternate days.

In a recent number of the CAVALRY JOURNAL an officer, while advocating the use of the shelter tent for men, says that officers should use them also on all occasions. To quote his words: "Officers should not luxuriate in tents and bedding and mess outfit, while their soldiers are treated with scant consideration."

If sleeping in shelter tents implies being treated with "scant consideration," then I am in favor of letting an officer "luxuriate" in a somewhat larger tent when the necessities of the service permit. An officer has a larger baggage allowance than a soldier, and this implies a larger allowance of shelter for the same. He is also, as a rule, older in years than the enlisted man, and expects to remain in the service longer, and therefore the government is the gainer by the care he takes of his health. Moreover, he often has important public records to protect from the weather, as well as his books and public funds. Therefore an officer might be permitted to "luxuriate" in at least an A tent, while his men are under shelter tents.

Apropos of tents, it may not be amiss to remark, that although uniformity is desirable in pitching and striking tents, the subject does not seem to be touched upon in any of our authorized drill books, except in the hospital manual.

I would advise substituting a simple form of tent drill for some of the superfluous matter in the cavalry drill regulations. "The Employment of Cavalry," for instance, might be omitted, as it is contradictory to much of the text in WAGNER'S "Security and Information."

Until this or something similar is done, every separate command will follow the ideas of its own commanding officer on the subject of tents, and different methods of pitching and striking tents, and even of driving tent pins, must continue to prevail.

J. A. LOCKWOOD,
Lieutenant, Fourth Cavalry.

CAVALRY PITCHING AND STRIKING CAMP.

The squadron being in column of troops at full distance (each troop having one yard additional distance for each trooper temporarily absent) the troops are dressed to the right on the guidon and dismounted.

The guidon of each troop is planted midway between the two ranks of the troop, and marks the right of the picket line.

The line is then stretched from the guidon to the left between the two ranks, and the horses tied on it about one yard apart. If the picket line is not at hand, the place selected for the same is marked on the ground.

The guidon is then planted between the picket line and the picket line of the troop next in rear, so as to mark the front of the right of the line of tents. A saber is likewise placed towards the left flank to mark a second point on the line of the front of the tents.

WITH SHELTER TENT.

To Pitch Camp.

The squadron commander commands: 1. *With shelter tents*, 2. *PITCH CAMP.*

This command is repeated by troop commanders. Each trooper then secures a shelter tent half, five pins, and an upright pole.

The troopers fall in, squads in their proper places, on the guidon, facing the picket line, in two ranks, with intervals of about three yards, and a distance of about three yards between ranks. The first sergeant falls in on the right of the troop, and the non-commissioned officers in charge of squads on the right of their squads.

The guidon marks the right of the front rank. The right trooper of the second rank is three yards in rear of right trooper of the first rank.

The troop commander then aligns the two ranks, after which each trooper places his shelter tent half and tent pins on the ground immediately in his front, the second rank also placing their poles upon the ground, each trooper of the first rank holding his upright pole (disjointed), one-half in each hand.

The troop commander commands: 1. *Prove*, 2. *DISTANCE*.

The troopers raise their arms laterally until horizontal, the poles being in the extension of the arms. The troopers on the right and left of the rank do not raise the arm nearest the out flank. When the ends of the poles touch, the troopers have their intervals. The alignment is verified, and each trooper of the first rank sticks a pin between his feet, on a line with his toes. The lines of the tent pins are then dressed. Each pin indicates the position of the front upright of a tent, which is placed against and in rear of the pin.

In pitching the tents each trooper of the first rank is assisted by the trooper of the second rank directly in his rear.

The tents when pitched are aligned by the first sergeant, if necessary.

Tent intervals should be about two feet. Three yards between poles.

To Strike Tents.

When the general is sounded each man hastens to the position he had when pitching tents, takes up the pins and at the last note the tents are laid down to the right. The men then proceed to their saddles and pack them.

WITH CONICAL WALL TENT.

To Pitch Camp.

The squadron commander commands: 1. *With conical wall tents*, 2. *PITCH CAMP*.

This command is repeated by troop commanders.

One non-commissioned officer and four men pitch each tent, each squad furnishing the detail for its own tent.

The non-commissioned officers in charge of details cause them to count fours. Nos. 1 and 2 of each detail procure canvas, No. 3, tripod and pole, and No. 4, the tent pins and two mauls or axes. They

all unroll the tent and spread it out near where it is to be pitched, apex at the center.

The non-commissioned officer in charge of the detail for the first tent steps off four yards from the guidon on the left along the line established, and causes No. 1 to drive two pins two feet apart to mark the door of the tent, the first pin being about four yards from the guidon.

The second non-commissioned officer steps off ten yards from the left door pin of the first tent and causes the foot-pins of the doorway of his tent to be established in the same manner as those of the first tent. Each non-commissioned officer in succession thus establishes the pins of his doorway, on the line prescribed, the intervals between doors being about ten yards.

Each non-commissioned officer measures with the tent pole from the middle point between the door pins directly backwards, the far end of the spindle of the pole determining the center of the tent, which he causes No. 1 to mark with a pin. No. 4 places three pins near the center pin. No. 2 places the tripod opened out flat, center over the center pin. The men now take post.—No. 2 in front, No. 3 in rear, No. 1 on the right, and No. 4 on the left of the tent. They work near these positions in pitching and striking tents.

All then bring the canvas over the tripod till its center comes to the center pin, and door at the front pins, when No. 2 slips the foot stops at each side of the door over front pins, and places the door of the tent opposite the pins.

Nos. 1 and 4, commencing at the front and rear of tent respectively and working on the right and left sides of the tent, scatter the pins and pull out the eye lines. Nos. 2 and 3 each take a maul or axe, and commencing front and rear respectively, work on the right and left sides of the tent, driving the eye line pins, placing them about one yard from the edge of the tent, in line with the seams.

The point for driving the eye line pins may be found more accurately in the following manner: Measure and mark upon the hood lines from the hood in the direction of the free ends of the lines the distance eleven feet three inches—the radius of the circle of eye line pins. Measure from the points thus determined towards the free ends two feet eleven inches—the interval between eye line pins, and mark the same. By applying this measure, the distance of the eye line pins from the center and their proper intervals may be determined.

As the pins are driven, Nos. 1 and 4 place the loops of the eye lines over them, respectively working on the right and left sides of the tent.

When the pins are set Nos. 2 and 4 creep under the canvas, slightly raise the tent and place the spindle of the pole through the plate, and raising the pole, set it in the socket of the tripod. No. 3 having, from the outside, placed the hood over the spindle, enters the tent by creeping under.

The non-commissioned officer places a maul or axe under the tent, and standing near the door, causes the men within to raise the tent so that the door is kept directly opposite and above the door pins. No. 4 now leaves the tent. The non-commissioned officer enters and inspects and adjusts, when necessary, the tripod and pole, and causes a pin to be driven against each leg of the tripod. Nos. 1 and 4 tighten the eave lines; they then scatter the wall pins. Nos. 2 and 3 drive the wall pins, working as before, No. 2 toward the right rear, and No. 3 toward the left front. Nos. 1 and 4 fasten the hood lines.

In pitching, as soon as any man has completed his assigned work he assists others until all have finished.

The interval between the centers of tents should be about thirty-four feet—the front of seventeen men in rank.

To Strike Tents.

The general is sounded, or the major commands: 1. *Strike*. 2. *TENTS*.

The same detail is required as for pitching tents. All articles are removed from the tent and the door cords tied. The wall pins are first removed, and then all the eave line pins, except the quadrant pins.

No. 2 now enters the tent, removes the pins at the feet of the tripod, and remains in the tent until after it is lowered. The non-commissioned officer takes his post near the door. The loops of the quadrant lines are now removed from the pins, and the lines held until the last note of the general, or until the command "*TENTS*," when the tents are lowered to the indicated side. The canvas is then rolled up and tied by Nos. 1 and 2, while Nos. 3 and 4 fasten the tripod and pole together, and collect the pins.

Tents may be pitched and lowered, according to the principles prescribed, by details consisting of more than five men.

THE WALL TENT.

To Pitch Tent.

Four men are required to pitch a wall tent, and will be numbered from 1 to 4.

Nos. 1 and 2 will place the ridge pole so that the ends will rest where the front and rear uprights are to be, and pins will be driven at these points by Nos. 3 and 4. Nos. 1 and 2 then place one end of the ridge pole at the front pin, and the other end to the right of, and perpendicular to, the line of the front and rear pins. From the outer end of the ridge pole No. 2 takes one pace to the front, at which point a large pin will be driven. The ridge pole will then be laid to the left of the front pin; one pace to the front will be taken by No. 2 from the outer end, and another large pin will be driven at that point.

Measurements will be made in the same way from the rear pin, except that the paces will be taken to the rear, the rear corner eave line pins being thus established.

The four corner eave lines are then attached to the pins, the ridge pole is placed in position, the spindles of the uprights inserted in the ridge pole, and the tent and fly adjusted on it. The tent is raised by Nos. 1 and 2 at the front upright, and by Nos. 3 and 4 at the rear upright pole. The tent is held in position by Nos. 1 and 3. Nos. 2 and 4 tighten up the eave lines. The other pins are then driven by all four men. The eave line pins are placed in line with the front and rear corner pins, and in the prolongation of the seams of the roof.

To Strike Tent.

Before or when the general sounds, all the pins except the four corner eave line pins are taken up. No. 1 goes to the front upright pole, No. 2 to the rear upright pole, No. 3 to the front and No. 4 to the rear corner pegs on the side opposite to that toward which the tent is to fall. At the last note of the general the tent is laid on the ground.

THE COMMON TENT WITH WALL.

The common tent with wall is pitched in a manner similar to the pitching of the wall tent, except that an upright pole is used instead of the ridge pole in determining the position of the eave line pins, and a short pace (about twenty inches) is taken to the front.

The striking of this tent is the same as that of the wall tent.

When the officers' tents are to be upon the left flank, all alignments are made to the left.

The squadron may also camp in line, in which case the camp is formed on the same general principles.

When camp is established with shelter tents, and there is not room in line or column, the shelter tents may be pitched in two parallel lines. In this case the front of the second line of tents will be established about three yards in rear of the tents of the first line. The intervals between the tents in the two lines should be directly opposite, and each tent of the second line should be directly in rear of the corresponding tent of the first line.

The requirements of Pars. 989-994, cavalry drill regulations, will govern in the establishment of squadron and regimental camps.

The foregoing system of pitching and striking camp was prepared by a board of officers at Fort Leavenworth, Kansas. In its preparation the board consulted many officers of experience. Nearly every regiment in the service was asked for its opinion, and many practical experiments were made.

THE GRECO-TURKISH WAR, 1897.

The best information obtainable in England as to the composition and numbers of the Turkish and Greek armies is to be found in the official hand-books compiled in the Intelligence Division of the War Office. That relating to Turkey is dated 1892, but is applicable to the present day, and the hand-book to the Greek army is dated 1895. The accompanying map has been specially compiled from the latest sources.

The Turkish military forces are organized on the territorial system, and for this purpose the Empire is divided into six districts, known as "ordu," with a special seventh ordu in Yemen and Hejaz. The headquarters of these six districts are at Constantinople, Adrianople, Monastir, Erzinjan, Damascus and Baghdad. All Mussulmans are liable to military service, but Christians and certain sects pay an exemption tax. The liability commences at twenty years of age, and lasts for twenty years, made up of four years with the colors, and two in the reserve of the Nizam or regular army, eight years in the Redif (corresponding to landwehr), and six years in the Mustahfiz, or militia. The Nizam or regular battalions number 284, the establishment of each battalion being nearly 1,000 of all ranks. The Nizam or regular cavalry consists of thirty-eight regiments of the line, two regiments of the line, two regiments of the guard, and two squadrons of mounted infantry; the war strength of the regiments being about 900 men and horses, and their armament consisting of carbine or rifle, sword and revolver. The guard regiments are armed, in addition, with a lance. The artillery consists of fifteen horse artillery batteries, 169 field batteries, forty-two mountain batteries, and sixty-four companies of fortress artillery, the total guns in the horse, field and mountain batteries amounting to 1,356. The engineers consist of thirty-one engineer companies, four telegraph companies, and four torpedo companies. A Nizam, or regular infantry, division on a war footing consists of sixteen battalions of infantry, one of rifles, and thirty-six guns; a cavalry division consists of six regiments, or twenty-four squadrons, and a horse artillery battery of eighteen guns; while an army corps consists of two infantry divisions, a cavalry division, and other troops. It is difficult to say if the Redif, or landwehr, would be organized into army corps. The whole military force of the Empire amounts to 700,620 men, of which 54,720 are artillery (with 1,356 guns), 7,400 engineers, 53,300 cavalry (in 202 squadrons), and 583,200 infantry, including 255,600 regulars, 316,800 Redif, or landwehr, and 10,800 militia.

The German officers who have assisted in the reorganization of the Turkish army since 1880—KOEHLER and KAMPHOEVENER, VON HONE, RISTOW, SCHILGEN and VON DER GOLTZ—know how fine is the fighting material of the Sultan's soldiers. Writing to the *Militär-Wochenblatt*, of 28th April, VON DER GOLTZ gives some of the impressions which he has formed of the army: "A superficial observer," he says, "cannot arrive at any correct opinion on the subject. The well-clothed battalions and well-mounted squadrons to be seen sur-

rounding the Sultan, are totally different from the provincial troops, especially if they belong to a badly-governed province. There has never been any systematic and uniform instruction of the soldiers by their officers, but the latter are not to blame for the often miserable appearance of the men. That is due to the meager and irregular issue of their pay by the provincial authorities. Yet the worst paid and worst fed troops of the Turkish army are more to be trusted than the smart guards of Yildiz, who seem to have caught the spirit of intrigue which pervades the palace, and over whom the influence of their officers is of the smallest. The loyalty, however, of the Turkish soldier, as a rule, is undoubted, and his power of endurance is extraordinary. The amount of physical labor he can perform in circumstances of extreme discomfort and privation, without uttering a murmur, has again and again called forth the admiration of war correspondents; and the fact that his officers have perfect confidence in his courage and steadiness, is the best proof of his value as a fighting man. This opinion of VON DER GOLTZ will be endorsed by many who have had any experience of Turkish troops. No one who was present with their armies during the campaign in 1877 can ever lose the impression there formed, that the Turkish soldier—Nizam, Redif or Mustahfiz—is a fighting man of the first order. Captain LEBRAN RENARD, of the French army, who has made the military power of Turkey a study, says of it to-day: "Every day the Ottoman army is making serious progress: it is recruited with regularity; it is well armed; its maneuvers are based upon correct rules; new railways enable its rapid mobilization; it is in a condition to meet eventualities from without."

The organization of the Greek army is based on universal conscription. The liability to serve begins at twenty two and lasts for thirty years. In the cavalry two years are supposed to be spent in the active army and eight in its reserve, and ten years in the territorial army and ten in its reserve. Similarly in the infantry, two years are supposed to be spent in the active army and ten in its reserve, eight years in the territorial army and ten in its reserve; but these terms are not kept to. The artillery consists of eleven field batteries and nine mountain batteries, or 120 guns. The officers and men in the artillery seem to be more intelligent than the rest of the army, and are quick at picking up their drill. The engineers include two field battalions, one railway and telegraph company, and one pyrotechnic company. The cavalry consists of three regiments, or twelve squadrons, and they are armed with carbine and sword. The infantry consists of ten regiments of the line and six battalions of light infantry and rifles. The total war strength is 66,250 of all ranks, 180 guns, and 126 ammunition wagons. According to the official hand-book, the mobilization of the Greek army would take from eight to ten weeks, and would not then be satisfactory. By far the best soldiers are the Evzoni (*Evzoni*), who correspond to our Highlanders. They wear the Albanian dress, which is generally regarded as the Greek national costume. They are a fine set of men, carry themselves well, have a springy stride and martial

bearing, and are the pick of the Greek troops. The ordinary Greek regiments of the line, judging from what is seen of them slouching about the country or loitering in the towns, in shabby and ill-fitting uniforms, could hardly have been expected to give a great account of themselves. But it is in discipline more than in anything else that the Greek soldier is lacking.

Compared with 1866, with 1870, and with 1877, the Græco-Turkish War is of small account. Yet it has, for the general reader as well as for the military student, an interest above its merits.

The general reader who has read of the power of the machine gun and the magazine rifle expects a carnage awful and unprecedented, and owns reluctantly to a sense of disappointed prophecy when he learns that the death rate so far is less than in previous wars. He has ignored the fact that the improvement in weapons tends to reduce, not to increase, the percentage of loss in contending armies. The military student is anxious to see how his pre-conceived notions of the destructive effect of the shrapnel fire of modern artillery, the use and abuse of cavalry, and the methods of a modern infantry attack, bear the test of practice after twenty years of theory. The events chronicled are so recent, that a detailed review of the course of the campaign in Thessaly would seem unnecessary, and a few notes on some of the various points of interest which have arisen will occupy fully the space allotted to this article.

The Turks lay to the north, the Greeks to the south, of the range of mountains which is pierced by the Maluna Pass—the Turks in superior numbers. There were troops of each force to the right of this pass, and troops of each force to the left; some of them miles away from the decisive point, which was the nearest road from capital to capital.

The struggle at the Maluna Pass, which began on the 17th April, involved (as did SULEIMAN's attack on the Schipka in 1877) a direct assault on a mountain stronghold, and resulted in favor of the attacking Turks principally by the effect of their artillery fire, though, strange to say, the actual destruction caused by this fire is reported to have been very small. The battle was continued in the plain day by day till Turnavo fell, and the feature of these days' fighting would seem to have been the small proportionate loss of the men engaged, the long range at which the infantry fire was opened and continued, and the gradual assertion of the Turkish predominance in artillery.

By the evening of the 23d April the Turks had established themselves within striking distance of the Greek position, and a trivial cavalry movement of theirs in the dead of night caused that panic and flight of their enemy's troops which will render the name of Larissa famous for years to come. Worn out with the prolonged strain of several days' fighting, unfortified by the stimulus of an iron discipline, mixed with the unarmed civil population, and, worse than that, with the armed but undisciplined "Associations of Patriots," the Greek army broke and fled. The incident is valuable reading

for those who rely on enthusiasm to take the place of ingrained discipline, and improvised efforts the place of a complete training in time of peace.

The Greek army rallied creditably after its period of disorganization, and took up a faulty position, its left on Pharsala and its right on Velestino, its extreme right being at Volo. The latter place, it must be remembered, was that at which the troops were landed when sent from Athens, as the passage by water was easier than the passage over the mountainous region between the capital and the frontier. So that the retreat of the main force on Pharsala necessitated a widened gap between this part of the army and its base of supplies. Further, the result of this retreat on Pharsala was to give up the water route as a line of retreat, and compel the Greek force to rely on the mountain roads, with their scanty means of subsistence.

The railway which connects Volo with Pharsala and Trikhala, branches at Velestino to Larissa. Hence the importance of Velestino. The Turks, once established there, could use the railway as a means of supply for their troops, and they thereby could cut off the Greeks at Pharsala, or its neighborhood, from their sea base at Volo, and compel them to trust to a risky retreat by a mountainous and ill-supplied route. This all-important junction nearly fell at once into Turkish hands. A cavalry reconnaissance almost carried it by a *coup de main*, the advance of the cavalry from Tel-el-Kebir to Cairo was nearly repeated, and the venture probably failed for the want of a handful of quick-moving infantry. What would that cavalry leader have given for a battalion of our mounted infantry! The Greeks repulsed this cavalry attack, recognized the value of the place and strengthened it, and its capture cost the Turkish army dear.

The Greek commander, relying, probably, on the line of railway which connected his two wings, appears to have committed a common *kriegsspiel* error in extending his troops over a space of country too extensive for proper occupation. The result was that he was strong nowhere. On the 5th May the Turks attacked both extremities, penetrated in the center, and the loss of Pharsala brought about the loss of Velestino. During the night the Greeks fell back and took up a strong position at Domoki, about twelve miles to the south of Pharsala. A concentration of the whole force near Velestino might have delayed, if it could not have averted, the final collapse.

One incident in the attack on Velestino will redound to the credit of all concerned. A fresh battery of artillery was causing loss and annoyance to the advancing Turks. A body of Circassian cavalry, led by the son of an old Turkish warrior of Armenian fame, fired by the highest traditions of cavalry leadership, moved forward to the attack of the guns; the charge was ridden nearly home, when the infantry escort to the guns, admirably placed and concealed, opened a convergent and overwhelming fire, and the gallant Circassians fell back with a loss of men and horses, leaving the battery intact, but with the satisfaction of having maintained the highest traditions of the cavalry arm.

Those who have studied the Russo-Turkish War of 1877-78 were by no means astonished to hear on the morning of the 1st May that the hitherto successful EDHEM PASHA had been superseded. The changes in the commands, in the former war, and the constant interference in the military plans telegraphed from Constantinople had a most baneful effect on the fortunes of the Turkish army. And it looked as if a similar supersession of commanders was to be initiated in this case. Luckily the success of EDHEM before Larissa came in the nick of time, and the continuity of command was maintained. The Turks are not the only people who have complained from home of the slow movement of their armies in the field; but surely this time there was little enough cause for impatience.

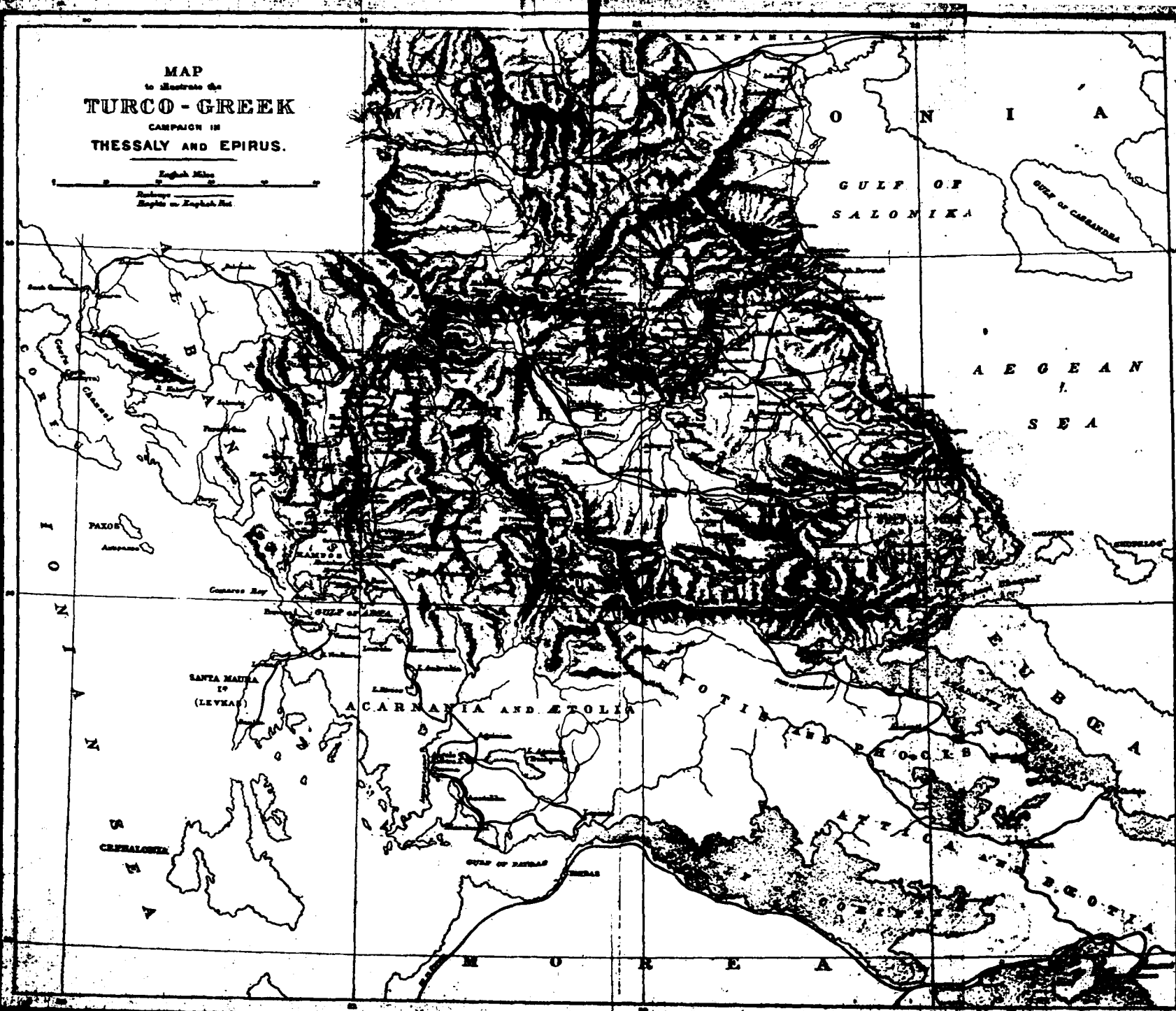
Given their superiority in numbers, the Turks have had a difficult task; and the order and regularity of their advance, their application of "superior force at decisive points," their triumph over the difficulties of supply down a long and mountainous line of communications, deserve all praise.

No less is their moderation in success worthy of admiration—it was not always so in the Russo-Turkish War; but in this campaign their behavior has apparently rivaled the most "moderate" army of modern times—the Germans of 1870-71.

To the fighting value of the Turkish soldiers the following passage, written twenty years ago by an Englishman, a master of the art of war, who knew them well, bears ample testimony. It is as true to-day as then, and in it lies the main reason of the Turkish success—in the converse qualities the main reason of the suddenness of the Greek failure: "The trained Turkish soldier seemed to possess every military virtue. Patient and enduring, submissive to discipline, of strong physique, and a good marcher, cool and brave in moments of danger, and possessing to a high degree that military instinct which is so valuable in the loose formations demanded by modern warfare, the Turk forms the beau-ideal of a soldier."—*Journal of the United Service Institution.*

MAP
to illustrate the
TURCO - GREEK
CAMPAIGN IN
THESSALY AND EPIRUS.

English Miles
0 10 20 30
Railways
Highways in English Miles



BOOK NOTICES AND EXCHANGES.

MILITARY MAP READING, FIELD, OUTPOST AND ROAD SKETCHING.
Captain William D. Beach, Third Cavalry, Instructor in Military Topography at the United States Infantry and Cavalry School. Hudson-Kimberly Publishing Co., Kansas City, Mo.

The ability to read topographical maps is a requirement that all military men should possess. To simplify the subject to such an extent as to render instruction in it an easy task, without being too general, necessitates a thorough theoretical and practical knowledge that can only be obtained by long experience. That such knowledge is possessed by the author of this book is shown by its contents, especially Part I, devoted to map reading.

In giving instruction to non-commissioned officers one is often at a loss how to begin. The book clearly shows the proper method of proceeding, beginning with *conventional signs*, showing by illustration how each is made and explaining what each represents. Next, the *scale* of a map is concisely explained and made easy of comprehension by illustration. The description of the *compass*, being very important, is well illustrated and carefully, correctly and methodically given.

The almost infinite varieties of form which ground has assumed is treated, in detail, by definition and illustration. The plate shows a perspective view of various features, and also the horizontal projection of the lines cut out by contour planes. The drawing is so clear and so well executed that the merest novice can read, understand and appreciate it.

Contouring, as well as the study of a contoured map, is briefly treated. The methods given are the simplest, and anyone who has attempted to teach this difficult branch of topography will appreciate the simplicity with which it is presented.

Field, outpost and road sketching is treated in sequence, and with sufficient minuteness to make it plain.

The book is an addition to our literature on topography, and all officers who have given instruction in it will appreciate the intelligent effort of the author to simplify and perfect the work in teaching

non-commissioned officers and enlisted men something of map reading and map making.

A page or two devoted to plaincraft and woodcraft might have added to the value of the book.

THE MATABELE CAMPAIGN OF 1896. Colonel Baden-Powell, Thirteenth Hussars, F. R. G. S. Methun & Co., London.

Through the courtesy of the author, the JOURNAL is in receipt of a copy of this most excellent and interesting account of the late operations against the Matabele rebels in South Africa.

In his letter to the Secretary, Colonel Powell says: "I venture to think that it might be of interest to many of your members, since it deals a good deal with the work of cavalry as mounted infantry against savage foes where scouting and rapid, long distance patrols were generally practiced in imitation of those carried out by your cavalry against the Indians."

The surmise of the author as to the interest it would prove to our cavalry officers is a correct one, for seldom is a more interesting and instructive account of such operations found. Those of us who have done any scouting after the wily redskin in the mountains and over the plains of Arizona and New Mexico, will recognize many similarities both as to country and foe. Our English brethren have also the same annoyances in the way of hostile and interfering methods among the people at home, such as press criticisms, peace proclamations, and other forms of interference.

The firearms of the Matabele are rather inferior, apparently, to those used by the American Indian at the present time, being of odd calibers and often of obsolete patterns, more like the style of gun given up by our Indians at the various times when they have surrendered their arms after peace has been proclaimed.

Some of the methods of handling these blacks would hardly be safe if applied to our own warfare, as these foes do not seem to have quite as much watchfulness as ours, allowing a comparatively close inspection of their strongholds, by a numerically weak force, and their stupidity in certain cases would never be displayed by a Sioux or a Cheyenne. Their method of ambushing a very small patrol is quite amusing and very easily circumvented, as they make a wide circuit and lay in wait on the trail by which it approached, never reckoning on the fact that the patrol can return by another; this of course makes it an easy matter for the patrol to circumvent them.

A curious similarity is observable in the name given to the Hotchkiss mountain gun by the Matabele, and by the Crow (and probably other) Indians in our own West. The Matabele call it the "Bye-and-Bye" gun, and the Crows call it "The-gun-that-shoots-to-day-and-fires-again-to-morrow."

A. G. H.

HINTS ON STABLE MANAGEMENT. Captain M. F. Rimington, Inniskilling Dragoons. Gale & Polden, Aldershot.

The book contains seventy-two pages of very useful hints on forage, conditioning of horses, watering, grooming, manes and tails, shoeing and feet, ventilation, care of saddles, biting, marching and camping.

There is little or nothing that is new; but the arrangement is excellent and there is no superfluous matter. Something of the same kind for our service for the use of stable sergeants would be beneficial.

QUESTIONS AND ANSWERS ON THE THEORY AND PRACTICE OF EQUITATION FOR THE COURSE OF SQUADRON TRAINING. Major A. J. R. Van Cortlandt, Third K. O. Hussars. Gale & Polden, Aldershot.

This booklet is not a treatise; as its name implies, it is a series of questions and answers. Like all works of its class it is restricted in its scope, and presents in condensed form much that needs full explanation.

THE SYNCHRONOGRAPH. A NEW METHOD OF RAPIDLY TRANSMITTING INTELLIGENCE BY THE ALTERNATING CURRENTS. By Albert Cushing Crehore and George Owen Squier. Pamphlet form. Technical description and discussion of the instrument. Fully illustrated.

PROCEEDINGS OF THE ROYAL ARTILLERY INSTITUTION. March, April, May, 1897.

1. A Plea for Speed in Firing With Garrison Artillery Guns. 2. The German Method of Bringing Guns into Action. 3. Colonel James Wemyss, Master Gunner of England, 1638-1666. 4. Captain Bogue and the Rocket Brigade. 5. Mountain Artillery Drill, 1837. 6. The British Army on the Continent of Europe. 7. Coast Defense. 8. Röntgen Rays. 9. The Science of Frontier Delimitation. 10. Direct and Indirect Fire. 11. Encampments in Hill Warfare on the Northwest Frontier of India.

JOURNAL OF THE UNITED STATES ARTILLERY. March, April, 1897.

1. Field Shrapnel and the Cannon of the Present. 2. Some Notes on our Artillery Target Practice. 3. An Improved Method of Hauling Heavy Guns. 4. The Progressive Development of the Schools for Artillery Practice in Germany. 5. An Experiment with Militia in Heavy Artillery Work. 6. Report on Development of a Photo Retardograph. 7. Professional Notes. 8. Book Reviews. 9. Index to Correct Artillery Literature.

JOURNAL OF THE MILITARY SERVICE INSTITUTION. May, 1897.

1. Proper Military Instruction. 2. The Present Status of Field Artillery. 3. The National Guard. 4. Developments in Horse-

shoeing. 5. Question of an Artillery Reserve. 6. The Sanitary Sergeant. 7. Ammunition Supply in Foreign Armies. 8. Proposed Uniform Examinations. 9. A Sketching Board. 10. Reprints and Translations. 11. Military Notes. 12. Comment and Criticism. 13. Reviews and Exchanges.

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA. April, 1897.

1. Jungle Warfare. 2. Some Considerations on the Subject of Musketry Fire and Musketry Training. 3. The Encouragement of Fencing. 4. Dueling in the German Universities. 5. Optical Lantern Apparatus. 6. A Portable Weigh Bridge for Checking Cost Transport Loads. 7. The Military Meaning of Partisan. 8. Foreign Articles.

PROCEEDINGS OF THE UNITED STATES NAVAL INSTITUTE. No. 1. 1897.

1. Prize Essay for 1897: Torpedo-Boat Policy. 2. International Arbitration; How and How Far is it Practicable? 3. Naval Law and Naval Courts. 4. Improvements in Ordnance and Armor in the Recent Past and Future. 5. The Capabilities of the Chart Compass. 6. Torpedo-Boat Policy. 7. The Composition of the Fleet. 8. Professional Notes. 9. Book Notices. 10. Bibliographic Notes.

THE INDIAN FENCING REVIEW. Nos. 2 and 3.

1. The Indian Fencing Association. 2. The Infantry Sword Exercise of 1895. 3. Sword Fighting and Sword Play. 4. Foreign System of Military Fence. 5. Fencing Journeys. 6. Massiello at Aldershot. 7. Fencing Journeys in Italy. 8. Swordsmanship in the Russian Cavalry. 9. Skobelev on Cavalry Armament. 10. Cuts and Points. 11. Books of Fence.

THE CANADIAN MILITARY INSTITUTE. March, 1897.

1. The Fundamental Principles Underlying the Battle Tactics of the Different Arms. 2. The Administrative System of a British Regiment. 3. Fire Discipline. 4. The Afghan War with the Khyder Column under Sir S. J. Browne. 5. The Strategic Value of Canadian Railways. 6. The Best Mode of Enlisting and Training a City Corps. 7. Reprints.

THE MAINE BUGLE. April, 1897.

1. The Tenth New York Cavalry. 2. Buckland Mills. 3. The Fourth Regiment of Carolina Confederate Infantry. 4. The Flag of the Sixty-First. 5. First Maine Heavy Artillery in the Fall of 1864. 6. Two Brothers in Blue. 7. The Capture of Fort Fisher. North Carolina. 8. General Adelbert Ames. 9. Echoes.

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION. May, 1897.

1. Major William Norman Ramsey. 2. Second Prize Essay. 3. The National Study of Military History. 4. Obok and the Country Bordering on the Gulf of Tajuro. 5. Naval Notes. 6. Military Notes.

THE UNITED SERVICE. April, 1897.

1. Washington as a Soldier. 2. The Indian Mutiny in Fiction. 3. Mr. Blakely's Boomerang. 4. The Yacht "Gnome." 5. Conversational Arithmetic. 6. Service Salad.

ALDERSHOT MILITARY SOCIETY. March, 1897.

Tactical Application of Field Defenses in Battles of Recent Campaigns.

REVUE DU CERCLE MILITAIRE.

IOWA HISTORICAL RECORD.

MILITAER WOCHENBLATT.

THE BREEDERS' GAZETTE.

THE RIDER AND DRIVER.

OUR DUMB ANIMALS.

PRIZE ESSAY.

I.

At a special meeting of the Executive Council of the Cavalry Association, held March 8th, to consider the subject of a prize essay, the following resolution was adopted:

Resolved, That the Cavalry Association undertake the production of a history of the American cavalry, which shall be brought out in the form of a series of historical essays, to be published in the JOURNAL; to this end be it further

Resolved, That the Cavalry Association does hereby offer a prize of \$100.00 in cash for the first essay of the series.

The prize will be awarded under the following conditions:

1. The competition to be open to all persons.
2. The essays must not exceed 30,000 words.
3. Three typewritten copies of each essay will be sent in a sealed envelope to the Secretary on or before October 15, 1897.
4. The essay will be signed *only* with the *nom de plume* adopted by the author. A sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address, must accompany the essay. This envelope will be opened in the presence of the Council after the decision of the Board of Award has been made.
5. The successful essay shall become the unconditional property of the Cavalry Association, and will be published in the CAVALRY JOURNAL.
6. The second essay shall receive honorable mention, and if desired by the Council, shall, upon payment of \$25.00 to the writer, become the unconditional property of the Cavalry Association.
7. The prize shall be awarded upon the recommendation of a Board, consisting of three suitable persons chosen by the Executive

Council, who shall be requested to designate *the essay deemed worthy of the prize*, and also, *the essay deemed worthy of honorable mention*.

Should members of the Board determine that no essay is worthy of the prize, they may designate one deemed worthy of honorable mention. Should the Board deem proper, it may recommend neither prize nor honorable mention.

The recommendations of individual members of the Board will be considered by the Council as strictly confidential.

In determining the essay worthy of the prize the Board will consider: *first*, historical accuracy; *second*, professional excellence; *third*, literary merit.

II.

The subject selected by the Council for the first essay of the series is as follows: "The History of the Cavalry of the Army 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."

III.

The names of the Board of Award will be announced in the September issue of the JOURNAL.

At a special meeting of the Executive Council held June 9, 1897, the following resolution was adopted:

WHEREAS, Many members of the Cavalry Association have expressed the opinion that the time allotted was insufficient for the proper preparation of an essay on the subject announced, particularly at this season of the year; be it therefore

Resolved, That the date for the submission of the prize essays be changed from October 15, 1897, to January 15, 1898; also, that the publication of the names of the members of the Board of Award be deferred until the December issue of the JOURNAL.

E. L. PHILLIPS,
Second Lieutenant, Sixth Cavalry,
Secretary.

NOTE.—The subject is intended to include organization, armament, equipment and supply, as well as the operations of the cavalry.

THE UNITED STATES CAVALRY.

FIRST CAVALRY—COLONEL ABRAHAM K. ARNOLD.

Adjutant, W. S. SCOTT. Quartermaster, G. H. MACDONALD.

HEADQUARTERS, FORT RILEY, KANSAS.

Troops—*E* and *K*, Fort Riley, Kan.; *A* and *I*, Fort Huachuca, Ariz.; *E* and *H*, Fort Still, O.
T.: *B* and *D*, Fort Reno, O. T.; *C* and *G*, Fort Sheridan, Ill.

SECOND CAVALRY—COLONEL GEORGE G. HUNTT.

Adjutant, R. E. L. MICHIE. Quartermaster, H. H. SARGENT.

HEADQUARTERS, FORT WINGATE, N. M.

Troops—*E* and *K*, Fort Wingate, N. M.; *A*, *C*, *D*, *F*, *G* and *H*, Fort Riley, Kan.; *B* and *I*, Fort Logan, Colo.

THIRD CAVALRY—COLONEL (Unassigned).

Adjutant, T. R. RIVERS. Quartermaster, J. W. HEARD.

HEADQUARTERS, FORT ETHAN ALLEN, VT.

Troops—*A*, *B*, *D*, *H*, *I* and *K*, Jefferson Barracks, Mo.; *C*, *E*, *F* and *G*, Fort Ethan Allen, Vt.

FOURTH CAVALRY—COLONEL CHARLES E. COMPTON.

Adjutant, C. STEWART. Quartermaster ———

HEADQUARTERS, FORT WALLA WALLA, WASH.

Troops—*A* and *G*, Fort Walla Walla, Wash.; *E*, Vancouver Barracks, Wash.; *F*, Boise Barracks, Idaho; *B*, *C*, *I* and *K*, Presidio of San Francisco, Cal.; *D* and *H*, Fort Yellowstone, Wyo.

FIFTH CAVALRY—COLONEL (Unassigned).

Adjutant, J. M. JENKINS. Quartermaster, J. T. HAINES.

HEADQUARTERS, FORT SAM HOUSTON, TEXAS.

Troops—*D*, *E*, *F* and *K*, Fort Sam Houston, Tex.; *B*, Fort McIntosh, Tex.; *C* and *I*, Fort Clark, Tex.; *G*, Fort Brown, Tex.; *H*, Fort Ringgold, Tex.; *A*, Fort Bliss, Tex.

SIXTH CAVALRY—COLONEL SAMUEL S. SUMNER.

Adjutant, R. L. HOWZE. Quartermaster, G. H. SANDS.

HEADQUARTERS, FORT MYER, VA.

Troops—*A*, *E*, *G* and *H*, Fort Myer, Va.; *B*, *C*, *F* and *K*, Fort Leavenworth, Kan.; *D* and *I*, Fort Robinson, Neb.

SEVENTH CAVALRY—COLONEL EDWIN V. SUMNER.

Adjutant, W. A. HOLBROOK. Quartermaster, W. H. HART.

HEADQUARTERS, FORT GRANT, ARIZONA.

Troops—*B*, *C*, *E* and *F*, Fort Grant, Ariz.; *I* and *K*, Fort Huachuca, Ariz.; *L*, Fort Sill, O. T.; *A* and *D*, Fort Bayard, N. M.; *G* and *H*, Fort Apache, Ariz.

EIGHTH CAVALRY—COLONEL (Unassigned).

Adjutant, S. L. H. SLOCUM. Quartermaster, C. C. WALLUTT.

HEADQUARTERS, FORT MEADE, S. D.

Troops—*B*, *D*, *E*, *F*, *G*, *H*, *I* and *K*, Fort Meade, S. D.; *A*, Fort Keogh, Mont.; *C*, Fort Yates, N. D.

NINTH CAVALRY—COLONEL DAVID PERRY.

Adjutant, ———. Quartermaster, A. B. JACKSON.

HEADQUARTERS, FORT ROBINSON, NEB.

Troops—*A*, *C*, *E*, *G*, *H* and *K*, Fort Robinson, Neb.; *B* and *F*, Fort Du Chesne, Utah; *D* and *I*, Fort Washakie, Wyo.

TENTH CAVALRY—COLONEL (Unassigned).

Adjutant, M. H. BARNUM. Quartermaster, L. HARDEMAN.

HEADQUARTERS, FORT ASSINIBOINE, MONT.

Troops—*C*, *D*, *F*, *G*, *H* and *I*, Fort Assinibouine, Mont.; *A*, *B*, *E* and *K*, Fort Custer, Mont.

The Adjutants of Regiments will please notify the Editor of changes in the Regimental Staff, and in stations of Troops.

VOL. X.

SEPTEMBER, 1897.

No. 38



GENERAL A. J. SMITH.

JOURNAL

OF THE

United States Cavalry

ASSOCIATION.

PUBLISHED QUARTERLY
BY THE UNITED STATES CAVALRY ASSOCIATION.
FORT LEAVENWORTH, KANSAS.

COPYRIGHT U. S. CAVALRY ASSOCIATION, 1897.
ALL RIGHTS RESERVED.

PRESS OF KETCHESON & REEVES.
LEAVENWORTH, KANSAS.

JOURNAL

OF THE

UNITED STATES CAVALRY ASSOCIATION.

VOL. X.

SEPTEMBER, 1897.

NO. 28.

ANDREW JACKSON SMITH.

BY LESLIE J. FERRY.

IN the Union army there served twenty-four persons of the name of SMITH, as generals or brevet generals, and on the Confederate side there were six General SMITHS of the various grades. Of the twenty-four Union General SMITHS, six or eight were conspicuous officers; the others were not so well known, though nearly all the SMITHS performed their parts in the war with honor and more or less glory to their cause and themselves. Among the numerous military SMITHS who served the Union cause with fidelity, C. F. SMITH, BALDY SMITH, MORGAN L. SMITH, JOHN E. SMITH, THOMAS KILBY SMITH, W. SOOY SMITH and GILES A. SMITH were bright names in our military annals. But, in my judgment, the greatest of all the SMITHS was Major-General ANDREW JACKSON SMITH of the Western armies, who died at St. Louis recently. For long-continued, unceasing, uncomplaining and uniformly successful service A. J. SMITH, I think, held the record over all the other SMITHS, numerous and deserving and distinguished as some of them were. Few generals of other names, too, soared higher than he, for he was in the front rank of the most distinguished commanders of the war.

General SMITH in his day was not an unknown and unsung hero. Although he never achieved the distinction of commanding a department while the war progressed, his influence was great in determining many important events of the conflict in the Mississippi Valley. Yet when he died the other day, thirty-two years afterward, SMITH was waved off the stage with a perfunctory obituary notice exactly six lines in length, so vague as to make it difficult to differentiate him from the other distinguished SMITHS in newspapers where President ROBERTS of the Pennsylvania Railroad, who died the same day, received nearly a column of panegyrics and a portrait. And the press this last week has been teeming with the exploits of the Confederate raider, JOE SHELBY, whose influence upon the war was almost nil.

ANDREW JACKSON SMITH was a Pennsylvanian. He was appointed from that State to West Point July 1, 1834, graduating from the Academy in 1838, No. 36 in a class of forty-five cadets: that is, within nine of the bottom. In SMITH's class were McDOWELL, CASEY, and R. S. GRANGER, who subsequently made names on the Union side during the Civil War, and BEAUREGARD, HARDEE and EDWARD JOHNSON of the Confederate service. Among his college mates in the preceding class were HOOKER, SEDGWICK, FRENCH, BRAGG, EARLY and PEMBERTON, while in the succeeding class were HALLECK, ISAAC I. STEVENS, LAWTON, and others who afterward became conspicuous on one side or the other.

Upon his graduation SMITH entered the old First Dragoons as a second lieutenant, and served against the Indians of the plains and in Oregon. He also had a share in the Mexican War. At the outbreak of the rebellion he was already a major in the First Dragoons. October 3, 1861, he was appointed colonel of the Second California Cavalry, but was soon detached, for in February, 1862, he turned up a chief of cavalry of the Department of the Missouri. This makes it probable that it was through HALLECK that SMITH was brought East and turned loose in the theatre of active military operations. He was commissioned a brigadier-general of volunteers May 17, 1862, while at St. Louis, and was thus fairly launched. All his earlier service was with the cavalry, and it appears that his superiors held him to have special qualifications for that arm; but it was as an infantry commander that he made his mark.

When, after Shiloh, HALLECK left St. Louis and went to the front to direct in person the combined armies operating against Corinth, SMITH was taken along as chief of cavalry. It was in the Corinth campaign that he first displayed those qualities of boldness

and activity which made him so successful as a leader, and afterward won him the regard and confidence of HALLECK, GRANT and SHERMAN. He commanded in a minor affair or two, which were cleverly managed. When the Confederates, BRAGG and KIRBY SMITH, invaded Kentucky in 1862, A. J. SMITH was sent back and assigned to a miscellaneous command in front of Cincinnati, which took some part in repelling the enemy from the Ohio river. It was one of the queer things in SMITH's career that he never appeared to be permanently attached anywhere, but was constantly tossed about from pillar to post, at the will and necessity of his chiefs, on important detached service. He wrote very few letters, and never remonstrated or grumbled, no matter what the nature of the duty assigned him, but went about its accomplishment in the most effective manner and without delay. Hence he became a prime favorite for the most difficult and dangerous undertakings, and was always available. When BANKS needed aid, GRANT said: "Send A. J. SMITH." When PRICE had to be chased out of Missouri, the order came: "Send up A. J. SMITH;" after FORREST had cleaned out nearly every Union officer sent after him, SMITH was put on his trail and defeated him; when HOOD sat down in front of Nashville, THOMAS did not attack until SMITH's veterans arrived from Missouri, and he finally wound up a series of remarkable marches and operations by taking part in the capture of Mobile. His selection for these various expeditions is strong proof of the high estimate placed upon his military capacity by his superiors.

After BRAGG had retreated out of Kentucky, SMITH was shifted down into West Tennessee again. He soon had organized a division of about 7,500 men, which composed part of the force used in the first great expedition down the Mississippi river against Vicksburg under General SHERMAN. He took a prominent part in the assault on Chickasaw Bluffs, where SHERMAN met with a serious repulse. Immediately afterward the Vicksburg expeditionary force was withdrawn, and under command of General McCLELLAND, it attacked and, in conjunction with the navy, reduced Arkansas Post, near the mouth of the Arkansas river. The fort, all its munitions, and some 5,000 prisoners fell into the hands of McCLELLAND. General SMITH led the attack with his division, and it was largely owing to his admirable dispositions that the fort was so cheaply won.

Soon after this event GRANT came down from Memphis and superseded McCLELLAND, and then followed the great Vicksburg campaign, in which SMITH took part as a division commander. He was conspicuous in most of the movements and battles leading up

to the environment of Vicksburg. It was in these operations that SMITH first fell under GRANT's personal observation, and he ever afterward had that commander's high regard. When PEMBERTON's messenger, General BOWEN, came forth to ask terms for the surrender of the Confederate stronghold, he presented himself on General SMITH's front on the Union lines. In the reports of Assistant Secretary of War CHARLES A. DANA, who accompanied the army during the Vicksburg campaign, it is recorded that SMITH took part with GRANT and MCPHERSON in the conferences with PEMBERTON and his advisers. After the surrender, SMITH accompanied SHERMAN's second expedition against JACKSON and JOE JOHNSTON.

After the capture of Vicksburg and Port Hudson, things became duller along the great river, and on the 5th of August, 1863, SMITH was detached again to the command of Columbus, Ky., where he remained until January 21, 1864, after which, for a few weeks, he was engaged in some minor operations around Memphis.

When the BANKS expedition up the Red river to Shreveport and beyond, if possible, was determined upon by the government, General GRANT detached A. J. SMITH with parts of the Sixteenth and Seventeenth Corps, about 10,000 men, to reinforce BANKS. Upon arriving at the mouth of the Red river, SMITH learned that General BANKS would be delayed in making the final advance. He thereupon determined to do a little business upon his own account. He entered Red river on March 13th, and on the 14th captured the Confederate stronghold, Fort de Russy, which barred the way of the navy to Alexandria, where Banks was to concentrate his command. He also made a dash on Henderson's Mill, capturing 250 prisoners and four guns. The Confederates attacked and defeated BANKS at the Sabine Cross Roads on May 8th, before SMITH could join, and fell back upon the latter at Pleasant Hill, where the Confederates, under General DICK TAYLOR, attacked again on the 9th and were repulsed. In this last battle SMITH's command was conspicuous and successful. He commanded the front and drove the enemy off the field, capturing 1,000 prisoners, five guns and six caissons. SMITH covered BANKS's retreat down Red river. In this expedition, ill-fated considered as a whole, SMITH's share was brilliant. He captured, all told, 1,757 prisoners and twenty-two pieces of artillery. In all its affairs he displayed quick perception and uncommon coolness and enterprise. He returned to Vicksburg with his command on the 23d of May, after an absence of seventy-four days.

Early in June the Confederate general, FORREST, had defeated disastrously General STURGIS at Guntown, Miss. In the beginning

of July, SMITH, with a force of 14,000 men, infantry and cavalry, was ordered to beat up FORREST. In those days the Union generals did not have to hunt long for FORREST; he was never in hiding when a fight was in sight. He attacked SMITH on the 14th with all his force; in fact, SMITH had out-maneuvered the Confederate by a flank movement, forcing him to give battle at a disadvantage. FORREST was outnumbered and badly worsted in the engagement and in the subsequent operations. His success against FORREST added largely to SMITH's reputation as a soldier. Later, during the early fall, the Confederate cavalryman, General JOSEPH WHEELER, got into East Tennessee, and upon SHERMAN's communications, GRANT telegraphed HALLECK: "If A. J. SMITH has reached Decatur, he had better be ordered by rail to Nashville to get on the track of WHEELER and drive him south." On September 12th SHERMAN telegraphed SMITH from Atlanta: "I have been trying for three months to get you and MOWER to me, but am headed off at every turn. HALLECK asks for you to clear out PRICE. Can't you make a quick job of it and then get to me?" These quotations show in what estimate SMITH was held by the military authorities.

Meanwhile SMITH had been promoted to major-general for his service in the Red River campaign, of date May 12, 1864. PRICE's raid into Missouri had become so threatening as to alarm the government, because the forces under General ROSECRANS, for the defense of that State, had been very much reduced. So it happened that SMITH, while at Cairo with his division, at last on his way to join SHERMAN, was diverted once again by an order from the War Department to go into Missouri. Hard marching, hard fare, and isolated skirmishing characterized this expedition. It was a most trying service, yet SMITH performed his part with uncomplaining zeal and fair success. He followed PRICE across Missouri, but at the final moment, through an error of judgment on the part of his superior in the direction of SMITH's march, the latter was deprived of a last opportunity to strike PRICE at Hickman's Mills, and the glory of the wind up was reserved for PLEASANTON at Mine Creek.

While PRICE was penetrating Missouri, HOOD had entered Tennessee, and was pressing the old hero, THOMAS, back on Nashville. Frantic appeals were sent for SMITH's troops to go to the assistance of THOMAS, which was ordered from Washington. SMITH's long march from the western part of the State, where he had followed PRICE, caused great delay in his reaching THOMAS. He embarked on steamers at St. Louis finally, and reached THOMAS at Nashville on the 1st and 2d of December, 1864, almost simultaneously with

HOOD's appearance before the city. HOOD had been severely defeated by General SCHOFIELD on November 30th, at Franklin. SMITH's share in the subsequent battle of Nashville, under THOMAS, on the 15th and 16th of December, was large and successful, and he was highly commended by THOMAS. HOOD was driven back across the Tennessee with enormous losses. SMITH took part in the pursuit, which was greatly retarded by bad weather, down to the river.

SMITH's extended operations had earned for his troops the soubriquet of "SMITH's Guerrillas." After the battle of Nashville, he wrote to Washington asking that his command, which had now grown to the dimensions of a corps, should receive a corps designation. He jocularly referred to their long journeyings and battles, and remarked that until they were assigned a corps number he should call them "the lost tribes of Israel." The President thereupon designated it the Sixteenth Army Corps. He was not permitted to remain long idle. CANBY's movement against Mobile, long delayed, was at last under way, and on the 6th of February, 1865, SMITH's veterans started on their last long journey by transports via the Tennessee, Ohio and Mississippi rivers to New Orleans, and thence by sea to Mobile. Under his command they participated in the capture of that city, the operations requiring about a month. Then they advanced up the Alabama river, SMITH occupying Montgomery and the whole outlying country, by making detachments to the more important points.

The war had now come to an end; the national authority was restored in all quarters. He remained in command of the District of Montgomery until the fall of 1865, when he was transferred to the District of Western Louisiana. He was mustered out of the volunteer service January 15, 1866, and made colonel of the Seventh Regular Cavalry July 23, 1866, but resigned May 6, 1869, and entered upon civil pursuits. Soon after General GRANT became President, in 1869, he appointed General SMITH to be postmaster of St. Louis, where he continued to reside until his death. Under a special law, passed in December, 1888, General SMITH was reappointed into the army as colonel, January 22, 1889, and on the same day was placed on the retired list.

General SMITH was of small stature, with rather brusque, abrupt manners, sometimes verging on irascibility, yet was popular with his troops, and shunned none of the hardships to which they were subjected. The Union cause owed General ANDREW JACKSON SMITH a great debt of gratitude.

FIELD ORDERS, MESSAGES AND REPORTS

BY CAPTAIN EBEN SWIFT, FIFTH CAVALRY

ORDERS.

THE giving of proper directions and orders to troops is one of the most important things to learn in the art of command. NAPOLEON himself does not always furnish a model in this respect. His defective orders to DESAIX might easily have led to his defeat at Marengo. At Wagram, a single word in the wrong place was sufficient to produce dangerous confusion in his army of 150,000 men. At Bautzen the Allies escaped destruction because his orders were not clear enough to suit the capacity of NEY. GROCHEY failed him at Waterloo because of vague and imperfect orders. In each case, however, he himself grasped the military situation clearly and well. More recently, at the battle of Inkerman in the Crimea, a corps was misdirected and kept out of the fight because of an order which could be interpreted in *two* ways. At Shiloh, General GRANT's orders were not direct, positive and clear enough to bring a division, which was six miles away, into a fight which lasted all day. Many a military career has been ruined because of badly constructed orders.

The increased size of modern armies adds immensely to the importance of this subject. The German staff, under the teaching of MOLTKE, has reduced it to a science.

A military order is the more or less strict expression of the will of a chief, conveyed to his subordinates. The higher the position of the commander, the more general in character will his orders be. At the beginning of operations, and from time to time thereafter, the plans and intentions of the supreme authority would be issued in the form of *Letters of Instructions*. They would regulate movements over a large area during a considerable time. In this way General GRANT directed a million men over an area half as large as

Europe, from his headquarters at City Point. His instructions were in the form of letters and telegrams to the various commanders. They were of the most general character and prescribed little else than the general objective of the hostile armies and concert of action in attacking them.

It seems appropriate that directions of the headquarters of an army marching on several roads, covering the dispositions for several days at a time, should be issued in the same way, although no uniform practice obtains. General SHERMAN's orders, from the headquarters of the military division of the Mississippi in his marches from Chattanooga to Atlanta and beyond, were almost too general to be called orders, although designated as such. Of the same character were the circulars issued by General MEADE before the battle of Gettysburg.

As soon as it becomes necessary to prescribe matters of detail, orders are issued. They would, for instance, be issued to a command marching on a single road. It would now be necessary to regulate in detail the size of the different fractions of the command, the task of each, the sequence in which they take the road, and the hours of starting. It is to this kind of an order to which I now ask your attention, because it will contain all the essential points of any field order, and because it requires a precise phraseology.

Orders are issued either (1) in writing, or (2) verbally.

The *written* order should be invariably used for large commands. The *verbal* order may be given (a) directly, or (b) by orderly. It may be issued directly when the officers can be quickly assembled to hear it given, but even then the orders should be dictated and written down if of any length. For simple details or a single service the verbal order may even reduce itself to a word of command. A notable instance of a verbal order occurred at Spring Hill, before the battle of Franklin. General HOOD has claimed that the best move of his military career came to naught because General CHEATHAM disobeyed his positive verbal order to attack. CHEATHAM has asserted with equal earnestness, that no such order was given. I refer you to a study of the situation there to decide how nearly a Federal army came to disaster. The *verbal* order, delivered by orderly, should be avoided as much as possible in the field. It would be used only upon urgent necessity, and always with the danger of some such controversy as the above taking place. Such an order should not contain more than a single, well determined point, as "the division will march to the village of X." The bearer of the message should repeat it before riding off. Sometimes, for

obvious reasons, the messenger is also made acquainted with the contents of the written message.

Orders are general or special, for regimental and all larger commands; for small units or commands they are simply called orders. The commanders of the several fractions would use the terms detachment orders, advance guard orders, rear guard orders, depending on the character of the duty.

As to the general plan of the order, several practices obtain:

1. To prescribe a line of conduct for the subordinate, both in the details of execution of a particular order, and in the different emergencies which may arise.

2. To point out the object to be reached, leaving the means to the judgment of those who are charged with the execution.

The *first* plan, it must be confessed, was followed by NAPOLEON and WELLINGTON. NAPOLEON particularly delighted in minute and voluminous instructions. He would detail the exact duties of every important commander and would attempt to provide for every case. This was perhaps a necessary part of his system, for his marshals were not men of conspicuous ability, except as fighters. The best of them frequently failed him when removed from his personal direction, and many of his instructions were neglected and ignored. His practice of providing for everything himself worked to his disadvantage toward the close of his career when he was not able to work for twenty hours a day. This is shown particularly at several phases of the Waterloo campaign when his staff failed to assume the direction of events in his absence or when he was resting. His defeat at Leipsic was largely due to the failure of his staff to provide means for retreat—matters which they should have attended to without orders.

The plan of NAPOLEON cannot be recommended and would not succeed in less skillful hands than his own. What the ordinary mind foresees seldom comes to pass. Few indeed are able to look so far into the future as to provide for every emergency. It is impossible to tell where, in the wide range of military knowledge, it is expedient to begin, and where to stop, when once you begin to give details. Instances are known of elaborate plans of battle which were never carried out because a single unexpected event occurred.

An order of the *second* class is based on the assumption that the recipient is familiar with his duties, and that he has sufficient military ability to use the advantage of being on the ground. In newly formed armies this fortunate state of affairs cannot exist; and con-

sequently the generals have gone into the opposite extremes in regulating details. In our rebellion it was only toward the last when the orders began to be boiled down to a good shape and size. The order for the advance of the Union army before the first Bull Run reads curiously to-day. It warned the army that three things were not pardonable in any commander. 1st. To come upon a battery or breastwork without a knowledge of its position. 2d. To be surprised. 3d. To fall back. This order which directed a movement of over 35,000 men, prescribed that advance guards, videttes and flankers were to be used. Brigades were warned to sustain themselves as long as possible before asking help of others. The order gave directions as to the manner of attacking a battery, and told how camp-kettles and mess-pans were to be carried. Not one of these points deserved a place in a military order for the march of such a command.

In the French armies of the republic in 1871 this peculiarity is marked. Page after page of minute details were written, which the accounts of the battles show were not carried out. On the other hand eighteen lines of the German official account give the orders of MOLTKE when the German armies, marching on Paris in 1870, were turned to the north to follow McMAHON. Yet in the latter case not a battalion crossed another in its march, or went hungry, or bivouacked in the open.

A precise form is given to the order. If it is of any length and includes the acts of several bodies of troops for a common end, it should be divided into paragraphs, numbered consecutively without headings. The most important matter should come first and passages dealing with a single subject are included in the same paragraph.

The most common form of a field order, as well as the most useful as an example, is the order of march of a body of troops acting alone when an enemy is near. Such an order would contain a suitable caption and ending, and the body of the order would be divided into about five numbered paragraphs, as follows:

- I. Information of the enemy and general situation.
- II. Your own plans.
- III. Your disposition for carrying out your plans.
- IV. The destination of the trains.
- V. The position of the commander.

An order will give at its head the designation of the leader's command. In our service the central point from which orders are issued is designated as headquarters, but the word seems to be unnecessary.

The caption must also name the place of issue, the number, the date, and generally the hour and minute. The date may be abbreviated in the usual way, thus, 11-20-95, indicating the eleventh month and twentieth day, of the year 1895. In naming a night, mention both days, Night 18, November. The hour and minute are written in railway fashion, thus, 9:15 A. M. The words noon and midnight should be written in full. At the end it must give the name of the commander by whose authority it is issued, and be authenticated by a staff officer if this is not done by the commander himself.

Under the order is briefly noted the manner of its issue, as:

"In writing to the commander of each camp."

"Dictated to the adjutants."

"Copy to commander-in-chief."

The information of the enemy was given by German commanders in some such form as this: "From reports received it seems probable that the enemy intends such a move," or "The enemy appears to be in such a position." This statement, to be of value, requires a complete system of reports, a free communication with all the fractions of a command, and an efficient service of information. From the fact that it was omitted from some of the most important orders of our last war we are led to the conclusion that scouting and reconnaissance was often defective, and also that the peculiar character of the theater of operations made it impossible to locate the enemy until he was actually encountered. Even in such a case it would seem that the ideas of the commander, however vague they might be, would deserve a place in the order.

The next paragraph contains an intimation of the *end in view*. It would give only so much of the general plan as would enable the subordinate to carry out the operations in hand. As an illustration of the necessity for these provisions I will refer you to the numerous cases where orders are based on incorrect notions of the position of the enemy, in which case the subordinate may be justified in disobeying the most positive order. One of the points of contention in the FITZ-JOHN PORTER case was that the orders of General POPE were based on an erroneous idea of the enemy, and the claim was made that the officer performed a great service in disobeying the order. At the battle of Worth the orders of the Crown Prince, to break off the action, were disobeyed because the commanders on the field thought the fight had progressed too far to make such a thing advisable.

The manner in which the troops are distributed may be shown

in the third paragraph, where the tasks are assigned to the several fractions of the command. It is preferable, however, to enumerate the troops apart from the text, in the margin, in a column headed, "Distribution of Troops." When the sequence of march is put in the orders, they are named one after the other and the heading is supplemented by the words, "and order of march." Thus the order of march of the fractions of an advance guard of a brigade would not appear in the brigade order. That would appear in the advance guard order, and the brigade order would simply give the names of the troops assigned to the advance guard. The brigade order would, however, give the order of march of the main body, which would be under the direct command of the commander. The most important *dispositions of troops* are given first, because they will impress themselves more strongly upon the memory. These will be followed by matters of lesser importance, which may have only for their object to secure or support the principal undertaking. If a natural arrangement such as this does not suggest itself, then it will begin with the foremost troops, as the advanced cavalry, following with advance guard and main body. This portion of the order will designate an initial point and the time it is passed by the head of the column. The time of marching of the subdivisions of the column will be calculated from here.

In naming units from which a portion is to be excluded, the unit should be named and the word "less" appended (for instance, First Cavalry, less one squadron). If more than half the unit is detached, it is sufficient to name the troops concerned.

In anticipation of action, the light baggage, that is the portion which will be required by the troops, will be separated from the heavy baggage. After this the light baggage follows the particular unit to which it belongs without further orders. The heavy baggage must be kept where it will not interfere with the movements of the troops and where it will not be involved in any of the confusion of battle.

The last paragraph gives the position of the commander. In certain cases it would give an hour at which staff officers from the various portions of the command are ordered to report for orders.

In general terms the order must be clear, short, precise, complete.

Avoid every form of expression that can be misunderstood because "experience shows that such orders will infallibly be misunderstood." Such words as "before," "behind," "forward," "rear," "this side," "that side," should be used with great care or

not at all. In their place the compass bearing, with reference to known points, is preferable, as, "One mile south of the village of X." The terms "right" and "left" may apply to individuals or bodies of men or to designate the bank of a stream—in which case the observer is supposed to be facing down the stream: they should not ordinarily apply to the ground or to inanimate objects, such as villages or woods. It will frequently be necessary to give the phonetic as well as the correct spelling of proper names. When several names are alike in a neighborhood, they must be located by reference to other points. Thus, in the Atlanta campaign there were two places designated as Howell's Mills, one on Peach Tree Creek and the other on Nancy's Creek, about two miles apart. A misunderstanding as to these points caused a wide gap in General SHERMAN's lines closing on Atlanta, which might have caused serious results.

A road will be designated by two or more places, following the line of march, as the "Leavenworth-Lowmont-Atchison Pike." It often happens that the names are different on different maps, and that places not on one map are found on another. When other than the official map is used, the fact must be stated. VON DER GOLTZ tells about hunting all night to find a name that was not on any of his maps at all.

The order in the field is issued under peculiar conditions of emergency and inconvenience. It is received sometimes in the midst of great excitement and danger: perhaps it must be read in a rain storm where no shelter is near, or at night by a poor light. Every care must be taken to make it brief, in plain phrase and short sentences.

It must be so positive in its terms that the responsibility can be placed with ease. The line must be clearly drawn between an order which is to be strictly construed and one where discretion is allowed. For instance, "March your troop to X," "March your troop to X at a gallop," "March your troop to X as quickly as possible" are a few forms of a very simple order, which might be obeyed in many ways. Imagine yourself in the place of the recipient of your order and ask yourself if you could obey without asking a question.

It must be complete in form. In the hurry and confusion of writing it will be easy to leave an organization not provided for, a road uncovered, a name in the wrong place. These blunders become fatal when they involve large commands.

The writing must be so distinct as to be legible even by a bad light. This is one of the most important requisites. The German

officers are directed to cultivate a fair round hand. Indifference to this plain and simple piece of education seriously impairs an officer's efficiency in many cases. The most serious criticism of the work of this kind that I have seen is that it is often so carelessly written as to be unintelligible. If an officer does this under the clear skies and favorable influences of a peace maneuver, what may be expected in the contrary case?

The list of things which an order should not contain is a long one. It is particularly necessary to avoid conjectures, expectations, reasons or apologies for measures taken.

The order for an advance should make no provision for a possible retreat. Such an event should be carefully considered, but the necessary directions should be given to the next senior officer in strict confidence.

All orders, not directly concerned with the movement in hand, should be issued separately. Such orders would be termed by the Germans "Orders of the Day." The practice of mixing up orders for every conceivable detail of service with the order for the movement of troops was a common thing at one time in our late war. Some of the orders of CHANZY in 1871, read like the army column of a newspaper.

Care should be taken that no order is given for things which would ordinarily be done without special orders. The orders of the Confederate commander for the attack on GRANT's army at Pittsburg Landing are a notable instance of the tendency of high commanders to reduce their subordinates to a state of tutelage. This order, the credit for which is claimed for General BEAUREGARD, required some hours for preparation, and now occupies about three pages of the Rebellion Records. It reminds one major-general, who, by the way, was himself the author of a system of tactics, that he must "make a proper distribution of the artillery along the line of battle, remembering that the rifle guns are of long range, and should be placed in commanding positions in the rear of his infantry, to fire mainly upon reserves and the second line of the enemy, but occasionally will be directed on his batteries and heads of columns." Another major-general, a veteran of twenty-five years service, was told how to form his regiment in line, but was permitted to place his artillery to suit himself. The order provided for a number of detachments, for camp guards, for repairs of bridges and roads, and closed with an appeal to the patriotism of the troops, and enjoined them to obey orders, not to waste ammunition, to fire slowly, at a mark, and to do much work with the bayonet.

MESSAGES, DISPATCHES, REPORTS.

A commander's knowledge of the situation is gained and his decisions are formed, largely by the messages he receives from the front. These messages are written on a message blank of size to fit, whence once folded, an envelope furnished for the purpose. An inspection of the blank and envelope renders a description unnecessary, except to explain that the heading "Sending Detachment" should be filled in with the name of the body of troops with which the writer is on duty, as picket of First Company, Twentieth Regiment of Infantry, or Officers' Patrol, Sixth Cavalry.

The address is written briefly as, "To General SHERMAN." The signature should be the writer's surname and rank.

For staff purposes copying apparatus is provided. It is usual not to completely close the envelope in order that commanders along the line of march may read its contents. The orderly retains the envelope.

I use the word "message" in preference to "report," which is generally employed in this country, so as to distinguish between brief communications which pass from one part to another of an army on service, and the more elaborate history of the operations prepared under cover, at greater leisure, giving a complete narrative of the campaign or battle. Hence it is more correct to say that a patrol sends a message than that it renders a report. A dispatch is a brief narrative of events, more detailed than a message and less so than a report. It is usually sent immediately after any important event, to higher authority.

The message, in its brevity, clearness and freedom from official forms, resembles an order or a telegram. It may even contain an order when sent to a subordinate. The message may therefore take the place of reports from the front and of orders from the rear.

The utmost care should be observed in its preparation, remembering that *facts* are wanted and that they must be clearly separated from what is heard or surmised.

Our rebellion records are full of stories of overwhelming forces of the enemy, of uniform valor and victory on the side of the writer and of indiscriminate praise of subordinates. This tendency to magnify the size of the enemy, to call a defeat a victory, and to award praise where it is not justly due, is only natural, but should be strongly repressed. The information thus obtained is valueless to a commander, and every willfully false report should be treated as a crime.

NOTES. I.

Following is an example of an order for the march of a detached brigade of all arms:

The command consists of:

- 1 squadron of cavalry,
- 1 battery,
- 1 brigade of infantry,
- $\frac{1}{2}$ company of engineers,
- 1 bearer company,
- $\frac{1}{2}$ ambulance company,

FIRST BRIGADE, FIRST DIVISION, FIRST ARMY CORPS.

FORT LEAVENWORTH, KANS.

11-21-95. 8:30 P. M.

FIELD ORDERS }
No. 1. }

Distribution of Troops 11-21

Advance Cavalry:

1 sq. 6 Cav. less 2 plat.

Advance Guard (Col. A.)

$\frac{1}{2}$ platoon of Cav.

1 Inf. Regt. less 1 bat.

$\frac{1}{2}$ Company Engineers.

Detachment of Bearer Co.

Main Body and Order of
March. (at 1,000 yds.)

Staff of 1 Brigade.

$\frac{1}{2}$ Platoon of Cav.

III Battalion 1 Inf.

Battery A, 1 Art.

2 Inf. Regt.

3 Inf. Regt. less 2 Cos.

Det. of Bearer Co.

$\frac{1}{2}$ Amb. Co.

Rear Guard (at 500 yds.)

1 platoon of Cav.

2 companies 3 Inf.

I. The enemy is reported at Winchester, advancing on Leavenworth.

II. The brigade will seize the line of the Big Stranger Creek to-morrow.

III. a. The cavalry will find the enemy and screen the march. The bridges will be held until the arrival of the infantry, when the cavalry will go to the flanks.

b. At 6 A. M. the brigade (except as above) will assemble near Frenchman's and will march by the road Frenchman's 8 Mile House.

c. The rear guard will send a detachment to guard the train.

IV. The heavy baggage will be parked at West End parade until 12 o'clock noon, when it will follow the troops.

V. I will be with the main body until 8 A. M. and with the advance guard after that hour.

B.
Brigadier General.

Dictated to Staff.

Copy by orderly to Squadron, Battery and Regimental Commanders.

Following are samples of the message blank and envelope, reduced half size.

SENDING DETACHMENT	LOCATION.	DAY.	MO.	HRS. a. m. or p. m.	MIN.
-----------------------	-----------	------	-----	------------------------	------

RECEIVED,

To

To

DEPARTURE

ARRIVAL

RATE OF SPEED

This envelope will be returned to bearer.

CAVALRY RAIDS.

BY LIEUTENANT JAMES H. REEVES, FOURTH CAVALRY.

WHILE not willing to admit that the day for the use of cavalry on the battlefield has completely passed away, it is at once admitted that its use in this respect has much diminished. But while its use on the actual field of battle has much diminished, its use in detached action has increased to such an extent that, "it implies no disparagement of the value of cavalry on the battlefield to say that the most important service of mounted troops is in that class of duties known as 'detached action.'" Detached action is defined to embrace: "All scouting, reconnoitering and raiding duty, whether by a great force of cavalry acting as a screen in front of the army, by a *raiding column*, a mere patrol, or even a single scout."

The cavalry may be said to be in the performance of these special functions continuously during the existence of war; while with infantry and artillery marches and maneuvers are the rule, and fighting, their *raison d'être*, is the exception.

Nor are these special functions to be underrated in summing up the various causes leading to a successful close of the war, for on these "the safety of the army and the soundness of the plans of the commanding general mainly depend." An able author says of NAPOLEON: "His military genius was paralyzed by lack of information; and to his deficiency in light cavalry, more than to any other cause, is to be attributed his downfall." While the cavalry will be incessantly engaged in detached action, raids, the special form of detached action which we are to consider in this paper, will be undertaken only when the occasion for their special use arises. And this occasion must be such that the advantages accruing will outweigh the grave disadvantages, such as inadequate objective, demoralization, waste of men and horses, absence at time most needed,

(and others which appear in the description of raids) which are connected with every raid.

Raids are defined (Cavalry Drill Regulations, paragraph 968) to be, "Isolated, independent cavalry operations, conducted with secrecy, by rapid marches, usually avoiding general engagements."

Prince KRAFT says: "What is the proper meaning of this new word 'Raid?' As far as I know, it has not yet been defined with sufficient precision. I understand it, judging by the various undertakings which have been so called, to mean an incursion made by a large mass of cavalry * * * during which this force is not only made independent for a time of the regular command of the army, but is also unable to count upon any daily support from the latter, and is thus absolutely detached and left to itself, while its communications with its own troops are necessarily often cut by the enemy; being thus situated, it proceeds, obeying the good pleasure of its leaders, to execute the duty which it may have been intended to carry out."

Far be it from me to criticise so great an authority as Prince KRAFT, but this definition does not seem to quite cover the American idea of a "raid," and here it may be said, they really originated during our Civil War.

In order to better understand what is meant by raids, let us first notice the objects for which they are or may be undertaken, and then follow out in detail one or two leaders while on a raid, which will present the subject more clearly and comprehensively, than we can by mere definition.

These objects are given in "Organization and Tactics," as follows:

- "1. To threaten or destroy the communications of the enemy, thus compelling him to weaken himself for their protection, or delay his advance.
- "2. To check an invading army, by operations against its communications and the capture of its immediate base of supplies.
- "3. To make a diversion in favor of the main army by drawing off troops in pursuit of the raiding force.
- "4. To gain information.
- "5. To cause alarm in the enemy's country, and thus destroy confidence in the enemy's commanding general, or create a sentiment unfavorable to the prosecuting of the war.
- "6. To interfere with the mobilization and concentration of the enemy's forces at the beginning of a campaign.
- "7. To devastate the enemy's country, and destroy his resources.
- "8. To effect the release of prisoners."

To go back for a moment and consider the subject historically, we find examples of raids or adventurous expeditions successfully executed as far back as the "Seven Years' War." As two examples we may notice HADDICK's capture of Berlin, October 17, 1757, with a force of 4,000 men and four cannon; he reached and attacked Berlin, which was defended by a force equal to his own, and capable of defeating it, had not this force been so imposed upon through rumors that had been scattered abroad as well as the bold front shown by HADDICK. He accepted a ransom of £27,000 sterling, and after a rest of twelve hours made a successful retreat, skillfully evading all attempts to cut him off. But the most important operation of the kind during that war was the attack and capture of the Prussian convoy marching from Trappau to Olmutz, for it had a decisive effect upon the result of the campaign, causing the raising of the siege of Olmutz and the retreat of FREDERICK into Bohemia.

The convoy was under command of Colonel MOSEL, and consisted of 4,000 wagons and an escort of eight battalions, 3,000 recruits or convalescents in four battalions, and 1,100 cavalry.

Marshal DAUN sent General LORDON to attack from the west and ZISKOWITZ to attack from the east.

Frederick sent General ZIETHEN with twenty squadrons and three battalions to MOSEL's assistance. The first attack on the convoy was unsuccessful. A second attack made while the convoy was passing through the defile of Domstoedel was successful and resulted in the destruction of the entire convoy with the exception of 250 wagons. Other instances might be cited from this war, also the operations of the Cossack leaders, CONSTANTINE, TCHERNIKEFF, DENIZOFF and others in the famous campaigns of 1813-14 are very interesting.

"But in strategic results, in skillful execution and far-reaching effects, the American raids surpassed all previous operations of the kind, and have as yet been unequalled." So then it will more nearly fulfill our object to consider some of these raids, the details of composition, equipment, execution, characteristics of leaders, etc., etc. Among the most brilliant and successful of American leaders may be mentioned MORGAN, FORREST, STUART, SHERIDAN, WILSON and GRIERSON.

MORGAN is credited with being the author of raids. This is probably true in that it was an original idea with him, for it is extremely unlikely that he ever heard of TCHERNIKEFF, TETTENBORN and other partisan leaders, though his raids were almost upon the same principles except that he used no infantry and did use guns.

His historian, General DUKE, says of him: "While other cavalry officers were adhering to the traditions of former wars, and the system of the schools, however inapplicable to the demands of their day and the nature of the struggle, he originated and perfected not only a system of tactics, a method of fighting and handling men in the presence of the enemy, but also a strategy as effective as it was novel. Totally ignorant of the art of war as learned from the books and in the academies, an imitator in nothing, self-taught in all that he knew and did, his success is not more marked than his genius."

Probably this statement is somewhat enthusiastic and colored by personal admiration, but it is true that MORGAN possessed the courage, the ready resource, the knack of adapting the means to the end necessary for every successful cavalry leader, as the following description of his command and operations will show. It may be remarked here that it is more to our purpose to consider rather the general features applicable to all his raids than those of a particular raid, for the expedients used of necessity varied with the demands of each case.

His force never consisted of more than 4,000 men. At first it was armed in a very nondescript manner, but finally uniformly with a rifle. Each man carried a brace of revolvers but no saber. Two small guns were generally with his command. His style of fighting was peculiar at that time and was original with MORGAN. To again quote his historian: "If the reader will only imagine a regiment drawn up in single rank, the flank companies skirmishing, sometimes on horseback and then thrown out as skirmishers on foot, and so deployed as to cover the whole front of the regiment, the rest of the men dismounted (one out of each set of fours and the corporals remaining to hold the horses), and deployed as circumstances required, and the command indicated to the front of, on either flank, or to the rear of the line of horses, the files two yards apart, and then imagine this line moved forward at a double quick or oftener a half run, he will have an idea of MORGAN's style of fighting."

The long flexible line curving forward at each extremity was hard to break, giving as it did a converging fire, admitting of facility of moving to and quick concentration at any point.

A small body of mounted men was usually kept in reserve for the purpose of acting on the flanks, covering a retreat or pushing a victory. His men were all good riders, but due to his methods of recruiting and the rapidity of his movements, there was neither

time nor opportunity for training his men or horses sufficiently for effective mounted work.

His command had to be a self-sustaining one, for he rarely fought with the army, and many times could count on his nearest support being as far distant as 100 miles and over.

His great fertility of resources is shown by his skillful marches, by his scattering his forces at times and threatening several points at once, by the extreme mobility of his column, allowing of rapid concentration, by his use of scouts, and in many other ways.

A special instance that might be mentioned occurred at Midway, Ky., (when on his first raid), where he made extraordinary use of the telegraph office (having with him an expert operator) intercepting various orders and sending out others, changing the direction of march of troops moving to cut him off. A summary of his first raid is: He started with 900 men, lost ninety and returned with 1,200, was absent twenty-four days, traveled 1,000 miles, captured seventeen towns, destroyed all the government supplies and arms in them, dispersed 1,500 home guards, and paroled 1,200 regulars.

MORGAN made his greatest raid (one year later, or in July, 1863), which was an unsuccessful one. Disobeying his orders, he had made a much more extended raid than was intended, got entirely beyond the help of assistance, and was caught by a sudden rise of the rivers, rendering all fords impassable. His command was dispersed and he was captured. He was confined in the State Penitentiary of Ohio, "where he proved himself a good man all round, an undeniable cavalry leader, and as full of resource as ever by tunneling through the prison wall and escaping with five others."

He was killed in September, 1864, while on a raid.

MORGAN may be cited as the foremost exponent in abandoning the saber, arming his men with a long-range rifle and fighting them dismounted.

But, great as was MORGAN's ability and self-sustaining powers, he was rivaled in these by FORREST, whose natural soldierly capacity was so great that it may be termed military genius. Like MORGAN, he was not an educated soldier, so proceeded in an original (at least to himself) way to work out his success.

His method of fighting was very similar to MORGAN's, though he made greater use of a mounted reserve and did not discard the saber, though placing only a small reliance in it.

So varied were the services performed by FORREST's men that they fully proved General KILPATRICK's trite saying that, "Cavalry can fight anywhere except at sea," and on two occasions they prac-

tically performed "the exception that proves the rule." One was his first action, where his regiment engaged a gunboat carrying nine guns and protected by iron plates. This boat had been sent to Canton, on the Cumberland river, to destroy a quantity of Confederate stores. FORREST made a night march of thirty-two miles and reached the point ahead of the boat. Dismounting his men, he placed them under cover of logs and trees, and when the boat came up he engaged it successfully, causing it to retire.

The second instance was in October, 1864. FORREST had decided to make an effort to impede the navigation and use of the Tennessee river. By the same means as employed in his first action he captured two steamers and a gunboat. Repairing the gunboat and one steamer, he manned them by detachments chosen from his command, and the Confederate flag was soon floating from both vessels, "the horsemen on shore making the air ring with cheer after cheer for their comrades who had taken service on the novel element." His fleet lasted only a day or two, when the boats being overmatched were run ashore and burnt, "the troopers scampering off to their horses, fonder of their saddles than ever."

Another exploit was cutting his way out from Fort Donelson rather than surrender; another, "the massacre of Fort Pillow" (a blot on his character as a soldier); another, the capture of the city of Memphis—but these are enough to show the great range of the man's abilities.

In raids, FORREST was equally effective, as is shown by his raids on the L. & M. R. R. in 1862; his raid in conjunction with VAN DORN on GRANT's communications and the depot at Holly Springs, which was perhaps the most successful and profitable raid ever undertaken; his raids on SHERMAN's communications in 1864—and others that could be mentioned.

In repelling or pursuing a raiding force he was always equal to the occasion, as is shown by his fight with General SMITH at Okolona, Miss., the succeeding pursuit and fight. Also, by his pursuit and capture of STREIGHT's command, which surrendered 1,700 to 500. In this, "for three days his men marched an average of forty-one miles daily, fighting for hours several times daily and nightly, and after that, in the last forty-eight hours of the expedition, he led his men, worried and jaded as they were, a distance of full ninety miles. At the surrender, the Confederates, formed up in line to receive it, were so overcome with sleep that they were nearly all nodding, unable to keep their eyes open."

In "Organization and Tactics," his character is summed up as

follows: "In the whole range of military history it would be hard to find the name of another cavalry leader who, with the same numbers caused his enemies so much trouble as N. B. FORREST."

But great as were the operations and successes of MORGAN and FORREST, they were most too much of the freebooter style, and it is to other American cavalymen and their commands that we must look for the model we are seeking.

Foremost among these is General J. E. B. STUART, who, "ignoring the cavalry traditions of the Old World, and seeking the most ready means to meet the end in view, he originated a new method of using mounted troops, and may be said to be the father of the cavalry tactics of the present day."

His force was composed of true dragoons, and while more effective in battle than the forces of MORGAN and FORREST, also rivaled them in the extent, magnitude and success of the raids undertaken. His ability for screening and reconnoitering duty has probably never been equaled.

The force under him in June, 1861, numbered only 21 officers and 313 men present for duty, yet such was his activity that a front of more than fifty miles was efficiently watched and every important movement of the enemy was duly reported, causing General JOHNSTON to say: "How can I eat, sleep, or rest in peace without you upon the outpost?"

General JOHNSTON's recommendation of STUART was: "He is a rare man, wonderfully endowed by nature with qualities necessary for an officer of light cavalry. Calm, firm, acute, active and enterprising, I know of no one more competent than he to estimate the occurrences before him at their true value."

The risks STUART took and the dangers from which he rescued his command can readily be imagined when we recall the fact that on three occasions he made the entire circuit of the Union army.

The first was "The Chickahominy Raid", General LEE's order for which provides as follows: "You are desired to make a scout movement to the rear of the enemy, with a view of gaining intelligence of his operations, communications, etc., and driving in his foraging parties and securing such grain, cattle, etc., for ourselves as you can make arrangements to have driven in. * * * You will return as soon as your expedition is accomplished; and you must bear constantly in mind, while endeavoring to execute the general purpose of your mission, not to hazard unnecessarily your command, or to attempt what your judgment may not approve. * * * One of the chief objects of your expedition is to gain intelligence for the guidance of future movements."

He moved on this raid on the 12th of June, 1862, with a force of 1,200 cavalry and two guns of his horse artillery. His command was in lightest marching order, carrying only three days' rations and sixty rounds of ammunition per man. He marched around the right of McCLELLAN's army, determining its position, and when he reached Tunstall's Station on the 13th, he had McCLELLAN's army squarely between himself and Richmond, and was within five or six miles of its camps.

He had now determined the position of the right wing, thereby accomplishing the main object of his expedition. The great depot of the army at the White House was less than four miles distant, and could he have spared the time to attack would have been a prize rich beyond description. But in view of General LEE's instructions, "Be content to accomplish all the good you can, without feeling it necessary to obtain all that might be desired," he forebore making the attempt.

In the light of after events it seems that STUART had up to this time intended returning by the same road, but now considering that too dangerous, due to the troops moving to cut off his retreat, he pushed boldly forward, and his command did not know that he had almost on the spur of the moment changed his plans.

He continued his march, making the entire circuit of the army, and safely reaching Richmond with most valuable information.

The waste of horses was replaced by those captured; a few prisoners were taken and a considerable quantity of stores destroyed, but the information gained was what in this case stamped his raid with success.

His raid to the rear of POPE's army, in August, 1862, was a brilliant affair, in which he almost captured General POPE himself, and did succeed in capturing a number of officers on his staff, together with a large sum of money, the despatch book and other papers of General POPE's office, his personal baggage and horses and other property. His greatest raid, "The Chambersburg Raid," was made with 1,800 men and four guns. The great marching powers and tactical versatility of his command were clearly shown in this raid. After reaching Chambersburg he marched on to Leesburg, a distance of ninety miles, in less than forty hours. In the affair a Poolesville the same men first charged as cavalry and drove back the enemy's horsemen, then, quickly dismounting, checked the advancing infantry long enough to enable the artillery and the rest of the command to come up. "The success of this raid depended, as in most raids, on General STUART's ability to

deceive the enemy as to the intended direction of his march, prevent all information reaching him by cutting the telegraph everywhere, and, at the same time, receiving accurate information as to the position of the enemy's various detachments; * * * his energy and impetuosity were unrivaled, while his presence of mind and promptitude of resource saved his command on many critical occasions."

These instances are sufficient to illustrate the general character of raids, and to complete and round out our definition given above, but we cannot close the historical references without briefly citing the great results accomplished in some other raids.

GRIERSON'S raid, in 1863, was made with about 1,700 men. He went clear across the State of Mississippi, from north to south, devastating the country, cutting the railways and telegraph lines, burning rolling stock, bridges, stores, etc. General GRANT says: "The raid was of great importance, as it attracted the attention of the enemy from the main movement against Vicksburg."

The greatest raid of the war, so far as preparation for, numbers engaged, area of country covered, and destruction caused, was made by General WILSON. His force consisted of nearly 13,000 men and eighteen guns, and was organized with the greatest care.

It was, in fact, almost an invading army, bent upon laying waste a great section of the enemy's country, rather than a raiding force, conducted with secrecy and avoiding general engagements. This force was so equipped as to be able to keep the field for sixty days without being dependent on the headquarters' magazines, etc.

Each man carried five days' provisions, twenty-four pounds of grain, 100 cartridges, and one set of spare shoes. A train of 250 wagons and pack-mules also accompanied the command. He was engaged in this raid for twenty-eight days, marched 525 miles, captured 6,820 prisoners and 280 guns, destroyed 99,000 stands of small arms, 1,000,000 rounds of artillery ammunition, 235,000 bales of cotton, twenty locomotives, 250 cars, and all mills, factories, bridges, etc., along his march.

In ability for handling great masses of cavalry, maneuvering and fighting them effectively, General SHERIDAN stands forth preeminently. He made his raid against Richmond in 1864 with 10,000 men, a small ammunition train, two ambulances per division, and a few pack-mules, three days' rations and a small quantity of forage carried on the saddles. The command was armed with saber, attached to the saddle, magazine rifle and revolver. This large command marched on one road, for, due to the nature of the country, it

was hardly ever possible to bring them together when wanted if they were marching on parallel roads.

SHERIDAN'S brilliant work in marching ahead, taking position in front of LEE'S retreating army and holding it until the main army came up and caused its surrender, is hardly in the nature of a raid, but may be merely mentioned here.

Having considered briefly examples of raids made with commands ranging from 900 to 13,000 men, it remains to be seen what lessons we can draw from them for our guidance in the future should the opportunity for raiding occur; for conclusions and deductions based upon past experiences are safer and a more sure guide than those arrived at from a mere theoretical consideration of the subject.

First, as to when and where raids are practicable.

We find that any time after the declaration of war, probably the earlier the better, as giving an idea of the enemy's place of concentration and his intentions, whether for offensive or defensive action.

As to place, we find they are not so practicable in an enemy's territory. Most of those which were successful during our Civil War were on friendly territory, though of course there are exceptions to this statement as to all other rules. Noticeably, STUART'S "Chambersburg Raid." The raids in Southern territory, while in an enemy's country, were greatly aided by the peculiar circumstances of the slave population acting as guides and spies. In the Franco-German War, raids made by the German cavalry were actually projected and even begun but they turned out impracticable due to the resistance offered by quickly raised levies, which should not have rendered them futile, as we will notice further on. According to Prince KRAFT, French raids on the German lines of communications were practicable. In the last days, when the German armies were in front of Paris, much could have been done in cutting the German lines of communications, destroying villages, cutting off supplies, etc., etc. But he seems to have overlooked the fact that at this time the French had no efficient cavalry. Their best opportunities seem to us to have been in the days around Metz, when 13,000 cavalry, instead of being shut up in Metz and the horses and men starved, should have been out raiding on the German communications. They could not have fared worse than they did and in all probability would have done much better; certainly, so far as foraging was concerned. Prince KRAFT in defending the German cavalry for not breaking up the mobilization of the force being

collected by GAMBETTA, points out that they could not have been of much use where a force of 200,000 men would have been encountered, forgetting that such a force could be much annoyed and forced to separate to obtain subsistence if their source of supplies were cut off for a day or two, which is just what we expect from a cavalry raid.

That Russia contemplates using cavalry early in the war on foreign soil, and Germany also (but to a less extent), we judge from the peace stations of their cavalry. Russia having forty-eight squadrons posted along the 450 miles of German frontier, while Germany has twenty squadrons along about the same frontier. From the practice the Russians are given in making long and rapid marches with large bodies of cavalry, we are inclined to believe that she thinks raids on foreign soil offer sufficient recompense to be attempted.

Next in order for consideration comes the composition of our raiding force. Before considering this, however, let us notice briefly the characteristics of the leader necessary for this force, for we do not think there is any other military operation where the success depends more absolutely (if as much so) on the leader, as in a raid.

"Secrecy, celerity and resolution," are given as his motto. He should possess the rarest combination of talent. He should have the great prudence necessary for one charged with responsibility, at the same time possessing extraordinary rashness and bravery, combining the greatest calmness with the greatest impetuosity. He must have unbounded fertility of resource, shaking himself free from the trammels of routine and "red tape," adapting his measures intelligently to suit the varying conditions of each particular case.

In the examples we have considered, we find the forces ranging from 900 to 13,000 men. The latter size would seem to more nearly fit Prince KRAFF's definition about "masses of cavalry." But we are inclined to think the ideal raiding force lies nearer the 2,000 mark, one reference being had to integral units. This seems to more nearly meet all the various requirements and demands made upon a raiding force, being small enough for the most rapid movements and easy subsistence, and at the same time possessing sufficient power to brush aside any minor resistance.

The two main factors governing in deciding on the size of the raiding force are, the object to be accomplished and the amount of opposition to be expected, while a third controlling influence would be the character of country raided, rendering foraging and a supply of fresh horses an easy matter. The entire force should be mounted,

no infantry being added, for it would so much impede the rapidity of the march as to counterbalance the greater resisting powers it would give the command.

Two guns per thousand men seem to meet the requirements given above and is the amount of artillery recommended by the best authorities, based upon actual experience. A special organization and service of scouts is necessary to prevent operating in the dark. But this brings us to the consideration of the next step.

Careful preparation is undoubtedly necessary for success. Horses and men must be in the most perfect condition possible, and already trained and hardened by service for the excessive work they are undertaking.

The raid must be carefully planned beforehand and the object to be attained must be such as to warrant the risk incurred.

A secondary object should be provided in case the main one fails of accomplishment, so that the raid will not appear to have been made uselessly.

Pack-mules should furnish all the transportation required, the command (including the horses) counting upon living on the country. Explosives and pioneer tools should be carried in the pack train.

The scouts and guides, on whom the safety of the command and the attainment of the object depend, can not be too carefully selected. General SHERIDAN had in his employ some sixty scouts and spies. These scouts must be brave, intelligent, and have a natural aptitude for the work. They should, as far as possible, be inhabitants of the country through which the raid is to be made, and should in all cases be men actuated by the most patriotic motives.

The conduct of the raid as to marches, manner of disposing the command, the work of the scouts, the overcoming of special obstacles that may arise, would vary so far in each particular case that no instructions can be laid down. The command must be kept well in hand and plundering and pillaging can not be tolerated. The conduct of the raid is so inseparable from the personality of the leader that each one must conduct a raid for himself, by himself, trusting only to himself.

Taking the policy of the United States to be firmly established as one of peace and non-interference in foreign affairs, our military force has come to be considered in the nature of an internal police, used to back up the general government in the execution of the laws, and we regard an invasion of a foreign country by us as some-

thing impossible of occurrence. If such be the case, are we not all the more liable to invasion should an occasion arise for which arbitration does not find a ready remedy?

Let us consider that such a case has arisen, and what are the conditions that confront us? The general confusion, the utter lack of preparation, the hurried and feverish attempts at forming an army that were made in 1861 would be as nothing compared to what would exist were war declared against us and an invading army landed on our shores. While an army is being created, we can not say mobilized and concentrated (except of the militia), something must be done. The little regular army would be expanded to double or treble its present size and thrown forward. In the meantime the enemy has made a landing, established a depot, and, having selected an objective in the interior, pushes forward. As they proceed inland fresh supplies are collected and secondary bases are formed, but their line of communications still reaches back to the coast, and every day grows longer and thereby weaker. Now, a raiding force becomes necessary to check this progress by operating against this line of communications, while the rest of the army delays his progress in front by occupying defensive positions and destroying the bridges and roads by which he seeks to advance. If they can succeed in breaking it completely and cause the enemy to fall back, we have accomplished what is wanted—time.

As soon as war is declared our little force of ten regiments of cavalry of 600 men each is mobilized, and we find a force (at least on paper) of 12,000 men.

But of this force only the original part of 6,000 men (600 per regiment) are sufficiently trained in mounted and dismounted action, in reconnoitering, in rapid and incessant marching, to undertake the dangerous duty of raiding upon the communications of a modern enemy. Calling this then two brigades of three regiments each, we attach to each brigade a battery of horse artillery, select from among the available officers commanders competent for raiding duty (not judged by rank alone), and turn this force loose "to harass and weaken the enemy by drawing off in pursuit his cavalry or other troops, or, by causing him to guard a great number of points; to threaten, interrupt, and destroy his communications; to destroy his depots and source of supplies, etc.;" and if necessary to lay waste the immediate country he is occupying, for he must be stopped at all hazards. But in the meantime the enemy has taken another or other places on the coast, and has two or more lines of communica-

tions running to the rear. This offers a greater number of opportunities for raiding, but makes the task of checking the enemy's advance more difficult. Or, take the case where England is our antagonist, or an ally of our antagonist, and Canada becomes the territory upon which the enemy would be based, and from which he would launch all offensive operations. Raids must now be attempted, not against the communications alone, but first against the railways and canal systems of Canada. Fortunately for us some of these are so situated as to offer a good objective for a raiding force, promising results commensurate with the risks incurred. The Welland Canal is one, the destruction of which would (at the present time) insure the safety of the upper lakes. The Canadian Pacific Railroad, the great trans-continental line, would be most effectively destroyed at many places, thus completely separating the eastern and western seacoasts. The New Brunswick and Intercolonial Railroads would form other objectives, and should be kept continually broken by raiding parties.

The nearness of these roads to the Maine frontier renders them peculiarly open to the attacks of raiding forces, but, on the other hand, the nature of the country makes the operation unusually difficult for cavalry—the only force with which raiding is possible. It may be confidently asserted, however, that cavalry which can operate in Arizona and Colorado would be able to surmount the natural difficulties of Maine and New Brunswick.

As for Mexico, we may consider an invasion from that territory as a base improbable, either for Mexico herself or with the assistance of allies, due to the lack of roads and the general topographical character of the northern part of the country.

Considering it, then, as settled, that in case of war much use will be made of raids, it remains to be asked if we are prepared to at once undertake these, our first offensive operations.

The organization of our regiments and brigades, where we group two or three regiments into a brigade, seems to be perfectly suited to our purposes. We also find our command all that we could desire as far as arms and, generally speaking, equipments go. In the matter of training for mounted and dismounted action, we find it able to use all the various kinds of mounted and dismounted action and to successfully combine the two when necessary.

We, therefore, do not possess that fear of, nor do we think we are likely to be seriously checked by, any bodies of home guards or quickly raised levies of peasants.

Were we not able to overcome such resistance, quickly brushing

it out of our way, we would not be worthy of the name of cavalry. So, then, we can not agree with VON DER GOLTZ when he says: "The thorough organization of the defensive power of civilized nations is also a prevention of raids. Even when the armies have already marched away squadrons of horse can, in thickly populated districts, with a little preparation, be successfully repulsed by levies."

"It is only the daring, enterprising spirit of the American horsemen that we can take as a model; the manner of carrying it out must upon European soil be totally different."

Such may be true of "European soil" and *European cavalry*, but we expect our cavalry not only to show the daring, enterprising spirit he refers to, but also to work out their raids much after the manner it has been in this country, with some additions in the way of aiding the celerity and thoroughness of the work done.

The principal of these is the use of explosives for the destruction of all masonry and truss bridges, canal locks, railroads, tunnels, reservoirs, telegraph lines, etc., etc.

At present, we find our force is unprepared in this important particular.

This, then, demands attention, "for the result of a raid in the vicinity of an active enemy, in so far at least as demolitions are concerned, would be more than problematical without a supply of high explosives and an accurate knowledge of how and where to use them."

We therefore form one "pioneer detachment" for each squadron, consisting of one officer, two non-commissioned officers, and eight privates.

They are thoroughly instructed in the use of the explosive granted us by the Ordnance Department, preferring guncotton to all others. This detachment is also drilled in the manner of making "faults" and "cutting in" on a telegraph line. Two pack-mules are assigned each "detachment." Each mule is equipped with a special pack-saddle and carries a supply of the explosive, including detonators, a Laffin & Rand Exploder, No. 3, some cutting tools, axes, saws, etc., and other necessary articles that experience would indicate. Each man of this detachment is provided with a kit to replace carbine and saber, this kit to contain a pocket relay with insulators for "cutting in," a file, wire nippers, cutters, a few detonators, a set of climbers, etc., etc.

We find our men pretty well instructed in the matter of reconnoitering and scouting duties generally.

The officers are able to read a map, and most of them to do rough road and position sketching, but our non-commissioned officers and men, if given a map of the country they were operating in, could not make intelligent use of it. This hampers us very much, for patrols unaccompanied by an officer, and couriers can only be directed verbally as to what route to follow and must depend on their memory and asking questions from persons met on the road.

As to subsisting upon the country by foraging and impressing fresh horses to replace those worn out, no practice is deemed necessary.

But our force is organized for a raid, and by the time we make the discovery that we have no explosive and that our men are unable to use it if we had it, also that a map is of no value to our non-commissioned officers, orders are received to move out.

These, then, seem to us to be the two main disadvantages our cavalry would have to operate under, and they are grave enough to seriously impair its value for raiding duty. But fortunately they can be corrected in a comparatively short time, and should not some attention be paid to these by "the powers that be," for after the opening of hostilities it will be too late.

We are not unmindful of the fact that, due to the greater extension of railways and telegraphs, the better understanding of "the service of security and information," and the greater powers conferred upon local defense by the long-range rifle and the intrenching tool, raids are growing to be more difficult of execution than in the past.

But when we remember that the concentration of such enormous masses of men as we see brought together in these days is one of the very features of modern war which will put a new weapon in the hands of enterprising cavalry; that these enormous armies are practically dependent upon railways as lines of communications; that railways, while the most serviceable, are the weakest of all lines of communications; and, that the whole soul of raiding consists in the destruction of railway and telegraphic communications, we do not think we err in predicting for our cavalry successes more glorious than those of the past which gained for the American cavalryman world renowned honors.

EMERGENCY CASES WITH THE HORSE.

BY CAPTAIN C. B. HOPPIN, SECOND CAVALRY.

MY intention, in the preparation of this paper, has been to note the diseases and injuries to which cavalry horses are most liable and to indicate such treatment as will be necessary to complete a cure, or at least prolong the life of the patient until competent veterinary assistance can be obtained.

The diseases most frequently met with are those involving the respiratory organs, including the air passages of the head, throat and lungs; and those in which the stomach and intestines are affected.

Fortunately for the horse owner trouble with the kidneys and bladder is extremely rare in the horse.

Among the diseases first mentioned, the one most frequently encountered is that which is known under the various names of strangles, distemper, colt-ill, catarrhal fever, etc.

This disease is found to exist in nearly every horse sent out for cavalry use from the great horse markets of the country, the stables of which, either through lack of ventilation, cleanliness or other causes serve to cause or develop the disease, thereby rendering these depots distributing points for the disease, as well as for remounts.

The disease may be recognized by fever, loss of appetite, or rather inability to eat, because of a sore throat, thirst, with failure to satisfy the same because of pain in swallowing. In a day or two the glands of the throat and those between the jaws will become swollen and sensitive to the touch. The nose runs, and a cough develops about the same time, the nature of the cough depending on the parts affected.

This disease is of an eruptive nature and therefore runs a regular course, and will probably not appear a second time in the same

EMERGENCY CASES WITH THE HORSE.

249

animal. No medicine will probably be required, but careful and intelligent nursing is wanted to prevent serious complications.

The throat should be warmly bandaged with flannels, and if the swellings do not point in a day or two they should be poulticed, and when pus has finally formed and the swellings pointed they should be lanced, care being taken to prevent injury to the great blood vessels in the vicinity.

The horse in all cases of disease of the respiratory organs must be allowed plenty of fresh, pure air, the body carefully blanketed and the legs warmly bandaged. Steaming with hay in a bucket of hot water will often afford great relief in catarrhal troubles, and should be tried.

Give the animal anything he will eat, but grass is the best food for him. Apples, carrots, scalded oats, corn, barley or bran, will often be taken. The bowels must be kept open if possible with laxative food, but failing in this, small doses of oil must be given, no severe purgatives being allowed in diseases of this nature.

PNEUMONIA OR LUNG FEVER.

Pneumonia or lung fever is also quite common, caused, as it may be by exposure, overwork when not in condition, or as a result of a common cold not properly treated. Pneumonia is ordinarily ushered in by a chill of varying severity, followed by a fever which within a few hours will raise the temperature to 103 degrees or higher. Respiration will be considerably increased. Pulse eighty or more per minute (the normal pulse is about forty per minute, respiration about fourteen per minute, temperature about 100), accompanied by a dry cough. The countenance is haggard, the mouth of a purplish hue and hot and sticky to the touch. He stands with front legs wide apart, elbows turned out and will not lie down until relieved or about to die. The legs and feet are icy cold, this being one of the most distinctive symptoms. The head is held low and if loose toward the freshest air.

The first thing to do is to try to restore the circulation, by friction and stimulating liniments applied to the legs and over the chest. If successful in this the case is probably won, but if the legs chill off again, repeat the rubbing and give three drams carbonate of ammonia, two ounces sweet spirits of nitre and one ounce alcohol, in a pint of water, repeating in five hours until relief is gained.

In case the drugs are not available and alcoholic stimulants are, give half a pint of whisky, brandy, or a quart of beer every hour.

Relief is often obtained by applying a blanket wrung out in hot water and folded about two feet wide, and placed over the back; around the body just back of the elbows, cover with a dry blanket and strap on; renew the wet blanket every half hour, for four or five hours. Great care must be taken in drying the body after this treatment, and alcohol or some light stimulating liniment should be rubbed into the hair to prevent taking cold. In pneumonia, except when complicated with congestion of the lungs, it will usually be safe to proceed as indicated, obtaining the services of a competent veterinarian, and proper medicines as soon as practicable, but when complicated with congestion, something must be done, and *at once*. Rub the legs and body thoroughly and cover carefully, using ammonia liniment to stimulate the action of the skin, and thus draw the blood from the overcharged lungs. Give any of the following stimulants: Whisky, brandy or alcohol, half a pint in a pint of water every hour. Beer, a quart every hour. One ounce tincture of arnica or one tablespoonful aqua ammonia in a pint of water every hour, until relief is obtained. In case there is no medicine vigorous rubbing for an hour or more, by as many men as can work, may effect a cure.

Congestion may be distinguished from pneumonia by the suddenness of the attack, from the history of the case, and by the alarming symptoms of suffocation, viz: very rapid breathing, with great effort, shown by distended nostrils and heaving flanks, pulse nearly 100 per minute. A loud murmur will be heard in the chest often accompanied by a fine crackling sound.

This is an extremely dangerous disease, and is usually brought on by hard work when suffering from a cold or when not in proper condition.

THUMPS.

This is a spasmodic contraction of the diaphragm. It is produced by the same causes as congestion of the lungs, and yields to the same treatment, viz: stimulants and rubbing.

GLANDERS AND FARCY.

Glanders and farcy while not frequently met with, still, from the fact that it is highly contagious and incurable, no time should be lost in its recognition, if indeed, such recognition is possible to the amateur.

Any animal which bleeds easily from the nose without previous severe exercise, which runs from the nose, especially from the left

nostril, which develops pustules on the lips or muzzle, the inside of the hind legs, or has irregular cords under the skin, sensitive to the touch, should be isolated at once, and if he develops swelling of the glands between the jaws, any of which adhere to the bone and becomes insensitive to the touch, or if he shows ulcers on the mucous membrane of the nose, kill him at once, and find out by post-mortem examination whether he has glanders or not. Any of these symptoms are sufficient to render the disease probable, and it is better to lose one horse that did not have glanders, than to expose a whole troop or more to possible contagion. If affected with glanders, V shaped tubercles will probably be found in the lungs.

DISEASES OF THE DIGESTIVE ORGANS.

Spasmodic or cramp colic usually commences suddenly and with intense pain: spasms occur at constantly decreasing intervals; during these intervals the pulse and respiration are nearly normal. During the spasms the animal evinces extreme pain, throws himself, stamps, paws, kicks, rolls and sweats profusely, and makes frequent attempts to pass water.

Give any of the following and repeat in an hour if necessary: One ounce chloral hydrate in a pint of water; two ounces sweet spirits nitre and two ounces laudanum in a pint of water; half ounce spirits ammonia in a pint of water; two ounces ether and two ounces laudanum in half pint linseed oil, brandy and whisky, half pint in one pint water; half teaspoonful pepper in oil or water, or pepper tea, *ad lib*; ginger, one tablespoonful in milk or water; Jamaica ginger, one tablespoonful in same; beer or ale, one quart. Rub the belly with mustard and water, pepper and water, or any stimulating liniment; inject soapsuds or salt and water.

Flatulent colic is readily recognized by the bloated appearance of the animal.

Alkalies generally neutralize the gas, among the best being two to four ounces soda bi-carb., two to four ounces bi-carb. potassa (salcratus) in water; half ounce chloride of lime in water; one tablespoonful ammonia in water; charcoal, soap and water, or lime water, in quantity.

INFLAMMATION OF THE KIDNEYS.

This disease may be caused by a cold, and horses that have been ridden and brought in warm are more liable to it than any others. The disease is rare and is only mentioned that I may emphasize the fact that any trouble with the kidneys is extremely rare.

When the trouble does occur it may be recognized by the almost constant endeavor to pass water. The penis hangs from the sheath and a drop of urine hangs at its extremity. The back is stiff and sore and the animal straddles with his hind legs if forced to walk, the loins are arched and flanks drawn up.

Apply a blanket wrung out in hot water to the loins; change every thirty minutes. If relief is not speedily gained, apply a light mustard plaster over the loins for a few minutes and then replace the hot blanket. Hot salt or sand in a bag may be used instead of the hot water. Linseed tea and slippery elm water are very soothing in their effects. The bowels should be opened thoroughly by the following drench: One pint castor oil and three drams aloes.

DISEASES OF THE FEET.

The most common of all foot diseases is laminitis, or founder. Its causes are many, viz: Long rides over hard roads, exhaustion, quick changes of temperature, as those caused by drinking cold water while heated, driving through a deep ford while hot, washing the legs in cold water while heated and feeding grain while heated or exhausted.

The disease consists of an inflammation of the sensitive laminae of the feet. In the acute form this is an exceedingly painful disease, and the chronic cases are liable to acute development at any time.

There will be little trouble in detecting this complaint. The hoofs affected are always hot. The horse can hardly be made to move owing to the increased pain which such movement causes. Where the front feet are affected the hind feet are brought well forward and kept there, the weight borne by the affected feet being mostly thrown upon the heels. The pulse is much accelerated and the temperature high.

The first acute attack can be completely cured, but in chronic cases cure is rarely effected.

In acute cases the shoes should be removed at once and the feet kept in cold water up to the ankles, the horse only being taken out for a part of the night in order that he may lie down. The cold foot bath should be continued until the fever in the feet subsides.

Give the following: Four ounces saltpeter in water until the fever is gone, at six-hour intervals. In cases of excessive temperature give ten drops of aconite every two hours for twenty-four hours.

This disease usually runs its course in four or five days, but if at

the end of that time there is still fever in the feet, blister at the coronet with biniodide of mercury or cantharides, one part of either to eight parts of lard. Wash off after twenty-four hours and repeat in a week if necessary.

CORNS.

Corns usually result from an injury, or undue pressure on some portion of the sole of the foot, and are most frequently found at the inner corner of the front foot.

They may be located by pinching the sole with the blacksmith's pincers or tapping it with the hammer.

When found, the sole should be cut down thin over the corn and the pressure removed from the horn in the vicinity, or the horse shod with tips.

INJURIES TO THE FEET.

These injuries usually occur through the puncture of the sole or frog by nails, wire, glass or sharp stones, and through carelessness or lack of skill in the smith.

These wounds are very serious if not properly cared for, and become the more so the nearer they approach the center of the foot. The tendency to suppuration and subsequent lockjaw is very marked in these cases.

I would state that during the construction period at the World's Fair, the stables of which were under my supervision, something over 200 cases of this kind occurred, and in the great majority of instances the injured horse was at work within twenty-four hours. The practice followed there was to have every hoof washed out whenever the horses came into the stable, and they were then examined by the barn foreman. If a nail was found it was immediately removed and the wound thoroughly pared out and cleansed. If serious, it was poulticed at once; if slight, it was washed with a one per cent carbolic solution, the opening in the sole stopped with a pledget of tow dipped in tar. This was held in place by a leather sole under the shoe, the space between the leather and the sole being packed with oakum. In the severe cases the poulticing was continued until suppuration ceased, when the wound was treated as just described.

SORE BACKS.

It is hardly fair treatment to say there should be no sore backs, for in spite of constant care in this direction, they will occur in every considerable command which has any work to do.

Accidents when the saddle is off, bad saddling, bad riding, loss of flesh through hard work, are some of the causes. Early treatment in all cases is necessary.

Treatment: First, when the skin is not broken.

In these cases the trouble is manifested by a slight swelling which is feverish and sensitive to the touch, and which appears shortly after the saddle is removed. The best treatment of these cases is continued bathing in cold salt and water until the fever disappears and the swelling subsides.

If this can be accomplished and the original cause removed, no further trouble will probably ensue, but as the cause is not always readily discovered, the slight injury may run on from bad to worse, until suppuration takes place and the horse is practically unserviceable. Pus once formed should be removed by lancing the containing sack, and washing the same out with a one per cent. solution of carbolic acid or a lotion of two drams sulphate zinc in a pint of water. The horse should not be ridden for four or five days unless absolutely necessary.

These sores often degenerate into sit-fasts, where the skin and connecting tissues become hardened and must be removed by the knife. Recovery in these cases is extremely tedious.

Second: Where the skin is broken or chafed. In these cases frequent bathing with any cooling astringent lotion is beneficial. The following are good, viz: Two drams sugar of lead, two drams sulphate of zinc in a pint of water; half ounce turpentine and one ounce vinegar; tincture of arnica one dram, water half pint; tincture arnica one dram, sulphate of zinc, two drams, ten ounces of water; whisky and white of egg beaten together. Collodion applied with a brush. The horse should not be ridden for a day or two.

The use of homeopathic remedies in veterinary practice is increasing, and the results, especially in the treatment of diseases of the respiratory organs, have been excellent. There is no doubt in my mind that there will be a constant increase in the use of these remedies. They are put up in proper strength and with full directions. They are easy to give, and if care is taken in their use, are effective.

Do not give your horse a lot of medicine until you know what is the matter with him. Even horses are sometimes killed by kindness.

SOME IMPORTANT FACTORS IN THE INSTRUCTION OF CAVALRY.

BY LIEUTENANT ALLYN K. CAPRON, SEVENTH CAVALRY.

WERE I to attempt any full description of the methods to be employed in the instruction of mounted troops, I should require the space of a volume, and not that of an article. And yet it may not be uninteresting to refer to a few of the more important points in this subject. Of course I do not believe that all officers will agree with me in some of the following remarks, but, nevertheless, I take the liberty of presenting them to the readers of the JOURNAL.

Horsemanship, Training of Remounts, Mounted Drill.—Often while witnessing a ride in the "bull ring," or riding hall, I have been struck by the number of poor horsemen. It would seem that but few of the men have good hands or a natural seat, but that in nearly all cases the shoulder joint and arm of the bridle hand are held fixed and rigid, and do not yield to a single motion of the horse. As stated above, that easy, natural seat, the very foundation of all military riding, is conspicuous by its absence. Seldom are the legs properly applied as aids, but in the majority of cases no attempt is made to use them for such purposes at all, as many of the men cling to their horses with the calves, and thus render it impossible to use the lower leg as an aid.

After much thought upon the subject, I have come to the conclusion that there are three principal reasons for this bad showing. They are as follows:

Firstly. As a general thing, when recruits are being taught to ride, almost as soon as they can "hold on," they are put through the mounted exercises and the various other circus feats which now constitute such an important part in the education of a cavalryman. Now, as the men have not acquired a natural seat, and do not

understand even the first principles of horsemanship when they begin this fancy riding, they are forced to hold on as best they can, and commit the errors outlined in the preceding paragraph. It is a well-known fact that when once a recruit falls into the habit of clinging with his calves he can never become a perfect master of his limbs, and therefore can never learn to apply the aids properly, while as to the results of depending upon the reins to maintain the balance, nothing need be said.

The mounted exercises are very good indeed for the purpose of making the men quick and agile, and to give them confidence and a well balanced seat in every variety of movement. They should not, however, be given until *after* the recruits can *ride* and have a firm, close seat, which is entirely independent of reins and stirrups.

Secondly. When first learning to ride, the hardest thing to attain is "balance," and if a man is first taken out bareback he has a very difficult job in endeavoring to maintain his balance. Consequently, in order to save himself from falling, he soon gets into the way of clinging to his horse like a monkey, and not only acquires a bad position, but ruins his "hands," as he holds on to the reins with all the strength of his arms.

Experience has shown me that the best method of instruction is to give the men saddles for the first two months. The saddle with stirrups assists them in assuming the proper position, helps them to keep their balance, and aids the instructor to cause them to use their hands lightly from the very first lesson. After two months' instruction with the saddle, then give them four on the blanket, and it will be found that they will, at the end of their course, have better, firmer seats, and lighter hands, than the men who were first "shaken" into the military seat bareback.

They also make more daring riders, as having had no falls or very few at the most, they are not very careful, and, as they can combine the action of their hands and legs in a better manner than the men who have fallen into the "monkey seat," they will be able to turn their horses when and where they please, and thus save themselves and their mounts many a hard tumble, the very knowledge of which will serve to make them dashing and fearless horsemen.

Now in the army, the very first thing is to put the recruits on bareback, and of course they soon fall into the faults explained above.

Thirdly. While it may not be necessary to instruct all of our men in "high school riding," still they should be taught to supple

and unite their horses, so as to have them under complete control. At present they know nothing of the power to be gained by the proper use of the legs, or of the effect of the hand, while as to producing the different forms of collection of the forces of the animal, and the best methods of overcoming his resistances, they are completely at sea.

Horsemanship is the ground-work upon which the efficiency of cavalry depends. Therefore, one of the best things that could be done for the cavalry would be to establish a "school of horsemanship," where officers selected from every cavalry regiment could be sent and taught the true art, and also to train a horse and rider from the beginning to the end. The theory and practice of biting, the treatment and care of horses, their diseases, the principles of shoeing, hygiene of stables, etc., should also comprise a part of the course. These officers, upon returning to their regiments, should be required to instruct the junior officers and the non-commissioned officers in the same subjects. Then we would have regiments that could *ride*, and not merely stick on their horses, that could take their mounts at any gait over any kind of ground; that could use their weapons under all conditions; and that while doing all of the above, could save their horses by bringing the strain of the work upon the stronger parts.

But the inspectors make the army. Most of them ask for fancy riding, and of course they get it. And of course our recruits are taught to vault over a horse before they can sit on one. If the inspectors wanted *horsemanship*, they could get that also; but they do not, and it is for this reason that the art of riding—*military riding*—receives so little attention in our service; for if a man's record depends upon his ability to stand on his head, he is going to practice that, and that only.

Many of our men can stick on a horse however wild and vicious he may be, and nearly all of them manage to go through the different drills in some sort of fashion. But the ability to simply stay on a horse is not horsemanship. These men use only brute force instead of skill, and as they cannot collect their horses by the use of their weight, of the legs and of the reins, they cannot get from their mounts the most complete obedience.

Quite a number of troopers sustain themselves when riding at the trot or when jumping, by the reins; many do not sit well down in the saddle; some lean the body too far to the front or rear; others curve the back to the rear; while nearly all turn out the toes. Very few enlisted men can cause their horses to execute the

gallop changes, or in other words, compel them to gallop true under all conditions, and I have seen many of them ride on the fork. Now, all these faults and the many others committed by the majority of troopers at every drill, are due entirely to bad preliminary instruction, given by drill masters who do not know how to ride themselves, because they were never taught *horsemanship*.

If these instructors, who are usually non-commissioned officers, had been taught by officers who had graduated from the "school of horsemanship," and who, consequently, knew how to train a horse and rider from the beginning up, the result would have been much different. They could then have taught the recruits, not only to vault their horses and perform the other mounted exercises, but, what is of more importance, would have made *horsemen* of them.

The proper training of remounts should also be more thorough than it is at present, for an unbroken or poorly trained horse is as useless for cavalry work as a poor horseman; and even more so, for cavalry, even if it can ride well, becomes nearly worthless when badly mounted. If any one doubts that our horses are not thoroughly trained, let him look at a troop at mounted drill and see how many of them are under perfect control. Let him notice how few of them will leave the ranks without backing up against the others and otherwise breaking up the formation; how few will stand perfectly still and square while being mounted. Let him count the number of "pullers" and runaways, and the few that go with their heads steady and in the proper position. Now, all of this comes from lack of training, for which there can be no excuse.

Every horse should be taught absolute obedience, by which is meant that he must, "under all conditions, go where his rider wishes, is not a puller, and obeys at once the aids applied by the leg, rein, or alteration in the balance." He must be taught the different gaits in order to render him safe over all kinds of ground and to prevent premature breakdown, for if he is well gaited and carries himself properly then he will be in proper balance and his weight will be evenly distributed over all four legs. The lessons in suppling and collecting, and the movements upon two paths must all be thoroughly taught, to train the horse to obey the pressure of the legs and reins, to carry himself properly, and to instill the idea of unconditional obedience. At the same time they prepare him for the instruction in the different gaits, and for backing and jumping.

The method of training horses laid down in our drill regulations is very good, but does not go far enough into the subject.

However, if it was practiced thoroughly, our horses would be better trained than they are at present.

After they are trained, the horses should be "put in good condition," and kept there, that they may be able to take the field at any moment. By condition, I mean that they must have plenty of wind, and muscle must be hard, and "have endurance enough" to go thirty miles a day, at a good pace for a month or more, without showing signs of *fatigue*. To accomplish this, at least four hours drill six times a week, for the most part at the trot and gallop, must be had during the drill season, and about twenty miles should be covered in each day's drill. At present most of our horses are too fat and soft, and not fit for field duty, because of the small amount of exercise they receive, while the large number of sore backs usually seen after a hard practice march, are due more to lack of condition than to badly fitting saddles or to carelessness on the part of the men.

Once the men have been taught to ride and the horses trained, then the drill field is the place for real work. But the work on the drill field should not consist entirely of "fours right and left," for nothing is so useless and so wearisome as this constant drumming of the same old tune, day in and day out. There is plenty of work in the drill book other than the movements by fours, and it is just as important.

When the movements are thoroughly learned, and can be executed with precision on the level drill field, then all drill by troop, squadron or regiment should be on uneven ground, covered with all kinds of obstacles, where the actual conditions of war are to be found, and I shall repeat that this kind of drill should be at the fast gaits and of at least four hours' duration six times a week, during the period set aside for this work. Neither should a little rain or other bad weather be allowed to interfere with drill. Rain never keeps the old guard from police duty; neither should it keep the troops from drill.

In this way our men would become accustomed to riding boot to boot at a gallop, straight across any kind of country, over ditches and other obstacles, without breaking the alignment or order, while the horses would be ready for the long gallops and fast work that would be demanded of them in time of war. This riding stirrup to stirrup is one of the fundamental principles of the charge and must be insisted upon at all times when drilling in close order.

For fast work in line the "follow my leader" system should be used, as it is much better for such purposes than the "base system." Among the most valuable paragraphs in the new drill regu-

lations (1896), are those relating to the "following trace" method, and they alone would make it the best book we have yet had.

In a cavalry fight, especially where forces larger than a troop are employed, it is of absolute importance that proficiency shall have been attained in keeping the true direction and the proper pace. To acquire this, and to execute the "follow my leader" system to the best advantage, the horses of every troop must be uniformly gaited, that is, every horse must be taught to walk four miles an hour, trot eight and gallop twelve. Furthermore, each and every horse must move at the gait ordered—all must trot when the signal trot is given, and gallop if that gait be designated.

All of the work outlined above is absolutely necessary, if we wish to teach our troopers to charge properly, and to train them to ride their horses square to the front, and to keep them well in hand; and lastly, how to spare their mounts until the decisive moment, when they are to collect every particle of muscle there is in them, to throw weight, strength, dash, and speed into the charge.

If cavalry cannot perform all of the above; if it can be stopped by every little obstacle, and if it cannot cover five or six miles at the fast gaits and then go into the charge with horses still fresh and strong, it is not worthy the name of "cavalry."

All modern cavalry leaders agree in saying that if important results are to be expected from the use of cavalry in battle, it must be kept in masses and not broken up into small detachments. To handle these large masses with skill and energy, practice must be had in time of peace, or we "shall be found wanting" at the critical hour. Squadrons, and at least once a year regiments, should be united and placed under the command of their own chiefs. These officers should always drill their commands, as only by practical experience can they become proficient in handling them. At present nearly all our regiments are broken up and the troops scattered to the four winds of heaven, and it is a fact that many of our young cavalry officers have never seen their colonels. To unite each regiment for two months every year would not cost too much money, when the vast amount of good the cavalry would receive thereby is taken into consideration. To suggest that brigade evolutions be had each year would, however, bring down the wrath of all good Congressmen upon my head. We can sink a million dollars in some little canal away down in Florida, but when it comes to spending a few thousands to increase the efficiency of our army—well, that is a different question.

Arms.—The cavalryman receives quite a thorough course of instruction in the use of his carbine and pistol. I believe, however, that moving targets should also be employed for both arms as well as stationary ones, and that more practice in firing the carbine rapidly, but with deliberate aim, should be given. A sight constructed on the same principles as the Lyman sporting rear sight, where the aperture is brought close to the eye, and the entire object aimed at is seen, instead of only a small portion of it, would be much better than the present one, as the men could then learn to shoot with both eyes open, which is the best method for rapid and yet accurate work. Volley firing by platoons, each under the command of its own chief, should also constitute a part of the practice, as it would not only aid in perfecting fire discipline, but would give the leaders confidence and experience in handling their commands in the different firings. All leaders of squads, platoons and troops should be frequently practiced in estimating distances, as upon their judgment in this direction the effect of controlled fire very often depends. Instruction on varied ground and in the use of cover should be given during target practice, the men firing at targets from behind walls, rocks, or trees, in ditches, from the edge of a wood, etc. Practice in firing with the carbine when mounted would also be most beneficial.

But it is in the use of the saber, however, that our cavalry is so sadly deficient, as few of the men can fence. The drill regulations treat on the subject, but the men are usually instructed in the art by a sergeant who has never been taught by a competent teacher, and who has picked up his knowledge from reading the drill book. It is a well known fact that no man can become an expert with the saber by simply studying a text book. The saber is the weapon with which all charges in close order should be made, therefore, to give the men confidence in themselves and their weapons, they should be thoroughly instructed in fencing by a competent instructor, who is himself an expert in the use of the blade.

Minor Tactics and the Employment of Cavalry—At nearly every post where I have served, very little practical instruction was given in minor tactics. Once or twice a year we were ordered out and made an attempt to post an outpost or to act as an advance guard, but the work was always very poor and principally for two reasons:

1st. The officers while understanding the theory of the work in hand, had little, if any practical knowledge of the subject.

2d. Because the men knew nothing whatever of their duties, either theoretically or practically.

Every command should be thoroughly instructed in the service of security and information, theory and practice going hand in hand throughout the entire course. Such instruction should be given progressively, that is, the men should first be taught the theory of patrolling, and then thorough practice in this work should be given in the field. When this is well understood, then the theory of the advance guard should be given, after which practical work in the same should be taken up. And thus, step by step, the different branches of the subject should be given, until all are familiar, not only with the theory, but can perform their duties properly when in the field.

In the same way the employment of cavalry against cavalry, infantry or artillery should be taught, and the dismounted action of cavalry explained and practiced. The fighting formation of the different units, as the squadron, regiment and brigade, on the field of battle; the role of the cavalry before and during an engagement; the pursuit of an enemy, and the manner of conducting a retreat; the support of artillery, and the manner of working with horse artillery; the escort of convoys; the crossing of streams with pack and wagon trains, etc., etc., must all be explained and practiced.

Night exercises should also be practiced, for in the future night attacks, and more especially night marches, will play an important role with cavalry, and the troops should be trained for night fighting, both as the attacking force and as the force surprised. Especially important is patrolling by night, in which the men can only become proficient by constant practice.

Another thing that demands a vast amount of attention and constant practice is the duty of the second and third lines in conforming to the movements of the first, and the use of the second either as an offensive or defensive flank. "Nothing is more urgent to insure success than the skillful and intelligent handling of the second and third lines, and of all the operations of cavalry, none present greater difficulties." General DEBRACK says in his book: "Almost all the failures of charges are due to the slowness or ignorance of the supports."

And yet how seldom we see any work of this nature that really amounts to much as a means of instruction. True, we have sham fights where lots of powder is burned, and still more excitement prevails, but where we often see troops badly handled. Such things are worse than no instruction, as they are the means of forming bad habits and wrong ideas.

The above are only a few of the many important subjects with

which all cavalrymen must be familiar. To become proficient in all, at least six hours a day should be set aside for military instruction, and during some periods of the year, eight or even ten would not be too much. I do not believe in working the soldier to death, but I would require a good, hard day's labor of him—in drill and instruction, but not in fatigue duty. There is plenty of time if we would only use it, but the trouble is, we have so long been accustomed to the one hour's drill a day, that we imagine we are greatly abused when called upon for anything more.

There are exceptions to nearly all rules, and the same applies of course to all of my remarks. There are troops where the horses are well trained and the men horsemen; there are posts where the instruction in minor tactics, etc., is most thorough. Of the first I have seen a few; of the second, I am bound to say, I have never yet had the good fortune to serve at one. My entire article is based on what I have found to be the rule at the ten or more posts at which I have observed the drill and instruction of troops.

In conclusion, I will state that when drilling or instructing our troops we should always bear in mind that the causes of the extension or contraction of the role of cavalry during the different wars depend almost entirely upon the principles which have governed its training and employment, or in other words, more upon the character and ability of its leaders than upon the many improvements in firearms. In the words of General WOLSELEY, "It should be instilled into the mind of every cavalryman that his branch of the service is invincible, and more than a match under all circumstances for infantry or artillery. * * * If he thinks otherwise, the sooner he transfers to the infantry the better. Every cavalry officer should be a fanatic upon this subject. All should remember the old cavalry proverb, 'Commend your soul to God and charge home.'"

THE SANTA FE TRADE: ITS ROUTE AND CHARACTER.

BY J. EVARTS GREENE.

LESS than twenty years ago, a traffic, which had been carried on for half a century under conditions unique in North America, came to an end, or, to speak more strictly, though the traffic continued, its conditions, which had been mediæval, oriental and, for this century and continent, singular, became modern, American and commonplace.

The Santa Fe trade resembled that of the caravans of Africa and Western Asia in that it traversed a desert, or what was then so called—the Great American Desert; it was also attended with dangers from the attacks of wild, marauding tribes. It differed from that, however, in the fact that there were no oases or inhabited stations on the long route, and in the contrast in the peoples and the conditions of life of the communities between which this traffic was conducted. At the eastern terminus was the rude, busy, enterprising, essentially modern and progressive life of our western border, distinctively American, using that word, as we must so often, in default of an adjective denoting that which pertains to the United States. At the other end of the route, the social, industrial and political condition of the people was substantially unchanged since Spanish rule was established in Mexico by CORTES and his companions early in the sixteenth century, and with no prospect of a change for centuries to come. This remark applies, of course, to the conditions prevailing when the trade was begun and for many years afterward, but not so strictly to the last twenty-five years of its existence.

To one, familiar only with the life of the Eastern States, who thirty-five or forty years ago visited Kansas City, which had then scarcely ceased to be known as Westport Landing, the sight of the huge wagons crowding the levee in early summer, with their

drivers, short in stature, slouching in gait, dressed with a peculiar shabby finery and with swarthy, stolid, sinister faces, was extremely fascinating, and suggested thoughts of romantic and mysterious adventure. That sight has not been seen for nearly twenty years. The railroad, while vastly increasing the trade, has transformed it into a prosaic, ordinary traffic. The Great American Desert has vanished. The empty waste is sprinkled with cities, villages and farms. The buffalo is nearly extinct, the Indian is no longer nomadic or predatory, and Santa Fe is, from the business point of view, simply a station, more or less like other stations, on a branch of the great transcontinental railway.

The old Santa Fe trade has only an historical interest now, and in that sense it is, I trust, a proper subject for the attention of this society.

The first Europeans to penetrate to the region traversed by the caravans of the Santa Fe trade were CABEZA DE VACA and his three companions, survivors of the company of PAMPHILO NARVAEZ. After nine years of wandering from the shores of Florida, they arrived in 1536 at Culiacan, near the Pacific coast in Mexico. It does not appear that their devious route crossed the line of the Santa Fe trail. It was probably altogether south of the latter. But the story which they told of rich and populous cities in the region north of Mexico prompted the famous expedition of CORONADO, who, setting out from Culiacan with a large force of Spaniards and Indians in 1540, wandered in New Mexico, wintered there, apparently not very far from Santa Fe, and in the spring set forth again toward the northeast in search of the city of Quivira, of whose greatness and riches he had heard surprising fictions.

I will not discuss the disputed questions concerning the identity of the places mentioned by CORONADO in his narrative of the earlier part of his journey. But I venture to offer a few suggestions in support of the opinion that its northeastern terminus was near that of what has been known in our time as the Santa Fe trail. Combining the account of CORONADO in his third letter to the Emperor CHARLES V. with that of Captain JUAN JARAMILLO, one of his companions, whose itinerary is fairly definite, it appears that after traveling for many days across great plains, where they encountered marvelously vast herds of buffalo, and suffered much from thirst, they came, on the day of Saints PETER and PAUL, to a river to which they gave the names of those Saints. CORONADO briefly but graphically describes the prairie, which seems to have impressed him with awe and almost with dismay. "There is neither rock nor hill," he

says, "nor tree nor shrub; nothing to arrest the eye, which seeks in vain for a limit to those endless plains as if gazing at the open sea."

They crossed the river, says JARAMILLO, and advanced along its northern bank in a northeasterly direction for three days, when they came to an Indian village on a considerable affluent of this stream. The Indians resembled those they had before met on the plains, but were hostile to the latter. They ate buffalo's flesh raw, and their dwellings and clothing were made of buffalo skins, but they also cultivated maize. Travelling four or five days farther, they found successively, six or seven other Indian villages on other affluents of the river, and at last came to a village whose name, they were told, was Quivira. It was not a rich and populous city, but a miserable group of skin huts, like the others. Here CORONADO remained twenty-five days, sending out parties which explored the neighboring country to some extent. He was told of other villages farther on, on the bank of a still larger river. He says the latitude of this place was forty degrees; that the country was well watered by rivers, brooks and springs; that the soil was rich, deep and black; that the pasturage was excellent; that the Indians cultivated maize; that there were plums in abundance like those of Spain, and excellent grapes. JARAMILLO adds to these fruits, nuts and mulberries. CORONADO pursued his quest no further, but returned, retracing for some distance the route by which he came, and arrived at Cicuye, whose site is supposed to have been some sixty or seventy miles to the eastward of Santa Fe, in forty days.

When I read the account of CORONADO's expedition in the chapter on "Early Explorations of New Mexico," contributed by our associate, Mr. HENRY W. HAYNES, to the "Narrative and Critical History of America," it seems to me that there could be little doubt as to the northeastern limit of CORONADO's explorations. CORONADO's and JARAMILLO's descriptions of the country traversed after they arrived at the river named by them for Saints PETER and PAUL, precisely fit the valley of the Kansas or Kaw River, with which I was once very familiar, having made the land-office surveys of a part of it.

I infer that the Smoky Hill or main fork of the Kaw River was the river Saints Peter and Paul, because, besides other reasons, it is the only considerable stream flowing northeastward within reasonable distance of the place where CORONADO, according to his previous and subsequent narrative, must have been. He came to the river, apparently, not far from the mouth of the Saline Fork, or

Grand Saline, about sixty miles from the present site of Fort Riley. Following the course of the river on its north bank, he came, after three days or more, to an Indian village on a tributary of the river. Three days' journey over a level route would bring him to the confluence of the Republican Fork, where there would certainly be an Indian village, if anywhere. For there the bluff is high and steep on the north, sheltering the place below from the fierce and bitter winter winds. Wood is abundant; it is almost the first considerable growth of timber, except cottonwood and elm, encountered by the traveler from the westward, and the bottom lands, broad and rich, required little labor to convert them into corn-fields. Continuing his journey for four or five days, he passed other villages in like situations, that is to say, on other branches of the river Saints Peter and Paul, and came at length to Quivira, not far, as I suppose, from the present site of Lawrence, and he was told of other villages beyond this on a larger river, which, if my theory is sound, must have been the Missouri.

The latitude of Lawrence is about thirty-nine and one-half degrees. CORONADO says his limit was forty. Greater precision could scarcely have been expected. He says the country was well watered with rivers, brooks and springs. Anyone who had occasion to travel with wagons along the valley of the Kaw River before the era of bridges was painfully reminded of the fact that the streams are numerous, and, what is unusual in a region so level, springs are many and copious. I well remember two, which, if CORONADO took the route which according to my interpretation of his narrative he says he did, he must have discovered and drunk from. One is a circular basin, ten feet or more in diameter and four or five deep, from which a stream, two or three feet wide, of clear, cold water flows to the river. Another, some twelve miles distant, we called the Seven Springs. For some distance along the foot of the bluff, streams of bright, cool water broke through the gravelly soil, and these uniting formed a delightful brook, which wandered through the wide bottom lands, a mile and a half to the river, near where the town of Abilene now is. Both these springs are in the open prairie, unconcealed by tree or shrub, and no traveler through that valley could have missed them or resisted the temptation to drink of their waters; for the river is somewhat turbid, and its water, though wholesome enough, I believe, is not very palatable, having a slightly alkaline taste. The plums and grapes, mulberries and nuts are there. The quality of the plums varies much; those from some trees are large, handsome and not ill-

flavored. The grapes are abundant enough, but CORONADO would not have written so confidently of their excellence if he had waited until they were ripe. The mulberries, ripening in June, were gone before his arrival, but JARAMILLO probably recognized the trees. The nuts most abundant there are black walnuts and pecans.

CORONADO came to this river on the days of SAINT PETER and SAINT PAUL, June 29th and 30th, according to the calendar of his church. His journey of eight days or more down the river and his stay of twenty-five days at Quivira occupied him until the second day of August or later, so that CASTAÑEDA, who says that they arrived at Cicuye in August, after a return journey of forty days, must be in error, and JARAMILLO, who fixes the time of their leaving Quivira at about the middle of August, is apparently correct.

The description of the province of Quivira fits the Kaw River country exactly. It will not fit any other nearly so well. Some portions of the Arkansas valley agree fairly well with the description, but the latitude is hopelessly wrong. The Platte River is more than a degree farther north; not so far that it need be ruled out on that score merely, but otherwise it is unlike CORONADO's river of Saints Peter and Paul. It seems highly probable, therefore, that CORONADO, though his route was not that of the Santa Fe trail centuries later, was the first white man who passed from one to the other of its terminal points.

From FRANCISCO VASQUEZ DE CORONADO to ZEBULON M. PIKE is a long step, not only in time, almost three hundred years, but in the contrast between the sonority of the name of the Spanish knightly adventurer and the homely quaintness of that of the American soldier. But Lieutenant, afterward General, PIKE was as adventurous, as intrepid, and as skillful a leader of men as the first explorer of New Mexico, and more honorable, just and humane. He was the next person of whom we have certain knowledge, who passed from the Mississippi Valley across the desert plains to Santa Fe. A vague tradition asserts that, in the eighteenth century, trade was carried on to some extent between the French settlements on the Illinois River and New Mexico, and proof of it has been said to exist in the archives of the Spanish government of the province. It is said also, that in 1804 one MORRISON of Kaskaskia, sent a Frenchman named LALANDE with goods for trade in Santa Fe, and that the faithless agent, having sold the goods profitably, neglected to account with his principal, lived prosperously in New Mexico and died there a rich man. These may be facts or fictions, but ZEBULON PIKE and his expedition pertain to the history of the Santa Fe trade, though he was a soldier and not a trader.

Having the year before conducted a successful expedition to explore the upper waters of the Mississippi, Lieutenant PIKE was in 1806 directed by General WILKINSON to explore the country to the westward so far as the headwaters of the Arkansas and Red Rivers. Setting out from St. Louis, he went across the country to the Arkansas, and ascended that river to its headwaters, thence passed to the Rio Grande, some distance above Santa Fe. He built a small fort there, seeming to have believed that the stream was the Red River, or one of its tributaries, and that he was within the territory of the United States. He was treacherously enticed from his little fortress by the Spaniards, made prisoner and sent back by way of Mexico to the United States. There was an appearance of mystery in some parts of his conduct on this expedition, and by some persons it was supposed to have a connection with the schemes of AARON BARR, but PIKE indignantly repelled this suspicion. He gave an interesting account of his expedition in his official report, in which, among other notable things, he writes of passing through vast herds of buffalo, elk, and "cabri," and says he prevented the wanton slaughter of these animals by his men, "not merely because of the scarcity of ammunition, but as I considered the law of humanity also forbade it." He would deserve to be honorably remembered for this, if for nothing else. Few of his fellow-countrymen in later years and in like circumstances have been so merciful. ZEBULON PIKE, then a brigadier-general, was killed in the battle near York, Upper Canada, April 25, 1813.

We come now to the actual beginning of the Santa Fe trade; but before treating of its history and its character let me give a brief description of its route. Its real eastern terminus was St. Louis, where the goods were purchased and the accounts adjusted. But the starting-point of the caravans was at first Franklin, a town about one hundred and fifty miles from St. Louis, on the Missouri River, afterward Independence, one hundred miles farther up the river, and finally Kansas City, known for some years as Westport Landing, Westport being a village five or six miles south of Kansas City on the State line, where for a time the forwarding-houses were established and the caravans made up for their journey of eight hundred miles. The route then was by steamboat from St. Louis to Kansas City, and by wagon from that place to Santa Fe. I may add that for a short time during the War of the Rebellion, the starting-point of the caravan was changed to Leavenworth, Kansas.

Except for its lack of mountain and sea, a more beautiful and attractive landscape can scarcely be found anywhere, than that near

the confluence of the Missouri and Kaw Rivers. In the late spring or early summer, it is especially charming, when the grass on the prairie is fresh and sprinkled profusely with flowers of many hues; when crab-apple thickets, many acres in extent, are covered with pink blossoms, surpassing in depth of color and delicacy of fragrance the bloom of our orchards; when the mignonette-like perfume of the wild grape and the subtle sweetness of the sensitive brier, a species of mimosa, with its flowers like purple globes, sprinkled with gold-dust, entrance the senses like—

Sabeian odors from the spicy shore
Of Araby the blest.

The oppressive monotony of the wide prairie is broken by gentle slopes and deep ravines, well wooded with groves of stately oaks and walnuts, which form promontories of woodland, jutting out into the open-prairie sea; and graceful elms, tall cottonwoods and stately sycamores adorn the margins of the streams. Pleasant brooks wander through the valleys, and plenteous springs entice the wayfarer by the sparkle and murmur of their cool, sweet waters. The Mormons, who occupied for a time about 1833, a district of like character in the adjacent counties of Missouri, styled it the Land of Promise—the Garden of the Lord—and well they might.

Not much of the route, however, was of this character. Leaving the Missouri at Kansas City, it followed in general the high prairie divide between the valleys of the Kaw and the Arkansas Rivers. If ease of travel were the only consideration, the summit of the dividing ridge or plateau would be the best route, affording a direct, almost level road, absolutely without obstructions, for more than a third of the whole distance. But in order to have daily supplies of water, it was necessary to follow along the southern slope of the divide, far enough below the summit line to intercept the tributaries of the Arkansas near their sources. These streams, the Marais-de-Cygnas, Neosho, Cottonwood and others, were encountered at suitable distances for camping-places, about twenty miles, more or less, being a day's journey.

Of the three requisites for a camp—water, grass and wood—the second was scarcely ever lacking, and the third was superfluous after entering the buffalo range, its place being taken by “buffalo-chips” or dried dung, which, readily gathered and making a clear, hot fire, met perfectly all the requirements of a summer-camp fuel. The route presents no difficulties; the early traders had some trouble through losing their way, but after the trail had been established, it was, without the expenditure of any labor in grading or

otherwise, a broad, well-worn highway, as distinct and unmistakable as any road in Massachusetts, stretching away for eight hundred miles without being crossed by any other, with no permanent habitation of man near it, and without a hill or ravine so steep or other obstacle so formidable as to make lightening of loads or doubling of teams necessary. Beyond Council Grove, one hundred and forty-five miles from Kansas City, no timber except an occasional cottonwood or elm was seen until within a short distance of Santa Fe. The rivers crossed were the Arkansas, Cimarron, Canadian and Pecos.

Mr. GREGG, whose book entitled “Commerce of the Prairies,” is the best authority on the early Santa Fe trade, says that when he made his first journey in 1831, buffaloes were not encountered until he had gone some distance beyond Council Grove. He says, also, that he never saw buffaloes so abundant as some travelers have represented, but only scattered herds, a few scores, hundreds and sometimes thousands, and that ten years later they were “very sensibly and rapidly decreasing.” Fifteen years later still, I found the eastern limit of the buffalo range as nearly as possible where GREGG placed it; but, instead of finding them less abundant than some travelers had represented, their numbers seemed so vast that exaggeration would be scarcely possible.

The caravans were sometimes attacked and more often threatened by marauding Indians, but the danger, except of a loss of mules or cattle by stampede, was not great. GREGG writes, about 1842: “In the course of twenty years since the commencement of this trade, I do not believe there has been a dozen deaths upon the Santa Fe route, even including those who have been killed off by disease, as well as by the Indians.”

The first actual trading expedition to Santa Fe from the United States appears to have been that undertaken by KNIGHT, BEARD, CHAMBERS and others in 1812. They followed PIKE's route up the Arkansas, and meeting with no remarkable adventure, arrived duly, expecting to find the republic proclaimed by HIDALGO in 1810 fully established there. But they found the Spanish royal authority still recognized, were suspected of connivance with the revolutionists, and were held as prisoners for nine years, until ITZABIDE established the republic in 1821 and set them at liberty.

In that year, BICKNELL and others left Franklin, Mo., with a small stock of goods, intending to trade with the Comanche Indians on the Upper Arkansas. Having heard of a better market at Santa Fe, they went there, and sold their merchandise at a surprising

profit. Until this time, all goods consumed in New Mexico which could not be produced there had been brought from Vera Cruz by pack trains, and the costs and risks of transportation were so enormous that common cottons sold for three dollars a yard, and other manufactured goods at correspondingly high prices. When the St. Louis merchants learned that a practicable route gave them access to a market where their only competitors must sell at such rates, they did not long neglect their opportunity.

Captain BICKNELL started again the next year with a larger stock, which he sold to advantage, but nearly perished on the route, having lost his way between the Arkansas and Cimarron Rivers. This part of the route was most dreaded by the early traders. The distance between the rivers, as the trail was finally established, was about sixty miles. It was the only part of the whole journey in which more than one day's march must be made without water. Mr. GREGG regards BICKNELL's expedition as the beginning of regular traffic on the Santa Fe trail. Two years later, in 1824, wagons were first used in this trade, the previous means of transport having been pack animals. It was found that the natural highway offered no serious difficulties to the wagons, and thereafter they were almost exclusively used. Twenty-five are said to have taken the trail that year, carrying merchandise valued at twenty-five or thirty thousand dollars. The early traders went in small parties, each having a few hundred dollars' worth of goods. The Indians at first were not hostile, and Mr. GREGG says: "It is to be feared that the traders were not always innocent of having instigated the savage hostilities that ensued in after years." Whether he means by this equivocal expression that traders prompted Indian attacks upon their rivals, or, that some of them provoked by their insolent cruelty indiscriminately attacked all traders, does not clearly appear. Whatever the cause in this case, the history of our relations with the Indians shows that misconduct on one side or the other, or perhaps on both, will in such circumstances infallibly supply provocation. For several years the traders suffered considerable losses of merchandise and cattle by Indian attacks. They applied to the government for protection, and in 1829 and 1830 a military escort was furnished. After that year the traders seem to have adopted the policy of protecting themselves by proceeding in large companies with some organization, which they could the more readily do as the amount of trade rapidly increased. Each company having, perhaps, forty or fifty wagons and more than one hundred men, chose a captain, who determined the order of march, the times of starting and halt-

ing, the place of encampment, and appointed lieutenants and sergeants, who commanded the guards, on which every able-bodied man was assigned to his share of duty. The captain had, also a somewhat vaguely defined general authority, for which he commanded respect if he was a natural leader of men, and suffered it to fall into contempt if he had not the gift of inspiring fear and respect. Later, as the trade fell into the hands of men of larger capital, each of whom fitted out a train of thirty wagons or more, the owner or his agent took command, and better organization and sterner discipline were enforced.

The volume of this trade is said to have averaged one hundred thousand dollars annually for the first fifteen years. After that it increased rapidly. Statistics, kindly supplied by my friend, THEODORE S. CASE, of Kansas City, gave the information that the first cargo of goods for the Santa Fe trade was landed at Kansas City in 1845, by WILLIAM BENT and CERAN ST. VRAIN. In 1850, six hundred wagon loads went from Kansas City. In 1855, the goods shipped were valued at five million dollars. In 1860, the weight of the goods shipped from the same point was 16,439,000 pounds, employing in their transportation 9,084 men, 6,147 mules, 27,920 oxen and 3,083 wagons. The first wagons used were made in Pittsburg. Those used later were built by MURPHY of St. Louis, and known as MURPHY wagons. They were large and heavy, each carrying a load of six thousand or seven thousand pounds and drawn by six yoke of oxen or ten or twelve mules. The oxen were bred in Missouri, the mules in New Mexico. The drivers of the wagons owned by New Mexican traders were usually Mexican Indians, those of the Missouri traders, or of freighters, who supplied teams and drivers and transported merchandise at the rate of twelve or fifteen cents a pound, were usually "American" in the restricted sense in which that word was used on the frontier, or sometimes Shawnee or Delaware Indians. The most peculiar part of their equipment was the formidable whip, its stock a good-sized, tough ash or pecan sapling nearly ten feet long, with a lash somewhat shorter, but fully two inches in diameter, ending in a buckskin thong. To wield this tremendous implement required all the strength of a man's loins. The driver did not flog his beasts with it, but cracked it with a heavy flourish and a smart jerk. You would hear a sound like a pistol shot, and see a little mist of hair and blood start where the cruel thong had cut like a bullet.

The usual day's drive was from fifteen to twenty miles. At the appointed stopping place the wagons were driven up in such order

as to form a square enclosed space or corral, an entrance to which could be closed by stretching chains across it. At halting, often early in the afternoon, the cattle were watered and turned out to graze under the charge of herders. At night they were driven into the corral and the entrance was closed. In the early morning for some hours before starting they were turned loose again to graze. The men camped for the night outside the corral, but retreated to it for defense in case of a formidable attack by Indians.

The goods for New Mexico were cotton cloths (bleached and brown), calicoes, rich and showy silk shawls and dress patterns, millinery, *bayeta* (a heavy scarlet woolen fabric used for petticoats by the New Mexican women), sugar, coffee, soap, hardware, and, during the later years of the traffic, bottled beer, canned goods, mining machinery, and innumerable other things. The return cargoes consisted of buffalo robes, beaver and other skins and furs (collected by trappers and Indian traders), wool, gold from the placer mines thirty or forty miles south of Santa Fe, and silver from the mines of Chihuahua and elsewhere. The silver dollars, which formed a part of many return loads, were put up in peculiar quaint packages. The manner of packing them is thus described in a letter from Mr. ELIAS BREVOORT, of Santa Fe, who has kindly supplied me with much information of great use in the preparation of this paper: "Silver dollars were dumped in quantities of about five thousand into or upon a green or fresh beef hide, and done up by having a rawhide rope interlaced around the edge of the hide and drawn up tightly. Then a fire was built near it so as to shrink the hide solidly to its contents to prevent friction of the coin." These packages were as hard and their contents as immovable as if the metal had been melted and poured into a mould.

One feature of the traffic, which gave it a speculative character, and perhaps added to its fascination for some of the adventurous traders, was the uncertainty as to the amount of duties which would be exacted by the Mexican officers of customs. The rates fixed by law were well enough known, but the doubt was how much of a rebate the officials would allow, and how much they must be paid for it. A convenient and generally satisfactory arrangement, said to have prevailed for some time, was that the trader should have one-third of the duty, the official one-third, and the government the remainder. Governor ARMJO, the last Mexican governor, at one time simplified the customs system by imposing by his own arbitrary authority a tax of \$500 on each wagon-load of goods, in lieu of all other duties. The immediate effect was to make impor-

tant changes in the character of the goods imported and in the methods of transportation. Instead of wagons carrying from one to two tons each, which had been in use up to that time, much larger wagons, carrying from three to three and a half tons, were used, and coarse and cheap goods were omitted from the loads. The perverse ingenuity of the "Gringos" thus frustrated the purposes of the governor, and he repealed his own tariff, which had been made without authority, and never had legal force. But Mexican officers generally had few scruples as regards usurping legislative authority, and Governor ARMJO fewer than most; and the New Mexican public and others having dealings with its government had learned by experience to submit to the ruling powers without raising constitutional questions unless they were prepared for a pronunciamiento. Though Santa Fe was the chief market of this trade and the destination of most of the caravans, some traders took their goods direct to Taos, Albuquerque, or other New Mexican towns, to Chihuahua, 200 miles south, or even to Sonora, on the Pacific coast in Old Mexico, thus arriving at CORONADO's starting point.

The men engaged in this traffic were merchants of a peculiar stamp, not unlike the merchants and master mariners of New England when discoveries were yet to be made by sea, and pirates, or other enemies not much better than pirates, were likely to be encountered. They were shrewd, prompt and daring, knowing their market well, but not averse from occasional rashly speculative ventures. Some of these, of whose mercantile achievements, as well as of their personal prowess and wild adventures, traditions still linger among the survivors of the time when the commerce of the prairie had a character of its own, were of French extraction, notably FELIX X. AUBREY and CERAN ST. VRAIN. The former is remembered chiefly for his famous ride from Santa Fe to Independence, unequaled, I believe, in the annals of horsemanship. He had wagered that he would ride this distance, 850 miles, in six days, and actually performed the feat in five days and sixteen hours, riding his own horse 150 miles and trusting to chance for relays for the rest of the journey. This achievement was commemorated by giving his name to a steamboat in the Missouri River trade, which I have often seen, proudly bearing at the head of its flagstaff the gilt figure of a horseman riding at full speed. Other famous rides were those of Mr. ELIAS BREVOORT, an old Santa Fe trader, still living, whom I have before mentioned, who rode from Puerta de Luna to Santa Fe—120 miles—in sixteen hours, and from Dona

Ana to Santa Fe—300 miles—in three days and three hours, the whole distance on one horse.

No one was better known on the plains from thirty to sixty years ago than CERAN ST. VRAIN. Traders, trappers, army officers, Indians, all either knew him personally or by reputation. Shrewd, enterprising, impetuous, choleric and intrepid, he was courteous and charming in manners, and I have been told that in his house at Santa Fe, all the conventional observances of polite society were carefully regarded, even to the point of appearing always at dinner in correct evening dress. His life was full of strange incidents and adventures, even beyond that of most prominent men of that region and time. He is said to have been born at Kaskaskia, or perhaps at Cape Girardeau, Missouri. In early life he entered the employment of the American Fur Company of St. Louis. With WILLIAM BENT he established a trading-post in New Mexico, known as Bent's Fort, and another known as Fort St. Vrain. To these forts, trappers from all the labyrinth of mountains for hundreds of miles around resorted to dispose of their furs and renew their equipment. KIT CARSON, JAMES BRIDGER, Old BILL WILLIAMS, VASQUEZ and many others, the equals of these in their time, though their names are not remembered, were among those who made these forts their rendezvous. About 1845, CERAN ST. VRAIN removed to Santa Fe, and had great success as a trader.

He was one of those men about whose memory traditions gather, and innumerable anecdotes are told of him. Here is a specimen. As he was playing cards one day with a Spaniard, a dispute arose and the lie was given. They separated with the understanding that when they next met they would fight it out. The meeting took place in the street, which the general public quickly left clear to the combatants. Each drew his pistol, and at the first fire both fell. They lay in the street exchanging shots, each of which inflicted a wound, until their weapons were emptied, when they were helped to their feet, shook hands and were carried off to have their wounds dressed. Both recovered and were friends, bearing no malice. Two knights of Richard-of-the-Lion-Heart's train would have fought out their quarrel with other weapons, but in much the same spirit.

JEAN PHILLIPE CHAVEZ was another well-known trader of the same type, chiefly remembered, however, for his tragic fate while defending his train from the attack of a company of bandits from Missouri, who had organized the raid, knowing that he was bringing from Santa Fe a great quantity of silver. CHAVEZ was killed,

and the robbers are said to have carried away treasure to the value of two hundred thousand dollars.

This incident, too, has a mediæval flavor, though it occurred no longer ago than 1850, I believe. Several of the robbers are said to have been captured and hung. This was not the only instance of the kind; indeed, the attacks of robbers were among the recognized perils of the trade. The JAMESSES, YOUNGERS and FORDS, whom that part of western Missouri has more lately produced, were the legitimate successors of the border banditti of the middle of this century.

It is almost as hard to fix with precision the end as the beginning of the Santa Fe trade in the form which I have tried to describe. The last train left Kansas City about 1866, and in successive years, the eastern starting-point of the caravans moved westward, following the progress of the railway. About fourteen years later, the locomotive thundered into Santa Fe, and broke the spell which, for three centuries, had shut from the modern world, the city of the Holy Faith of Saint FRANCIS.

In closing let me express my thanks for valuable aid in gathering materials for this paper, to my friends of many years, Major HUGH G. BROWN, U. S. A., and Colonel THEODORE S. CASE, of Kansas City, both of whom with me saw something of this trade in 1857, and to Mr. ELIAS BREVOORT, of Santa Fe, who, with great kindness, though a stranger, put at my disposal his intimate knowledge of my subject.

PROFESSIONAL NOTES.

The attention of the readers of the JOURNAL is called to the roster of the cavalry of the National Guard, on the last page of this issue. It has taken no little work to procure this information, and arrange in such manner as to be presentable. It is intended to publish this roster in each issue of the JOURNAL, and keep it corrected up to date.

SOME NOTES ON ENGLISH CAVALRY.

While in Europe last winter, I was, during my stay in London, the guest of the First Life Guards and of the Royal Horse Guards, popularly known as "The Blues," and had a day at Aldershot with the Scots Greys and the Rifles.

The officers of these famous cavalry regiments, apart from the hearty good-fellowship of their hospitality, showed great pleasure in going the rounds of barracks and stables with me, when they found I was keenly interested in everything pertaining to their service, and belonged to Squadron "A," of the New York National Guard.

I found them equally keen in every detail relating to our Regular and National Guard cavalry, such as I was able to give them. Our new drill regulations were of the warmest interest to them in the condensation of commands and the simpler formations, as compared with theirs, which were then undergoing revision, as ours have.

Naturally, I took pride in speaking of Squadron "A," and what it had achieved under Major ROX in the seven years of its existence. It was an unflinching source of surprise to these officers that civilians could be moulded so quickly into cavalymen, and render such service in Buffalo and Brooklyn, in 1893 and 1895, as have become matters of history, and to be enthusiastic enough to give the time to the hard work required in such regular drilling and campaigning as produced the results which have made the squadron famous.

Apropos of this: In discussing the make-up of the squadron with Lord WOLSELEY, the commander-in-chief, he made the pregnant remark, "Your major is indeed fortunate in such a troop of gentlemen for there lies the pride of endurance and personal courage. Your

soldier who has the moral backing of his gentleman's breeding, will stand more hardship uncomplainingly, dare more, and accomplish more, than any other."

Regardless of the pessimistic views of so many military critics as to the employment of cavalry in the next great war, there was, among all the officers I met, only the strongest belief in the still greater value of cavalry in the future, and it was impossible to avoid the contagion of their own faith in themselves, and with their magnificent traditions behind them, this can be readily understood.

These three regiments, the First Life Guards, the Royal Horse Guards, and the Royal Scots Greys, are, in the rank and file, splendid bodies of men, and whether it was under the inspiration of the war talk of the day, or simply their usual pleasure in their work for its own sake, there was a cheery and contented air about the men in stables and elsewhere, and a bright alertness of manner, or "smartness," as the word is used in England, that was pleasant to see. In grooming, there seemed a genuine fondness for their animals in the hearty and thorough way it was done, that spoke volumes. Attachment between man and horse is encouraged by the officers in every way, and it is a severe punishment for some dereliction in the care of his horse to take a man's mount from him.

In the First Life Guards and the Royal Horse Guards, the mounts are of the same general class—all Irish bred horses, and, I was amazed to learn, put into service at the age of four years. This was explained to me by the falling off in the numbers bred in late years, there being so little profit in it to the Irish farmer nowadays. What little there was, was going to the middle man, and the fear of their being disposed of to others should the stock be left a year or so longer before purchase by the cavalry.

As a rule, while large, they seemed too heavy in build, and degenerate in breeding, and while Sir S. McDONALD LOCKHART, commanding the Life Guards, disputed this, I had my views confirmed later, when in Ireland, by getting the facts first hand as to the present indifference of the farmers in breeding from the little profit in it, and the consequent deterioration of the stock in late years. Despite their early use in the service they have powerful hind-quarters, and commenting on this to Sir SIMON, he dryly remarked, "So are the hind-quarters of the men." It must be remembered in this connection that the standard of height in the Guards is five feet ten inches, and that I saw the horses bare. In "parade order" the glory of their equipment and clothing covers and adds so much as to completely change the appearance of the horse to a fine charger.

The barracks of both regiments, the First Life Guards at Knightsbridge, and the Royal Horse Guards at Regent's Park, are on the same general plan as regards arrangement of the stables, and are models of ventilation and sanitation. The stalls are unusually roomy, and both stalls and passageways are paved with the rough block of our old street paving in preference to cement or any of the patent devices seen so frequently in private stables. The ceilings

are lofty, and the utter absence of all the usual stable odors seemed to warrant the hanging of the accoutrements on the stall posts.

For sick horses, distant and complete isolation is practiced.

All the leather equipment, as usual in fact throughout the English cavalry, is of "fair," or russet leather, and considering its long life with its handsomer appearance, it is strange the authorities in our country should cling so persistently to the funereal black with its constant necessity of being furbished up with black pastes and consequent ruination of breeches as soon as a man sweats in warm weather work.

In this connection, COLONEL TURNBULL, in command of the Royal Training School of Cavalry in Quebec, showed me a few years ago a fair leather saddle, in perfect condition, that had been in constant use in his troop for twenty-two years, and was still in daily use, and in all that time nothing but soap and water had ever touched it.

Commenting again upon the amount of metal work on the handsome and showy trappings of these commands to be cleaned and polished, apart from the helmets and cuirasses of the men, I was assured that they accomplished it in but little time, and their pride was all sufficient to keep everything up to the mark, and that punishment was seldom for faults on this head.

Here, let me ask, could we not have a little more metal work in our own equipment in having open stirrups issued to us, preferably of gun metal? The present hideous leather booted and clumsy stirrup, growing out of the necessity for protecting the foot against brush and cold on the plains, is thoroughly well adapted to this end, but how it ruins every effort at smartness on parade, and how it encourages a careless seat!

In the present day talk of reducing all that makes the pomp and glitter, the glory of the bright steel and brass of the trappings of the English troops, to blued metal and dun-colored hue, I found it the consensus of opinion that, admitting the practical necessity of this for campaigning, were it to be done in times of peace at home the British soldier would be brought to mutiny, and even the British taxpayer, who loves a show for his money, would rebel against it.

I was particularly struck at the Royal Horse Guards by the *entente cordiale* existing between the officers and the men, each showing an evident pride and esteem in the other. Here the officers are men of title and of high rank, and a more pleasant, jolly, unaffected lot of fellows it would be hard to find. They take great interest individually in the men, and do all they can to make their lives pleasant for them.

At Aldershot I met the Royal Scots Greys, whose horses are all of the color that gives the regiment its name. They have a very good-looking lot of animals, of cleaner build as a class than those of the Guards, and with evidence of better breeding or more careful selection. Their slightly smaller size may have helped to this impression, for the adjutant assured me they were purchased in the

usual way and through the same agencies as the others. The question of giving up this distinctive grey color was then under discussion, it being thought too conspicuous for use in the field with the present long-range arms.

Stationed also at Aldershot was a mounted detachment of the Rifle Brigade, a branch of the service coming into great favor as support for cavalry advance guards. The men are light in build and their mounts are cobs, as these well-built, carefully bred and sturdy little horses are called in England. Their manes are hogged, with the exception of a tuft for the man to seize in mounting, and this tuft being left only three or four inches long, stands erect like a whisk brush and gives these little cobs the most comical appearance.

All the cavalry regiments I have spoken of were exceptionally well drilled, well set up, as the traditional guardsman is, and composed of fine looking men, of unusually good physique, and in the First Life Guards and Royal Horse Guards of the highest standard of height in the army. Their movements were executed with snap and precision and with great evenness. Their seat, with shorter leathers than ours, is natural and good, more closely approximating the seat bare-backed, and they sit lightly and easily in consequence.

It may be of interest to add a note as to the feed allowance according to the latest rules in the English cavalry. There are "stables" three times a day for feeding. In the morning they give from one to two pounds of grain and about twelve pounds of hay; at noon, five pounds of grain and another twelve pounds of hay, and at evening, five pounds of grain and about thirty-five pounds of hay. At the Regent's Park barracks I saw some hay which had just been delivered, of so fine and rich a quality as I never saw equaled here, and they were surprised at my admiration of it, it being nothing out of the common for them.

There is a growing feeling with some of the best veterinarians in Europe that hay should be first fed to the horse instead of the grain, as usual, the suggestion being that the appetite partly sated with the hay, the horse will eat the grain more slowly, and therefore digest it better, retaining it longer in the stomach before sending it onward into the intestines.

It may also be of interest, a question I asked of the riding masters of these regiments, and their replies. Whether they preferred men for the ranks who had known something of horses before enlisting, or nothing. In one case there was a strongly expressed preference for the man who had ridden before and knew something about a horse, and in another an equally strong preference was expressed for the man who had never even seen a horse before he enlisted. These opinions were founded upon individual experience, of which much in proof was given, and it but proves how diametrically opposed expert opinion can be.

H. EDWARDS-FICKEN,
Squadron "A," N. Y. N. G.

THE FIRST YEAR'S EXPERIENCE OF THE DENVER CITY TROOP.

The report of the War Department for 1896 on the organized militia of the United States gives the total number of men as 115,627. Of this number the infantry claims 102,488 and only 4,970 are found in the cavalry. Many populous and wealthy States like Michigan, Indiana and Iowa have no cavalry at all. It is surprising to note that Kentucky, the home of the thoroughbred horse, while supplying over 1,600 infantry is so little interested in cavalry that not a single troop is reported. Some of the States like New Hampshire, South Carolina and Virginia, while maintaining a fair number of men enrolled in the cavalry, do not seem to consider it essential to equip them with modern weapons or require very much drilling from the mounted troops. Cavalry is, of course, an expensive branch of the service to equip and maintain. It demands, and must receive, a vast amount of work from those charged with its development. Many good cavalry officers maintain that it requires five years service to carry the average recruit through his training and make of him that proudest and most self-reliant of all creatures—a thoroughly trained cavalryman. With eight hours work a day this would give nearly 15,000 hours instruction. Under the most favorable surroundings in the National Guard we can only hope for from 500 to 1,000 hours of instruction during one enlistment. We are about paralyzed sometimes at the bigness of the subject and the littleness of our means of instruction. Notwithstanding these facts the writer believes that every State in the union could well afford to give this branch of the service the funds necessary for complete equipment and could go out of the way to provide means of instruction. It is not advisable to maintain an unduly large cavalry force. A small one thoroughly equipped and properly trained will give full returns for the money invested. It is a great mistake for National Guard authorities to consider that cavalry can only be useful in the open country or under circumstances where a charge could be made effectual. The infantry can be relieved of a vast amount of patrol duty by the intelligent employment of mounted patrols. Hardly a city in the country but makes use of the principle involved by substituting a few mounted policemen for the large number of foot officers formerly employed.

Ever since the war there has been a tendency to question the efficacy of cavalry in such service as the National Guard is called upon to perform. Until recently in labor troubles no use has been made of the cavalry except to employ them as messengers, a service much better performed by the bicycle squad usually attached to every infantry regiment. During the last disturbance at Pullman some effort was made to employ the Chicago cavalry, but the result seemed to have been a disappointment to all concerned.

Until Troop "A" of New York City made their splendid record in the Brooklyn strike, in 1895, and the incomparable REMINGTON

had advertised the fact to the world, the military authorities would seem to have been justified in the opinion often expressed, that a National Guard cavalry could be of little use except on escort duty.

The military legislation in Colorado during the last decade, illustrates the changing sentiment of those interested in National Guard matters. For some time previous to 1889, there had been in the State three troops of cavalry. The amendments passed in 1889 allowed the continuance of these three troops, but provided that "hereafter no cavalry troops shall be mustered into service. Whenever for cause any troop shall be mustered out the battalion organization shall be discontinued and the remaining troops attached to the regiments of infantry." In 1891 military people had made up their minds that bicycles and electric motors would not entirely supercede horseflesh, and accordingly again amended the military law so that two troops of cavalry should be continued, and attached them to the two regiments of infantry. The law also permitted the maintenance of a signal corps.

Under the provisions of the act of 1891, the Denver City Troop was organized and mustered into the service of the State by the energetic Adjutant-General, C. M. MOSES, who, with the Assistant Adjutant-General, B. F. KLEE, served as privates in the ranks, that they might by their presence encourage the members and assist in carrying the organization over the rough places in its career. The troop was mustered in some time in December, 1895. During the winter the men were drilled in the school of the soldier, and by spring had become fairly proficient in the foot movements and the manual of carbine and saber. In May mounted exercises were commenced. The riding shool was laid out in an enclosure about 70x250 feet. The expense of obtaining tan bark and sawdust made it impossible to use either. After some experimenting with shavings from planing mills, with beef's hair, and one or two other materials, we selected finely screened sand which was easily obtained from a dry creek running through the city. A layer of ten inches of this sand was spread over the ground and made a very satisfactory cushion for us to fall on. It was pretty heavy work for horses to continue long on the sand, but on the whole we were well satisfied with the result.

The horses purchased by the troop were nearly all unbroken range stock, all of them well bred, some of them highly bred, but every one of them as wild as an antelope.

Up to the time of the Leadville strike in September, the horses were not thoroughly broken. The men were encouraged to do the training themselves, as a means of educating men as well as horses, and the members being nearly all business or professional men, of course had very little time to devote to horse-breaking, except at the regular drills. The officers of the troop had hoped to secure the services of one of the well drilled sergeants of the Second U. S. Cavalry, two troops of which are stationed near Denver, but this plan was frustrated by the spring exercises of the cavalry, requiring

the presence of the men with their commands. Various horse trainers and so-called riding masters from this and other countries were then interviewed. Good teachers were so scarce that the officers finally settled down to digging out of the tactics and kindred works such knowledge as was necessary to develop the correct cavalry seat and train the horses to a fair degree of excellence. The knowledge thus gained was always supplemented and amplified by the kindly and valuable suggestions of our friend, Lieutenant BYRAM, of the First U. S. Cavalry, then acting as military adviser to the Governor. The result of this enforced method of self-education has been so satisfactory that it is doubtful if the troop will ever engage a professional riding master. The effect of the study and teaching has been most excellent, especially among our non-commissioned officers, "*qui discit docet*." To fit himself for teaching others the non-com. was compelled to do a great deal of collateral reading and spend many hours alone on the longe. The strike at Leadville was declared in June, 1896. Almost from the beginning there was reason to expect serious trouble before a settlement could be reached. In anticipation of possible service for the troop it was deemed wise to hurry through the school of the trooper and commence drill in patrol and escort duty, the school of the squad and skirmish drill, mounted and dismounted. Every possible effort was made in the time allowed to accustom the horses to the use of firearms. So far as the time permitted the men were instructed in the use of the saber. Throughout the history of the troop considerable attention has been given to fencing with foils, single stick exercise mounted and dismounted, and broad sword and saber exercise. While no expert swordsman has been developed, yet the command is familiar with the saber and rely upon it as a weapon. In service the men preferred to carry it, feeling confidence in its use.

July 3d a portion of the troop took a short practice march of thirty-five miles, going into camp in the foothills near Denver. On the march, advance guard drill and skirmish drill were practiced. Camp was reached about 11 P. M., and the usual camp duties performed. The next day, with the aid of twenty or thirty ranchmen, an excellent dismounted skirmish drill with blank cartridges was held—one party attacking and another defending a high bluff, well wooded and very rocky. In the midst of the exercises a dispatch received from the Adjutant-General recalled the troop to Denver, where we arrived about midnight, having been absent twenty-nine hours and marched seventy miles. The recall was due to a false alarm from Leadville, where the situation remained unchanged for two months longer. Pending the final outbreak the troop was given an opportunity to complete its equipment and go on with the drill. The opportunity was improved to the utmost by officers and men. Our equipment was of course similar to that of the regular cavalry, which in turn has been evolved by many years of rough service in the West. Some details we were obliged to change for economy's sake, and in some parts of the equipment we were led by the nature of our service to make slight alterations. Our saddle,

bridle and blankets were those used in the regular service, with the exception of the bit, which was a hand forged bit, with straight side-bar and low port. Theoretically the bits seemed all right, and conformed to nearly all of the requirements laid down in CARTER'S work. Practically they were a great nuisance. The horses frequently tossed them upside down, and some amusing and interesting exhibitions of bolting occurred as a result of the loss of control of the horses. Various devices were resorted to for overcoming this defect, the most successful perhaps being to run a string from the rein-ring on one side under the chin-strap to the cheek-strap ring on the other side. Although supposed to be made of the best material, the bits were continually breaking. At one time six out of forty-two on hand were unfit for use, having broken for no assignable reason. Officers and men united in condemning the bit as unsafe.

The carbine was a venerable piece of mechanism, which had been in the hands of various State organizations for twenty years. Most of the guns showed serious signs of neglect, as they had evidently had but indifferent care. The locks, hammers and firing pins were in fair condition, but the stocks and barrels were badly battered. The rifling was much worn and rusty in many of the guns. All of the guns had been in the hands of the gunsmith just previous to the campaign, and had been put in as serviceable condition as possible. The sights were the old leaf sight without wind gauges, and the front sights on many of the guns were bruised and out of shape. Notwithstanding these defects, the carbine issued us did good service; for it was the reliable Springfield weapon, and we are among those who believe that no better gun has as yet been placed in the hands of the troops. Five men belonging to the Leadville troop one day made a score of 116 out of a possible 125 at 200 yards, off hand, the regulation "A" target being used. Each man used the carbine assigned him, and no effort was made to select the best shots in the troop. The score is given as an evidence of the accuracy of the weapon after having been over twenty years in service, where no expert and very little ordinary care had ever been given the piece. It was customary for us when acting as escort for officers or guarding "scabs," to ride at "advance carbine." Later in the campaign some of the men preferred to carry at night "sawed off" shot guns loaded with coarse buckshot. The men killed by the defenders of the Coronado and Emmett mines, and later picked up and turned over to the authorities, were nearly all killed by buckshot. At nearly all of the mines shotguns for night duties were considered an essential part of the armament. The cavalry profited by the experience of the infantry, and the night squads usually carried a couple of shotguns. The carbines were all right for day duty, dismounted, and enough target practice was indulged in to give the men confidence in their use.

Just prior to the campaign the troop had been furnished with the regulation 38-calibre navy Colt's revolver, with six-inch barrel. We have no criticism to make on the mechanism of the gun, with

one possible exception. Out of fifty-two pistols issued we had four, or a trifle under eight per cent. disabled by the breaking of the cylinder lock-bolt spring. After our return from Leadville we fired between five and six thousand rounds of ammunition and broke two more springs. No other part of the revolver gave out, and we feel justified in recommending that some change should be made in the mechanism of the piece which would strengthen an evidently weak part. The accuracy of the weapon was unquestioned. The holster was modeled after that in use in the army and is an abomination. Some other method should be adopted for carrying the weapon. It was almost impossible to draw the pistol with one hand, and what the trooper is to do with the piece after discharging it, no one seems to know. We all felt that the ring and lanyard should be provided, so that after discharging the gun the saber might be drawn without an instant's loss of time. The practice at mounted shooting showed that even the most expert men lost a moment of most valuable time in replacing the pistol prior to drawing the saber. Usually the horse would carry the rider over many yards of ground before the transfer could be made. All over the West, where men are continually shooting big game, and therefore are competent to express an opinion, there is a decided preference for large calibre weapons. We invariably prefer stopping property to penetration. Experience has taught us the value of shock in producing results. For this reason the troopers, nearly all of whom have hunted from boyhood, did not place implicit reliance on their new 38 calibre weapon. Many of the men carried in addition to their regular troop pistols, a 44 or 45-calibre; this with the additional ammunition required and the regular accoutrements worn made perambulating arsenals out of some of the men.

It has always been a matter of surprise to the writer that some cavalry officers in the U. S. army are ready to abandon the saber except when carried on occasions of ceremony. We confess that when cavalry is called upon to dismount and fight as infantry, the old method of carrying a saber would make almost any one wish to discard it altogether, but with it attached to the saddle where it belongs on service, that objection is removed. Whatever may be the opinion in the regular army, based on the experience of regular army service, our own convictions are well established. We are positive that for such service as the National Guard has to perform no weapon can take the place of the saber. Until our men can be taught to shoot mounted very much better than they do now we are not sure but that the saber is as deadly a weapon as the pistol. In our hands it was used as a policeman's club. In such duty as we had to perform—dispersing bunches of men, clearing the streets, or holding back crowds of strikers, we found it immensely useful to have a weapon we could employ mildly without killing any one. In another campaign we should rely upon it more than in the last.

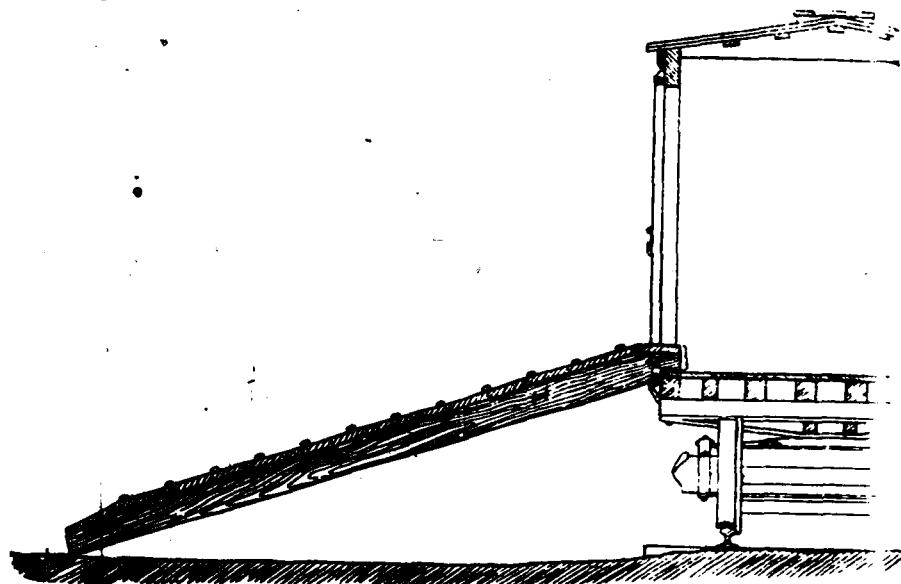
As previously mentioned the call to Leadville was not unexpected, and thus opportunity was given to prepare for the trip so far as our financial condition allowed. Not having money enough

to purchase saddle-bags, we were provided with the infantry canvas haversacks, which we slung to the shelter tent roll at the rear of the saddle. We supplied our troop quartermaster with such necessary articles as would be required for independent action in the field. In our troop wagon we had frying pans, coffee boilers, camp kettles, pails, blacksmith tools, a few extra horse shoes, nails, hammers, saws, hatchets and axes. Wire nippers sufficiently strong to cut barbed wire fences were supplied to all the non-commissioned officers. The first sergeant's box contained stationery and ink, blank reports, and the usual record books of the troop. No baggage of any kind was allowed either officers or men, except what each trooper carried on his horse. During the summer the men were instructed in packing the saddle and the following instructions were posted in the armory: "Until further orders each member of the Denver City Troop will place in his locker and leave there the following articles: One suit underwear, one pair socks, two handkerchiefs, tooth brush, matches in tin box, comb, writing material, currycomb and brush, soap, two towels. In case the troop is ordered into service the articles will be packed as follows: In the bedblanket: Underwear, socks and handkerchiefs. In the haversack: Comb, matches, tooth brush, writing material, soap, towel, curry comb and brush."

Anticipating plenty of cold and stormy weather, the men were advised to carry rubber coats and chaps.

Just before being ordered on duty we devised, and the Adjutant General generously provided us with a shelter tent which proved to be the most valuable part of our equipment. As a tent we consider it inferior to the regular issue, but for any other one of the multitude of uses to which we put the article we thought it superior. It was a sheet 7x6 feet in size, made of twenty-two ounce duck. Our friends in the regular service had advised us that the regulation tent of the army did not shed water very well, and we accordingly bought heavy ducking. We had rings instead of buttons placed one foot apart around the entire edge. These rings were of brass, sewed in, and were three-quarters of an inch in diameter, to allow the use of the lariat in fastening the edges together. This method of fastening is not so neat as the buttons, nor does it make quite so good a joint, but it is serviceable. Not one of the 1,440 holes tore out, which is certainly a pretty good record. The heavy canvas containing as it did the bed blanket and small articles, made a bulky roll, and this was the only objection we had to it. It was absolutely impervious to water, and furnished dry beds for the men. It was our custom while on outpost duty for two men to place one tent and one double blanket on the ground and then use the other blanket and tent for cover. In camp the tents were used at night throughout the campaign as horse blankets, and carried the horses safely through some violent storms of rain and snow. No shelter was provided for the horses until we had been in camp nearly two months. The hospital squad experimented with the tent, using it successfully as a hand litter and as a travois. On one occasion by

stringing four sheets together they very promptly erected an awning over a trooper who had become exhausted. Until the quartermaster issued us mattresses the sheets were often used in that manner by doubling one or running two together and stuffing with hay. We think the tent can be improved by adding the end flaps and providing buttons for one-half of the fastenings. Our lariat was a four-ply manilla rope especially made for cowboy use, and was the best rope we ever bought. We carried the lariat coiled and did not use the pin. Shortly before leaving Denver the writer was requested to devise a ramp suitable for detraining at any point on the line, either in the mountains or on the plains. After inspecting the various styles of stock cars in this vicinity and submitting the plans to Lieutenant BYRAM, the ramp was built and was so admirably adapted to its purpose that it is preserved and laid away for future use. We carried it on top of one of the stock cars and lashed it into place with a lariat. It all goes in one piece, and although heavy can be put in place in a moment's time by detailing men enough to handle it easily. A simple drawing and description is appended.



The bed pieces consisted of three fourteen foot 2"x6". The floor was of two-inch plank. Bits of inch stuff were nailed on the floor at intervals of about one foot to prevent slipping. Strong staples were inserted at the car end of the bed pieces, through which lariats were passed in securing the ramp. Three staples were also placed

on each side, through which uprights were to be placed if it was desired to stretch a rope to "fence in" the ramp. A notch was cut in the upper end to allow the ramp to fit the car floor more closely.

Our quarters at the armory are somewhat contracted, but so far as possible each man's field equipment was placed by itself to be issued to him as he reported at the armory in case of a call for service. Saddles, blankets, and bridles are left with the horses at the various stables where the horses are boarded or owned. The order to mobilize reached the armory at 3:05 A. M. on the 21st of September. The members were notified by messengers mounted on bicycles. Three of the men, including the troop quartermaster reside over seven miles from the armory, two more were in a neighboring city, and the balance were within a radius of about two miles from the armory.

We were obliged to make requisition for nine livery horses, which were promptly furnished. We also completely uniformed and equipped five recruits recently joined. Our consignment of pistols had been received but a few days previously and were issued with the pistol and carbine ammunition after the troop was formed dismounted. Twenty rounds each of carbine and pistol cartridges were given each man. At 8:30 the troop left the armory, taking breakfast at a restaurant before entraining. We were very much disappointed at the length of time required for us to get away after receiving the order, and believe it can be reduced one-half another time by a more compact arrangement of each man's equipment and better previous instruction in packing. Nearly all the time was consumed in issuing and packing the equipment, as every man had reported by 5:30, and twenty minutes at the outside should have sufficed for mounting the troop after the arrival of the men. However, the experience showed us a weak point in our acquirements and the defect was remedied after a few days in camp. After the return to Denver very much better arrangements for storing the field equipment were devised, and the mobilization will be much quicker next time. All but three members reported; two of them were out of town and came to Leadville at once. Transportation to Leadville was by railroad, and the infantry trains preceded that of the cavalry and artillery. The latter train was a mixed one, being composed of an antiquated style of cattle car for the horses, four box cars for the Quartermaster Department, an open car for the artillery, and a passenger coach for the men. Very little difficulty was experienced in entraining, although many of the horses had never been in a car before. The stock was watered just before going on board. We left Denver at 11:20 A. M. on the 21st, and detrained in Leadville in perfect condition between 4 and 5 A. M. of the 22d. In addition to our own horses, we had on the train the horses of the staff and artillery, making in all 105 head. We placed twenty-one head in each car. The writer was in command of the train. Experienced men were placed in charge of the horses, and a careful inspection was made at each stop the train made. One large horse required tying by lariat to prevent kicking and biting. The artillery and staff horses were nearly all obtained from livery

stables and were for the most part very good stock. The troop horses were nearly all owned by the individual troopers and were generally well bred and handsome animals. During the first two months of the campaign we had no stables and the horses were picketed behind a high fence. During these two months the weather was usually fine, but there were days and nights of rain or snow. About the 1st of December the quartermaster secured some lumber, and sheds open to the south were built, with separate stalls and feed boxes. The open side we closed at night with old canvas tents, leaving the shed open by day. Some of the service at Leadville was extremely hard on the horses. We frequently patrolled the hills, over the roughest of ground, up to 12,000 feet altitude. The mountain trails are not bad, but they often could not be used. In spite of the greatest watchfulness, we occasionally had a sore back to deal with, although every horse was kept in the service. New horses brought on the line would occasionally develop scratches, but no bad case was reported. About the middle of October all but a dozen of the Denver City Troop and one officer were withdrawn, and twenty infantrymen from one of the Leadville companies were transferred into the cavalry and continued as cavalry until the end of the campaign. These Leadville men were all young business and professional men, of a high order of intelligence, and very soon acquired the vim and snap so essential to good cavalry. Some of the horses they introduced into the troop required a great deal of training, but being used to the altitude and tough, they were excellent mounts. We found early in the campaign that "valley" horses like "valley" men were short of wind when trying to run at an altitude of two miles. It required several weeks' residence to accustom the stock to the change. After the cold weather set in it became necessary to sharpen the horses' shoes very frequently. The mountain trails are so very steep and often so rough and icy that unless a horse is sharp shod the rider had much better go on foot. Those horses constantly on night duty were sometimes sharpened every day. The troop blacksmith was assisted by a hired blacksmith and by details from the troop. We were very fortunate in the way of injuries to horses. A few were cut by breaking through the ice, a few were temporarily lame from strains, one had a front hoof nearly torn off at the corona by catching it in the railroad track, but no serious case of injury or sickness occurred during the campaign. The problem of feed was an interesting one. At first, while the horses ate hay on the picket line and grain from the nose bag, the feed ration was excessive. Most ranchmen and private owners feed too much hay, and it was difficult to restrain the men from too indulgent attention to their stock. The writer found, after a temporary absence from camp, the regular issue of hay per horse at twenty-two pounds per day. This was reduced gradually to fourteen pounds. We never fed to the average horse more than ten pounds of oats and were constantly ahead on our issue on both hay and grain. The stock was always in prime condition, the horses themselves were nearly all accustomed to hav-

ing hay before them continually and we therefore found it wise to feed rather more frequently than the regulations called for. Oats were fed at 7, 11:30, and 5. Hay at morning stables, 8:45 A. M., 6 P. M., and 10 P. M. The service we were on was neither garrison duty, active campaign, or camp of instruction, but a decided and disagreeable mixture of all three. In inclement weather nearly all the horses would sometimes be left in stables for several days and then suddenly a scare would come, the cavalry would be called for, and the stock would have two or three days' work over villainous trails and in bitter cold weather. Drilling was carried on perpetually throughout the service whenever the weather would permit, and the stock was not overworked. We were fortunate in being allowed three or four extra mounts at all times, so that a substitute could be used whenever for any reason a horse was temporarily disabled.

The uniform of the men was the regulation U. S. campaign uniform and with one or two modifications was admirably adapted to the service in mild weather. Storms are frequent and sudden in the mountains and the men should be provided with some sort of rubber pouch. No squad was allowed to leave camp for duty without overcoats, for at 10,000 altitude the temperature can and does make wild tumbles of 30 and 50 degrees, and storms come almost without warning. Our dismounted service over the sharp rocks, wore out our town shoes in two or three days, and we were provided with the regular mountain lace boots so much worn in the Rockies, and found them very serviceable, as they were thick soled and strong enough to stand the service. They are made to fit the leg closely by lacing at the instep, and so take the place of the campaign leggins which we found a nuisance while riding through the brush. The leggins may be all right for the open country or for city work, but they were never meant for rough service. We had had some little experience with them in the scrub-oak of the foothills, and were not surprised to see them tear off whenever any fast riding was attempted among the second growth pine in the mountain. After winter set in our feet were most comfortable in calfskin shoes or boots, with heavy and high arctic shoes. Some of the men while mounted used the huge German socks drawn on over boots and legs. Every trooper who could afford a pair bought "chaps." They are a great protection to a mounted man, and might well be issued to such forces as are ordered into a timbered country or are on service in very cold weather. The heavy underclothes and sweaters furnished us we believe were the cause of the wonderful health of the command. Every man was provided with two suits of underclothes and two sweaters, so that when coming in wet from a detail he could change his clothing. It was a very simple matter for the commanding officer of each company or troop to see that the various details on duty in wet weather changed clothing immediately after caring for their horses. Colds and serious lung complaints were almost unknown.

The headgear used by the men was at first the regulation cam-

paign hat, supplanted later by a cheap cap, with a roll to cover the ears. A few of the men bought fur caps and several received the ugly looking but very comfortable muskrat caps of the regulars. We were very early given a heavy sheepskin glove, with wool on the outside, which protected our hands perfectly. Altogether a cavalry patrol presented a rather motley appearance, but campaigning at 10,000 feet altitude, with temperature from forty degrees above to twenty degrees below, is business and not pleasure. The fact that only one case of pneumonia developed and no serious accident and no fatality occurred among the eighty-seven men on duty, is evidence sufficient that the health and comfort of the men were well cared for. The food served the men and the forage provided for the horses were the best money could buy. We had constantly on our tables the best of meats and vegetables in abundance. The troop taxed its members a couple of dollars per month each and added to the regular issue fresh milk (a scarce article in that district) and not a few delicacies, such as fruit, celery and pastry. The camp commander allowed us to purchase lumber and build a very comfortable eating house, which was warmed by a Sibley stove.* As mentioned above, cavalry was a new arm of the service for Colorado. It is true that there had always been two or three troops on the rolls of the Adjutant General, but partly for lack of equipment and partly for lack of horses no serious effort was ever made in this State to drill a troop well enough to employ them in the service until the winter of 1895-6. Very few of the originators of the Denver City Troop had much idea of the great value of this branch of the service, and indeed not many really expected to see any service more difficult than parading on occasions of public demonstrations. On account of the ignorance prevailing regarding the use of mounted troops, we saw some peculiar service at Leadville. There were in the district usually about 600 soldiers. The territory under observation was extensive and the property valuation immensely great. For several weeks after the opening of the campaign nearly every soldier in camp was on duty at least every other night. The cavalry took their full share of this work. Small day patrols were maintained almost constantly. Night patrols were resorted to in the latter part of the campaign, and with most excellent results. Small parties of cavalry were frequently sent to investigate rumored depots of supplies for the strikers, or to search abandoned mines and mill properties for collections of arms. Some of these details carried us into rough country—one trip going above timber line in a snow storm. The territory guarded was about fifteen miles long and five to ten wide, Leadville, with per-

* Being inexperienced we had no idea that a man could enjoy "all the comforts of home" in a Sibley tent. The State provided enough of these tents so that there was no overcrowding. As the cold weather came on the men bought lumber, laid floors, and built bunks to sleep in. In the cavalry quarters in winter there were never more than six or seven men in a tent. After the stables were built, the saddles and horse equipments were moved from the tents to the stables and this left plenty of room in the tents. We were given plenty of pine wood for heating. It usually required the assiduous attention of one man as stoker to supply the stove with wood, still the tents were always comfortable. Various racks and hooks were devised to hold cooking utensils against the central stoves, and the men enjoyed doing a little private cooking after returning from night duty.

haps 15,000 inhabitants, being near the center of the district. While we were there the lawyers could not agree, nor have they ever settled for us how much authority we had, or whether we had any right to disarm strikers, or secure weapons, or search buildings, or interfere with traffic. It made our task a delicate one, for we frequently received distinct orders to do all these things, and the orders were carried out.

Three different parties of non-union men were imported from Missouri to work in the mines. On each occasion the cavalry patrolled the railroad track for four or five miles out of the city and prevented any one from approaching or crossing the track until after the train passed, bearing the miners and their guards. The grade into Leadville is heavy and trains run slowly. By speeding the horses the troop usually reached the station in time to furnish point and flankers for the column guarding the workmen and escorting them to the mine. During January a reduction of the force occurred. Detachments of soldiers were relieved from duty from time to time, until only a squad of cavalry under an officer of the Leadville troop and a provost guard of infantry remained. Early in March the strike was declared off and the troops were promptly withdrawn.

Although the proper function of cavalry was little understood at the beginning of the campaign of five months' duration, the valuable service rendered by the troop so impressed every one who had an opportunity to judge of the work, that a clause was inserted in the military bill then before the Legislature authorizing the formation of a squadron of four troops, and by the appointment of a major putting the cavalry into an organization by itself instead of attaching it as before to the regiments of infantry. The campaign was a most valuable one in the way of instruction. Perhaps the most important lesson learned being the necessity of training our horses more thoroughly. The men were taught confidence in themselves and reliance on the organization, and although the continued absence from business was a severe trial to many of the members of the troop, we lost but very few men after the service was over, and their places were promptly filled by the enlistment of equally good material.

JOHN CHASE,
Lieutenant, N. G. C.

THE HUMAN ANIMAL IN BATTLE.

In the March number of the JOURNAL was published a resume of Mr. H. W. WILSON's article entitled, "The Human Animal in Battle," a very important military subject. As is suggested by the title, the central thought or main point is that of *courage*. This quality or attribute has been defined by many great soldiers, and it is said to be incited by about as many different causes. To those who are loath to take the sordid view of the matter, as it is usually presented, as for instance in the "Red Badge of Courage," by STEPHEN CRANE,

the following extract from the "Matabele Campaign," by Colonel R. S. S. BADEN-POWELL, may prove of interest:

"I have seen in the *Fortnightly* an article on 'The Human Animal in Battle.'

"It is interesting, but it doesn't exactly tally with the impressions gleaned from experiences here. Allowance must be made, of course, for individual constitutions, but the author seems to imply that for the generality, 'courage is a powerful exercise of will to overcome the more natural tendency to run away'; but it seems to me to be an exercise that is put into practice very promptly and automatically by some people.

"He talks of the soldier as going into a fight with his mind full of the question as to whether he is going to be killed, and if so—why? That he then discovers that fighting is not pleasure, it is not sport; he merely gets dazed, and all his senses are blurred.

"As far as I know, men going into action are, as a rule, thinking of anything but getting killed, and they are anything but dazed. If they happen to think at all about anybody being killed, they do so as in ordinary life—and death: they reckon on their neighbors dying, but not on themselves.

"There is naturally a sort of excitement which takes possession of one, and which, I think, works on you to the same extent as a couple of glasses of champagne. You forget all fatigue, and your wits are more than usually sharpened.

"This brightening of the wits is similar to that which occurs in the case of an actor on the stage. Ask him in the wings, just before he goes on, what are his next few lines, and he probably could not tell you: he steps before the footlights, and at that same moment his mind, I suppose, concentrates itself on the matter in hand, the lines come to him without effort of memory, and his wits are about him to the extent that if one of the 'gods' interrupts with a bit of chaff, the actor can rap back a repartee at him that would take him a month to work out in cold blood. In the same way, one's wits brighten in a fight: one seems to see clearly in every direction at once, to grasp what the enemy is at, and also what is wanted on one's own side, before, around and behind one. The mind is clear and not confused, and is buoyed with a feeling of elation and cheery excitement, but with a cruel under-current, close below the surface, which the Kaffirs so aptly describe as 'seeing red.'

"A little instance in a fight two days ago will illustrate my meaning. A trooper coming back from the firing line with a message to the rear, saw, as he passed, one of our Cape boys skulking under cover behind a rock. 'Forward on, Alexander!' he shouted cheerily, and picked up a stone to playfully enforce his command. At this moment a Matabele in a cave close by fired and just missed him; he merely altered the direction and the force of his throw, and hurled the stone hard at the cave instead of at the Cape boy. Then with eager haste, mad with rage, and swearing volubly, he dashed up the rocks to 'give the nigger snuff.'

"This sudden change from cheery light-heartedness to blood-thirsting rage is one of the peculiarities of the mind during a fight.

"Another curious statement in the article is that in action fear plays some game with one's secretion of saliva, and that an intense thirst results. Speaking for myself, I have been in as great a funk as any man of my weight and years; but I do not recollect any particular thirst connected with it. I have for my part never seen much difference between the thirst of the battle-field and that of the polo-field, the cricket-field, or any other field, except perhaps one, the pig-sticking field, which certainly can produce a thirst peculiarly its own, and one which transcends that of any other pursuit—but even that thirst is not the result of fear."

THE ARMY BUMMER

The Bummer bore upon his person the proprietary trade mark of the Great United States. He was a creation of the American Eagle, and he became a necessitous necessity as soon as his creator was advised of his boundless per capita of utility and gall. He never felt the gyves of discipline. If rank compelled a salute, a vicious mental exclamation, was lymph for such lupus.

No crowned head would have tolerated him for a moment. There was about him the potency and inclination to knock the underpinning from a throne, or jump the claim and sequester the crown jewels of any satrap who occupied that kind of an upholstered seat. The interest on his capitalized assurance would have been ample to have paid the entire principal of the national debt. He was a larger book of strategy than DE JOMINI ever wrote, and beyond doubt he was the only personage of whom WILLIAM T. CUMSEY ever had cause to be envious or afraid. The objective point became his while the army was busy in preparation for its capture; and it laggardly responded to his request to hurry up and help him hold it.

Had he been a Crusader, the Holy City would have been his meat; and his descendants to-day would have borne the hen lyant or the razor back rampant on their ennobled escutcheons.

If the genus homo of whom I am permitted to speak, could have been projected into the Russian campaign, as MARK TWAIN did the Yank into the Court and times of KING ARTHUR, instead of Death on horseback pursuing the French army a-foot back to France, the return from that God-forsaken country would have been a summer picnic; and, far into the next autumn, the road from the Kremlin to Champs Elysee, would have been littered with chicken feathers and ham rinds.

When the government, and the great liberty loving people behind it, were in agony over the outcome, and while the national gloom was as though the empty bottles of the night had been upturned and emptied into Chaos, he heard the roosters crow for morning and gave the North backbone and faith, when they waited in dumb despondency for the dread Sphinx to answer, whether the government of the people, by the people and for the people, should be wiped from the face of the earth, as some day a Kansas cyclone will serve the sixteen story buildings of Chicago, he punctured the Confederacy and knew it to be an apple of the Dead Sea.

He wired SHERMAN to come and not be afraid, as there was nothing but a handful of Georgia Malish of odd sizes and last year's vintage, and three proclamations of BRAGG intervening between him and the sea.

He was a wise man in his day and army corps. He always hunted up a Baptist settlement for a convenient place to ford a river. He was then sure of a ripple and rock bottom. He was all things to all women. Notwithstanding he had a family at home, he wooed the Southern maiden while a number of loving letters

from his wife remained secure in his pocket. He told her the story old as time and sweet as mortality; one which pulses with the same rhythm and warmth beneath the midnight sun and Labrador sky as it does amid all the opulence of noon's eternal flowers. He asseverated to her, that it was under a dire compulsion he dared not name, that he took service in the Union army; that scorning prof- fers of high command in both the army and navy, he took the humblest position he could find; that although GRANT was his uncle, he had not the heart to sanction the General's course; he prophesied a victory to the Southern cause and hinted at reclama- tion from the Northern purse for all the South had suffered or borne or lost; he declared that upon the conclusion of the vulgar and unconstitutional rapine and pillage of the Northern horde, he intended to return and invest his entire private fortune in that very vicinity.

And then, with his arms entangling her, "he poured into the porches" of her ears the "leprous distillment" besides which CLAUDE MELNOTTE's harangue to the trusting PAULINE was as con- tractor's sow belly to Hesperian fruit. And all the while, his eyes wandered the landscape o'er, alert to discover the lair of the heir- looms and the abode of the buttermilk and sausage.

He was a statistician who used up the resources of the country in compiling the returns.

As a financier, he inflated the volume of Confederate currency by an issue, which, for letter press, was complimentary to the Philadelphia concern that got it up, and much of which, our British brethren hold and hope some day for the United States to assume and pay.

As the deeps of atmosphere envelope the earth and protect it from stellar shot and hot, whizzing, rotten, planetary camp kettles, so harm comes not to any mortal, as the tenuous nebula around the comet's head and hundred miles of tail, so, he surrounded the army and pervaded the country, a pillar of cloud by day and a pillar of fire by night, while the great sinuous, crawling army bisected the Confederacy with a frolic and tore it in two with a joke. It was the first great march the Salvation Army ever made.

The buimner's conscience was but an annex to his appetite. He was the very inspiration and genius of hunger. Reason, reputation and risk were hand maidens that waited on stomach. Anatom- ically, he was an Octopus of Abdomen, whose tentacles reached every hen roost and pig sty. His teeth were sand papered and edged for nubbing, pain killer, goose liver, red hair oil and corn pone.

Par excellence, the American Knight; whose lance was always in poise for the unwary hog, and who victoriously wrestled the trophies, in his joust and tourney with unsophisticated mutton. He may have been unshaven, hungry and dirty, but when it comes to loyalty to the cause he was a vestal virgin, that had no use for a seive; and when it come to disguising his purpose, by the use of chin music, he was a SOCRATES.

Alas, and ah me! We gaze backward to at last linger on a dream. We invoke the past, and only a specter stalks across the memory to-night! The unreal flesh has taken on the invisible liv- erty that mantles a soul in Paradise! He rides his flea-bitten mule no more! His canteen lies corroded and empty! His gastric juice has taken vacation and he assimilates his victuals no longer! The great nerve that touched the brain of an army's intelligence and activity has departed!

Where he may be, I cannot tell! Full well I know, his valor threads the shining meshes of the flag. There is an echo of him in the mighty woods as the birds sing songs of peace in the depths! Wherever the glow touches the hill tops it tinges his name! There is a laughter of streams that ripple to his memory and a psalm of oceans that anthems his praise! There was victory and home again, instead of petty provinces, incongruous, divergent and soon to be alien! From ocean to its sister sea, is one land and one flag, while, under the Divine benignities, he fought for and so well helped to accomplish!

Where he may be, I cannot tell. If, still, he dance the crazy maze called life, I say, God bless him! And, if he is a foot pedes- trian on the streets of the New Jerusalem, he has, long ere this, ascertained how well the golden cobble stones are anchored down and how firm the matchless gems are set and grounded in its alabaster walls!

With him has vanished the marching men, the horse, the rider, the Dahlgren, "the thunder of the captains and the shouting," the lustrous and shining banners of victory, "the pride, pomp and cir- cumstance of glorious war"—all are gone forever!

J. G. WATERS,
Captain.

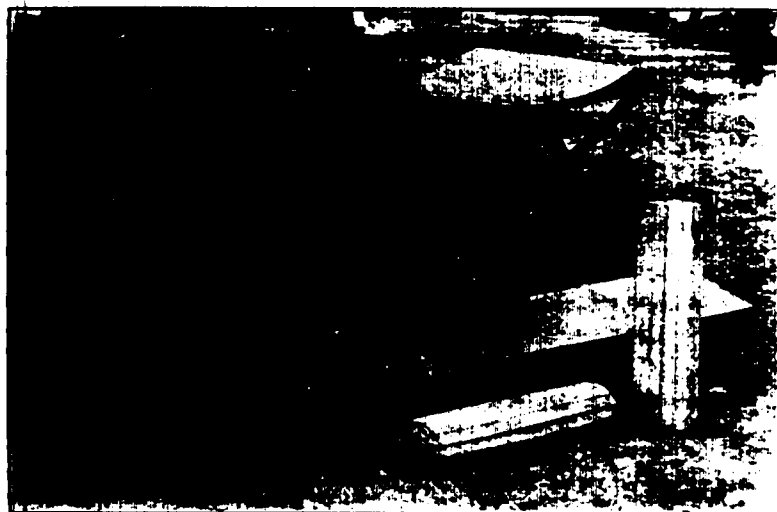
CAMP TABLE.

At the request of Lieutenant REEVES, I had taken at Camp Lin- coln, Springfield, Illinois, two photographs of our camp table, which he said he would like to send to the Association, and I mail them to you to-day. If you think they are of enough interest I will send you all the correct measurements, so that you will have a clearer understanding of the use of the table.

The table, when set up, is twenty-one feet long and a little over three feet wide, and will admit of thirty-six men standing at it at one time. It takes about four and one-half minutes to set the table up and about a minute less to take it to pieces and put in a box. The box at the present time is seven feet long, a foot high and a foot wide (inside measurement) and is very easily carried when an escort wagon is used, one of which I had made for my troop about a year ago. I am now improving the table so that it will go into a box about four and one-half feet long to about two and one-half feet high, making it more compact in size.



The tops of the table, you will notice, are in three sections, and made of hard wood, such as is used in parquette flooring, glued on to a light canvas or duck, the sections being seven feet in length.



I assure you that the table was a decided luxury during our trip from Bloomington to Springfield, we using a "Buzzacott range" for cooking. This table is an idea of my own, and was made by two members of my troop.

M. L. C. FUNKHEUSER,
Captain First Cavalry, Ill. N. G.

With these preliminary observations I will now proceed with the following:

INTRODUCTION.

You have all lately had the opportunity of hearing or reading the very valuable lecture by Captain LEE, R. A., on "Mobilization," which takes such a comprehensive grasp of the subject, and explains so fully and clearly the necessity of a completely perfect organization of every little detail required; and his opening chapter upon the general state of the French army is so true to life that it will be sufficient for me to say that at the breaking out of the war the French cavalry were in no way prepared.

For some years previous the impression was gaining ground that modern warfare and improved firearms had sealed the fate of this arm, while the committee that had been appointed to consider the question reported and decided that the regulations of 1829 were perfect in 1869.

The order, however, to "mobilize" had been given, and as there were no reserves of horses, a portion of the effective strength only four-year-old remounts, no supplies of mess tins, kettles or camp necessities, all was confusion, marching and countermarching incessant, and sending vain applications to Paris for supplies.

Thus they marched to meet the enemy and hoped for the best.

FIRST PART.

Arrived on the frontier, the French cavalry commenced operations upon exterior lines, while the Prussians covered their whole front and flanks with an impenetrable cloud of cavalry scouts, and attacked with all the advantage of interior lines; also a perfect knowledge of the country, which the excellent maps in their hands gave them; while the French cavalry had no maps.

The Germans, therefore, at once commenced to use their cavalry with unparalleled audacity, showing unlimited confidence in the dash of their men, and the staying power of their horses. So that to the ubiquitous Uhlán, which was the term that came to be applied to the Prussian cavalry without distinction by most correspondents during the war, in a great measure the general success of the campaign is largely due.

The French saw this, to them, new method of handling cavalry with astonishment, and tried to follow the example set them, but failed from want of special training—their theory having been that cavalry should be sheltered in masses behind inequalities of ground until required, then to be launched against the enemy at the decisive moment; and so, while their brilliant courage throughout the campaign saved the honor of their arm, it was wasted in useless charges, the men frequently riding to what they knew was instant death—the stern reality of practice proving that shells searched out every nook, and regiments were annihilated before they could close with infantry in the charge.

REPRINTS AND TRANSLATIONS.

THE FRENCH CAVALRY, 1870.

The choice of a subject having been left to myself, I naturally have selected one connected with my own arm of the profession, to which in a measure, as members of the active militia of Canada, we all belong, and with which particular arm I have been for so many years actively connected.

Two years ago I had the honor of giving a lecture at the Canadian Military Institute in Toronto upon the value of the cavalry arm in general that caused some to think that I wished it to be believed that good cavalry were invincible and always successful, so to-night I have chosen for my subject "The French Cavalry, 1870, with its lessons for Canadians," and obtain the facts which I am about to bring to your notice connected with that disastrous campaign from the account given thereof by Lieutenant-Colonel BONIE, Eleventh Dragoons, and published by him in Paris in 1871.

I have yet another reason for choosing this subject, inasmuch as I took a very deep interest in the French cavalry, because in 1866 when I was attached to the cavalry depot at Canterbury and heard of the probability of a Fenian raid, I came out in the month of March by way of New York, and was immediately appointed intelligence officer to Colonel MacDOUGAL, Adjutant-General. The information which I collected and brought in to headquarters here in Montreal from the other side of the frontier was considered of such importance that I was rewarded with having the letter F printed before my name in the militia list, so that I can claim fellowship with the newly-formed veteran association of Montreal.

The Fenian War being over, I returned to Europe in 1867 at the suggestion of the late Sir GEORGE CARTIER, Minister of Militia, to visit the French cavalry in an official capacity, seeking instruction that might be useful in Canada, and was duly accredited to the French military authorities, through the kind influence of the British ambassador in Paris, Lord LYONS.

BATTLE OF WISSEMBOURG.

The ball opened—if I may be permitted to use so graceful an expression in connection with such grim work as war, and I also desire to remind you that I confide myself throughout this lecture solely to the action of the cavalry, taking no account of the three arms—with the battle of Wissembourg, where the Second Division, under the command of General DOUTAI, were encamped. The cavalry occupied the positions of Soultz, Seltz, Haguenau and Brumath. This was the morning of the 4th of August, and in such an extent of ground the French cavalry might have found plenty of occupation in outpost work; but they did nothing, with the result that the French Second Division of 7,000 men were completely taken by surprise and vigorously attacked by 35,000 Prussians, who poured a heavy artillery fire of shells into their ranks.

In great haste General DOUTAI called to his escort to follow him, and galloped to the front, where he was killed rather than retire; and the remains of the small force which fought with desperation against such large odds were compelled to fall back, together with the cavalry, who took no part in the action, owing to unsuitable ground for charging.

The Prussian cavalry vedettes followed closely upon the retreating French and never lost sight of them, notwithstanding the most dreadful weather; so the retreat continued, until the night of the 5th and 6th, when they joined the First Army Corps, which was united near Reichshoffen and Froeschwiller.

The activity of the Prussian scouts was of inestimable value during this retreat of the French, and contributed in no inconsiderable degree in making preparations for the battle of Worth, which took place on the morrow.

BATTLE OF WORTH, OR FROESCHWILLER.

The first dawn of the morning of the 6th August had come, and the French cavalry had obtained no information of what the Prussians were doing, so that Marshal McMAHON was not aware that the strength of the Prussian force in front of him had been tripled during the night, so that he really awaited the attack of 140,000 Prussians with his 35,000 men drawn up on the high ground between Froeschwiller and Worth, Elsashausen and Gundersbach.

The French cavalry consisted of the Brigade Michel, Eighth and Ninth Cuirassiers on the right, which was the weakest position, the Division Bonnemain, First, Second, Third and Fourth Cuirassiers in reserve in rear of the center, and the Third Hussars and Eleventh Chasseurs, the Brigade Septeuil, on the left.

No time was lost by the Prussians in opening fire by their advance guard, and very shortly afterwards a general attack was made on all points of the French position—right, center and left—and by 11 o'clock no less than fourteen batteries of artillery were pouring a destructive storm of shells into the village of Worth, causing

the terrified inhabitants to fly in all directions, but, as I have already stated, I must confine myself to the doings of the French cavalry only, who, at about 1:30 P. M., were called upon by the general to save the day if possible; and the results of their charges were simply bloody and useless, as they had to attack an enemy always out of reach and often out of sight; but it was the first employment given the cavalry in this campaign.

The First and Fourth Cuirassiers charged by successive squadrons—retiring with the loss of many men and horses—the latter regiment their colonel.

The Second Cuirassiers then charged by wings and lost their colonel and five officers killed, besides others wounded, and 129 men and 250 horses.

The Third Cuirassiers now came into action and one wing charged, losing the colonel, seven officers and seventy men and horses killed and wounded.

This now seemed the right moment for the Prussians, who at once attacked with redoubled energy—regiment after regiment marching to the attack of the French position in front and flanks—so that the only hope of the French seemed to them to be in using their still remaining fresh cavalry on the right under General MICHEL, so the order was given him to charge.

Immediately down came a magnificent array of horsemen at a gallop that made the earth shake—the Eighth Cuirassiers leading—but as soon as they reached the proper distance, two volleys fired by word of command, followed by independent firing, transformed two-thirds of these men and horses into a line of corpses.

The Ninth Cuirassiers and Fourth Lancers, who had arrived during the day, and were following in support of the first line, were even more unfortunate, owing to the obstacles in their path, which caused the effect of the infantry fire to be more murderous still, and what remained of these regiments tried to escape through the village of Mosbrun, which, unknown to them, had already been occupied by the Prussians, who fired upon them in all directions from the houses, and as they had also blocked up the end of the street leading through this village, all who were not killed were taken prisoners.

I must mention, too, that the Second Lancers, who had also arrived since the morning, were left exposed to fire all day, and apparently no attempt was made to get them under cover. This regiment lost their colonel, eleven officers and many men and horses without having charged.

The only important piece of information gained was that, although the bullets rained like hail on the cuirasses, not one was pierced.

Thus ended the first employment of the French cavalry in this war.

I do not think it is necessary for me to point out the lesson to be learnt from this day's doings; it is patent to everyone.

The cavalry was sacrificed—for what? To save the infantry

and give it time to retreat. Well, a small portion of one regiment was saved, but at the cost of three times as many men and horses as there were foot soldiers saved; and there was no regular retreat after all, but a rout, for the whole corps d'armee fled pell-mell.

Reichshoffen was the direction taken. At Niederbronn orders were given to make for Savern as a rallying point, and officers and soldiers, generals, cannons and wagons—all in one disorderly mob—pushed along the road all night of the 6th and 7th, arriving in scattered little bands, so that by 8 o'clock in the morning the remains of the cavalry regiments were collected together.

RETREAT TO CHALONS COMMENCES.

Naturally it was expected that upon arrival at Savern order would be restored, when suddenly the "parade call" sounded and the cavalry at once mounted and marched without rest by Phasbourg to Sarrebourg. How they were to live was a question that presented itself to the minds of most, for the enemy's cavalry had captured everything at the two battles of Wissembourg and Froeschwiller.

Fortunately, however, they excited the sympathy of their fellow-countrymen—the peasantry—who fed them.

Arrived at Sarrebourg, regiments were reformed and returns of killed and wounded sent in, generals resumed command of their brigades and no one supposed that L'Alsace would be abandoned without a struggle.

At noon on the 8th, the cry of the Prussians was raised as some cavalry scouts were seen, and the order was given to the French cavalry to saddle and bridle and retreat to Lunneville, where it was hoped that supplies of everything that was required would be obtained.

During this long retreat the Prussian scouts followed the retreating army and never lost touch night or day—reporting everything that took place to their chiefs, and keeping the retreating French in a constant state of alarm—because the French cavalry continued to keep together in masses.

They arrived at Lunneville, which is a large cavalry depot, on the 10th August, and now at last all wants and losses would be made good, and rations and forage once more regularly distributed. So generally, the spirits of everyone revived and the situation seemed to brighten with the prospect of rest.

The Germans had, however, by this time carried out the first part of their strategical campaign and pushed a large cavalry force as far as Nancy in between the several French corps d'armee which were now effectually separated, and besides spread the news everywhere that an advancing army in overwhelming numbers was near at hand.

These reports had also reached Lunneville and it was not long before the alarm was given that the Germans were upon them and their dreaded cavalry appeared in sight. Immediately all was con-

fusion—cooking pots were emptied, forage taken from the horses—and bridling up with all haste the retreat was continued by way of Colombey, Beaumont, Neufchateau and Joinville. Finally the corps d'armee of Marshal McMAHON reached Chalons on the 20th August.

What now was the part played by the French cavalry in this long retreat? Simply nil; for they neither obtained information nor fought. It seemed to be a mere trial of speed, their only thought, apparently, to escape being cut off, and most lamentable mismanagement certainly in every department was only too evident.

The route was continually being changed, the rations never came up until a late hour, and were then generally short in quantity; moreover, owing to the bad habit of not quartering themselves in the villages, they got but little rest.

During the month of August it rained incessantly, and they had for camping grounds fields under water—the earth so soaked that the picketing pegs had no hold—neither shelter, nor straw to sleep on, and owing to the heavy rain could neither light fires nor dry clothes.

The horses were equally miserable. The wind blew away a portion of their scanty rations, and pressing together with their backs up and their heads out, they endeavored to protect themselves against the weather. Every morning, however, they were obliged to march, and men and horses left the species of bog in which they were encamped, stiff, tired and out of spirits.

How much better the Germans understood the art of war! Aware of the extreme importance of preserving above all things the strength of their troops, they quartered them on the inhabitants.

Immediately on their arrival in a village the men were housed, and the horses put into barns. In this manner they rested and dried themselves thoroughly, were well fed, and were in the best condition to continue the struggle.

By the French system of bivouacking they imagined they lessened the cost of war for the inhabitants, but such is not the case, for soldiers who have to bivouac lay hands on all the wood and straw that can be found for camping purposes. It would, therefore, have been less expensive for a peasant to give a place at his fire, as he would then avoid waste.

Besides, if you do away with tents, you lessen the amount carried on the horse, and can thus get more work out of him, and you also enable the horse to rest himself by putting him under shelter every night.

SECOND PART.

We must now look to see what has been going on in the Second Army Corps, under the command of Marshal BAZAINE, for you will remember I mentioned in my opening sentence that the French had commenced operations upon exterior lines.

After an unimportant success by General FROSSARD at Sarre-

bruck, on the 2d of August, he retired to the right bank of the River Sarre, and took up a position a cheval on the Forbach road, with his right resting on Spicheren and his left towards Stiring, having his reserves in his rear.

On the 6th of August General STEINMETZ ordered the German cavalry to pass through Sarrebruck and gain the left bank of the river. Then following up closely he attacked the French Second Corps d'Armee and forced them, after an obstinate and sanguinary engagement, to retire on Forbach, and from there to Saint-Avold. This was the battle of Spicheren.

The French cavalry had nothing to do during the day, but towards evening found an opportunity of acting, and, as this little episode of the battle concerns the question of cavalry soldiers fighting on foot, it deserves mention.

The troops who were entrusted with the duty of guarding the outlets from the wood had been forced to retire, and there was no one left at this point but one company of engineers and a portion of the Twelfth Dragoons.

Two squadrons of this regiment were accordingly dismounted, and, under cover of some slight earthworks hastily thrown up by the engineers, opened fire on the heads of the advancing columns.

Having succeeded in checking their advance, they remounted and charged the enemy, whom they repulsed, and then, after this brilliant feat of arms, retired behind the railway, and, with the assistance of the engineers, they maintained this position long enough to give the troops who occupied Forbach time to make the dispositions they wished.

BRETREAT TO METZ.

After this battle the retreat to Metz commenced on the 7th of August and continued to the 14th, and the role of the French cavalry amounted to very little during this time, while the ingenious manner in which the Prussian cavalry scouts kept up a persistent touch and surveillance on all their movements was a revelation.

General CISSEY, who commanded the First Division of the Fourth Corps, not having had any experience of this kind of work, and losing all his patience at the continued surveillance of the enemy's cavalry, ordered the Second Hussars to put a stop to it, so a squadron of this regiment was accordingly told off to drive them back, and Captain JOUVENOT, who commanded, by his energetic attack drove in the Prussian outposts, but, having pursued too far, was repulsed and killed, several officers and men being wounded. However, from this time forth, the French army was allowed to retire unmolested to Metz.

In the course of the 10th, 11th, 12th, 13th and 14th of August various reconnaissances were made by the Chasseurs d'Afrique. Of these one example deserves mention. The German cavalry had entered the town of Pont-a-Mousson, cut the telegraph wires and railway. Informed of what was going on, General MARGUERITE

turned out his brigade at 1:30 o'clock, proceeded as quickly as possible along the left bank of the Moselle and arrived about 4 o'clock at Pont-a-Mousson. The Third Squadron of the First Chasseurs d'Afrique passing through some orchards, galloped up the railway, and caught the Germans at work in the railway station. The remainder of the brigade, sword in hand, charged, notwithstanding the slipperiness of the pavement, up the streets to the end of the town. There they were received with a fire from the windows.

General MARGUERITE, who was in the thick of the affair, was attacked by a Prussian officer, who aimed at his head: his forage cap, however, was alone cut, and the Prussian fell covered with wounds.

At the termination of some other reconnaissances that were pushed along the Moselle, the Prussian cavalry, consisting of four regiments, after exchanging shots, left the plateau of Mousson, having sustained a loss of two officers and fourteen men killed, and two officers, thirty-two rank and file and forty-one horses made prisoners and brought into Metz.

On the fourteenth of August the French Second Army Corps found themselves concentrated around Metz, and now all the scattered forces were formed into two distinct armies, viz: Marshal BAZAINE's and Marshal McMAHON's, and the strategical plan of campaign henceforward for these two bodies was to endeavor to unite beyond the forests of the Argonne, while that of the Prussians was to prevent them.

This same evening General DE FORTON bivouacked on both sides of the Mars-la-Tour road, with the Brigades Murat, First and Ninth Dragoons, and de Gramont Seventh and Tenth Cuirassiers. Next day Prince FREDERICK CHARLES pushed forward his cavalry to make a reconnaissance on a large scale, and establish contact, which was afterwards constantly kept up by scouts. An artillery duel, with some skirmishing, had also lasted most of the day, and as it was of the utmost importance to cut off the Second and Sixth French Corps and force BAZAINE's army into Metz, the Germans marched all the night of the 15th, traversing an immense track of ground.

BATTLE OF REZONVILLE.

On the morning of the 16th of August the French position was as follows: The Second Corps in front of Rezonville on the left of the Verdun road, the Sixth Corps on its right, the Third Corps between Verneville and Saint Marcel, the Fourth Corps on the march for Doncourt, and the Guards occupied Gravelotte. General DE BARAIL's cavalry were at Conflans, while General DE FORTON's cavalry were at Vionville when he received the order to march at 5 o'clock A. M., but this was countermanded, and at 9 o'clock the saddles and bridles were taken off. The dragoon officers in charge of the picquet had twice sent in to announce the approach of a large body of cavalry and artillery. A staff officer was sent out to see if this was the case. He returned and said there was nothing of importance going on, so the order to take the horses to water was

accordingly issued, the arrangement being that whilst three squadrons of a regiment were being watered the fourth squadron was to be on the lookout. Scarcely, however, had they arrived at the watering place when the Prussian artillery opened fire with a storm of shells, and both the bivouacs and the villages were literally riddled. The Prussians had got information from their scouts of the carelessness of the French, and had accordingly brought up their artillery at a gallop and placed it on both sides of the road, from which position they fired as fast as they could.

Immediately there was a panic in the streets of Vionville. The men, mounting their horses, pushed up the road, which was encumbered with wagons and loose horses. The officers, in spite of the heavy fire, tried to stop their men, but only succeeded with great difficulty. Finally, they managed to restore order in a few troops, and these served as a rallying point to the remainder, and they all now returned to the plateau of Rezonville.

The cuirassier brigade, who, fortunately for themselves, had quitted their first ground and gone further to the rear, escaped this shower of shells. They now mounted in perfect order, and to avoid being cut off by large bodies of the enemy's cavalry, which threatened their right, they retired behind the wood which borders the Roman road on the east; then passing in front of Villers aux Bois, they debouched on the plateau of Rezonville, a little to the right of the Ninth Dragoons.

VALABREQUE's division, who had been on the *qui vive*, mounted quickly and arrived soon after, and in order to get under cover from the Prussian artillery they placed themselves close to the wood of Villers. This division was composed of General VALABREQUE's Fourth and Fifth Chasseurs and BACHELLER's Seventh and Twelfth Dragoons.

At the sound of the cannonade the Second Corps stood to their arms and formed up. General BATAILLE's division was on the right, General VERGE's on the left and LAPASSAT's brigade extended to the right by Marshal CANROBERT. Two attacks are now prepared against them: the front one from Mars-la-Tour and Thionville, the other on the left from the wood of Gorze. Up to about 11 o'clock the action was undecided, but at that moment General BATAILLE was wounded, and on the left of the Second Corps the French began to give way. To put a stop to this and to reestablish the battle, General FROSSARD determined to charge the Prussian infantry, and accordingly ordered up the cavalry.

The Third Lancers formed the first line, and beyond them was General DESVAUX's division, who had taken up a position on the right of the Rezonville road, in rear of that village, and a distance of about 1,000 yards from their lines.

General DESVAUX now ordered General DE PREUIL to advance in support, with the cuirassiers of the Guard along the other side of the road and in rear of the Third Lancers. This movement was immediately executed, and the regiment, placed parallel to the brow of the hill and a little below it, was under cover.

A few minutes afterwards this formation was changed to a double-column formation with the Fifth Squadron in reserve. Towards 11:30 o'clock the fire, which had been very severe, slackened a moment, and suddenly the French saw their skirmishers falling back in disorder over the brow of the hill. They were closely followed by the enemy's artillery, who crowned the heights and commenced to shell the cavalry.

Two squadrons of the Third Lancers now advanced, but as they received no order to charge, they came back after going a short way.

General DE PREUIL then sent to inform General DESVAUX that in this part of the field there was a general retreat, and almost immediately he received the order "to charge." This officer's command was at so great a distance from the enemy's infantry that the success of a charge was doubtful, unless preceded by a heavy artillery fire, which should make some impression on them. This objection was raised, but General FROSSARD himself came up and said: "Charge immediately or we are all lost."

THE FIRST GREAT CHARGE.

Now, here again we see the same call for the cavalry on the part of the French which we have seen made in the previous engagements in this war, and as this battle of Rezonville, or Mars-la-Tour, was almost entirely an affair of cavalry on both sides, and perhaps the most important one of modern times, I shall go a little more into details and give you almost Colonel BONIE's own words.

The instant the command was given General DE PREUIL ordered the first echelon to advance, and they galloped off in good order. The second followed at about 150 yards distance, but as they were going too fast the General ordered them to slacken their pace, and, accompanied by his staff, placed himself on their flank. In the meantime, the first line, going as fast as they could, left the second a long way behind. As soon as the enemy's skirmishers saw the French cuirassiers start they formed rallying squares as quickly as possible, and in doing so had ceased firing.

The advance accordingly arrived at a good distance, and without much loss, when suddenly they were hindered by various obstacles which lay in their way. These consisted of biscuit barrels, a baggage wagon and camp equipments that had been abandoned by the French troops in their hurried retreat.

Obstructed in their advance, the first line inclined to its left, and the further they went the greater the pressure became, and ended by throwing the two squadrons into disorder, so that when they received, at thirty paces distance, the terrible fire of the Prussians they were thrown into hopeless confusion, and rushed forward into the intervals of the Prussian squares.

The Lieutenant-Colonel was badly wounded. The commandant, though mortally wounded, nevertheless forced his way into a square followed only by an adjutant, who was killed on the spot. As for

the others, obliged in order to retreat to go right around the squares, they received the fire of all four faces, and were annihilated.

The second line was now unmasked; they were received by a file fire when at a distance of about 300 yards; this made a few gaps in the line, but they continued in good order, for the fire ceased for a moment; but when at 100 yards distance they got the order to "charge," the enemy poured in such a hail of bullets that more than half the line was knocked over. The remainder got entangled in the obstacles that covered the ground, or else fell into a ditch that was dug about ten paces in front of the squares.

The third line was equally unsuccessful, and was dispersed by the fire like the two preceding ones.

Whilst the cuirassiers of the Guard tried to re-form they were pressed by two regiments of Prussian cavalry, who passed through the intervals between the Prussian squares, one regiment coming through the right center interval. The other regiment—Fifteenth Lancers—came through the other interval, and were received with a sharp fire at a short distance from the French skirmishers, who, not having had time to retire, had lain down in the ditches along the roadside. This fire stopped the pursuit of this regiment. As for the Prussian hussars, with the greatest daring, they pursued so far that they succeeded in surrounding Marshal BAZAINE, who, with the whole of his staff, were obliged to draw swords and join in the melee, when a squadron of the French Fifth Hussars and another of the Fourth Chasseurs, warned in time by General DE PREUIL, arrived extremely *à propos*, and rescued the Marshal and his staff.

This charge of the French hussars and chasseurs was made perpendicularly to the road and presented their flank to the Prussian squares, who were, however, unable to fire, as their own men were between the French and themselves.

The French cuirassier regiment lost in this charge 22 officers, 208 rank and file, and 243 horses.

As the squares that were charged remained unbroken the result was almost *nil*.

It is to be supposed that had the artillery opened fire on the line that was to be attacked, as General DE PREUIL desired, a different result might have been obtained.

Another conclusion that may be formed is that the ground ought to have been previously reconnoitered, as, had that been done, the charge might have had a different direction.

At the same time that the Prussians displayed their attack on Rezonville, their cavalry, under the command of Duke WILLIAM OF MECKLENBURG, endeavored to overthrow the French Sixth Corps and some batteries of artillery, which had been pushed on ahead on the plateau, with a battalion of chasseurs as an escort. The Prussians began by crushing the French fire by a superior one; then sent forward two lines of cavalry in echelon, at a distance of about one hundred yards from each other. The first line was composed of cuirassiers and the second of lancers. These two lines charged.

overthrew the chasseurs *à pied* in spite of their well sustained fire, sabered the French batteries as they passed, and endeavored to annihilate the remnants of the foot soldiers. But they were unaware that the moment of reckoning had arrived, and that they were about to be cut to pieces by the French cavalry.

I want you now to hark back a little in remembering how I explained that DE FORTON's and VALABREQUE's divisions at the termination of certain movements had gone and placed themselves near the wood which borders the Roman road.

On arrival the two front brigades of General DE FORTON were formed in column of regiments right in front, and had executed several changes of front, sometimes with a view to facing Rezonville and sometimes Vionville. The last time they executed this movement they became inverted, not only in each regiment, but in each squadron, and in this formation proceeded to the top of the plateau, keeping the wood close to the Roman road in their rear.

On seeing the Prussian cavalry among their batteries, General DE FORTON ordered the dragoons and a portion of the cuirassiers to advance. They deployed and attacked the advancing line. In the charge the Ninth Dragoons passed through the Prussian cuirassiers, who opened their ranks without stopping, and inclined to the right and left against the French artillery and then pushed on to rejoin their own lancers.

The charge terminated, the Prussian lancers wheeled about to retire, but were attacked by the French cuirassiers who charged to the command, "Attention, les Cuirassiers—Partez." As these words indicate no sort of formation they advanced in a confused mass, the officers being forced to push their horses to the utmost in order to keep ahead of the men, who were riding with their reins completely loose. A terrible melee now took place: the Sixteenth Prussian Lancers taken in flank were overthrown, sabered, and actively pursued, when suddenly the White Prussian Cuirassiers came up to their assistance, but their horses were so blown by their long advance that they were thoroughly done.

It was now the French turn, and the cavalry of General VALABREQUE advanced to join DE FORTON's and engage the enemy.

The fight was now at its height, and was waged with the greatest fury on both sides. The eagerness of the French was so great, and the two sides were so mixed up, that in spite of the trumpets sounding the rally, the massacre went on. In a few seconds the Prussian cavalry was annihilated and the ground strewn with the dead bodies of lancers and white cuirassiers; the best mounted and those taken prisoners alone escaped.

At this moment the Prussian infantry from the side of Vionville opened fire on the ground on which the Seventh French Cuirassiers were operating. The retreat was, therefore, sounded and the French regiments were re-formed and proceeded to Gravelotte.

A short time after the charges I have described took place General L'ADMIRAL, who commanded the French right wing, and who

had marched to the sound of the cannon, found himself opposed by the enemy in considerable force.

The divisions of the Fourth Corps, who had advanced with success as far as the plateau of Greycere, were now stopped by the Prussian infantry preceded by artillery debouching by Mars-la-Tour. They were also threatened in flank by a large body of cavalry.

THE FINAL STRUGGLE.

We now come to the furious death struggle, which terminated this awful day, 16th of August, when no less than 6,000 cavalry soldiers contended for the mastery, and it is certainly a great object lesson.

It was 4:30 o'clock in the afternoon; a Prussian horse artillery battery had placed itself in a position to flank the highway upon which the French were marching. So General L'ADMIRAL sent orders to Generals DU BARAIL, LEGRAND, and DE FRANCE, to protect his right with the cavalry.

General DU BARAIL immediately attacked the battery with the Second Chasseurs d'Afrique with such quickness that the artillery had hardly time to fire, and sabering the gunners, continued to gallop on, but seeing a formidable force in their front, diverged to the left, and rallied behind the angle of the wood, and returned after firing a volley from their rifles, which prevented the battery again taking part in the action.

No mention is made as to whether this volley was fired by dismounting the men or not, but as we have a standing rule never to fire mounted except to give an alarm, I take for granted that it was fired on foot.

While this was being done, Generals LEGRAND and DE FRANCE formed up their cavalry into two distinct masses, each of two lines, when a second order came from the commander-in-chief to attack at once. General DU BARAIL, however, remarked that the supreme moment for a successful charge was passed, as the Prussian cavalry under General BREDOW were in mass upon higher and more advantageous ground, and that they should first be weakened by artillery fire; but the order to charge was repeated. So the whole of the French cavalry started at a gallop, which the Prussians seeing, they also started down hill with loud hurrahs at full speed. The shock of two such masses coming into collision was something terrible, and the confusion and melee of such numbers of men, in all sorts of uniforms, contending against one another in a hand-to-hand furious death struggle, quite impossible of description.

In one part of the field the French dragoons mistook their own blue lancers for Prussians and sabered them without mercy. Even when the men cried out, "*Ne nous frappez point! nous sommes Français!*" the dragoons thought it was a ruse to stop them, and continued slaughtering their own comrades.

At last the French trumpet sounded the "recall," and very shortly afterwards the Prussian trumpets sounded the "rally," and

they re-formed upon the original high ground they had first occupied and retired to Mars-la-Tour, leaving the French cavalry in possession of the field of battle. Thus ended this most awful day, and I think a few general observations upon the employment of the cavalry in this engagement are useful.

The errors committed were as follows:

Charges commenced at too long distances.

The ground not reconnoitered by scouts.

Infantry attacked in position without having first been subjected to fire.

Regiments allowing themselves to be taken by surprise while in process of formation.

Attacking without reserves.

Danger of light cavalry charging heavy cavalry.

No concert of action between the several generals, and want of a head in command.

RETREAT TO METZ.

The retreat of Marshal BAZAINE's army to Metz and its final surrender is soon told.

The road to Verdun being blocked by the Prussians, the French fell back and fought the battle of Gravelotte on the 18th of August.

In this battle the only action of their cavalry was a charge of the Third Hussars who, coming unexpectedly upon a sunken wall in the ground, were stopped by it, and behind this wall the Prussian riflemen showed themselves and decimated the ranks of the hussars as they retired. The retreat, therefore, continued, until the whole of the corps d'armee was shut up in Metz on August 31st and September 1st.

The siege which followed is anything but interesting or pleasant to read, for it was more like a horrible nightmare of famine, starvation and death. The poor, unfortunate cavalry horses were utilized for transport purposes at first, and then many hundreds of them eaten as food by the starving garrison, until none were left, when Marshal BAZAINE capitulated and the whole army became prisoners of war, and were sent into Prussia for safe keeping.

Marshal BAZAINE, you will remember, was tried at the conclusion of the war on his return to France, and sentenced to death, but subsequently commuted to imprisonment for life in the island of Margueritte, close to Cannes in the south of France; and, as it happened, I was passing part of the winter 1872-3 at Cannes when he escaped with the assistance of his wife, who was staying in the next hotel to mine, and who was materially assisted, it was said, by the connivance of the guard, who were old soldiers and had served under the Marshal. But be that as it may, I shall never forget the intense excitement that prevailed in Cannes that morning among all classes of citizens and strangers, for suspicion seemed to rest upon everyone.

THIRD PART.

We left Marshal McMAHON on the 20th of August in command at the Chalons camp of anything but a desirable army, and at a council of war held by the Emperor it was considered advisable to retreat behind the walls of Paris. So on the 21st of August, at 5 o'clock in the morning, the march to Rheims commenced. Marshal McMAHON mounted his horse at 11 o'clock and the Emperor NAPOLEON III. followed in his carriage at noon, surrounded by his large staff.

No sooner, however, was this news heard in Paris than Mons. ROCHER left to inform the Emperor that a revolution against the provisional government was eminent, and at all costs the retreat should stop.

Now the position of matters at the moment as regards the Prussians was this: Prince FREDERICK CHARLES was preparing to force the army opposed to him into Metz and then to surround it, while two other armies were marching on Paris, one under the Prince Royal of Saxé by way of Verdun, and the other under the Prince Royal of Prussia by Nancy and St. Dizier, while their cavalry were far in advance scouring the country.

Indecision as to what was best to be done marked every movement of the French, and orders and counter orders were incessantly given, until on the night of the 27th of August the following telegram from the Minister of War in Paris to Marshal McMAHON arrived: "*Le Conseil de Regence, et le Conseil des Ministres vous supplient, de rallier quand meme l'armee de Bazaine, sans quoi une revolution est imminente a Paris.*"

This imposed an impossible task upon Marshal McMAHON, but without hesitation he at once gave the necessary orders, and altered his route by a flank march across the front of the advancing Prussians, and endeavored to reach BAZAINE by a rapid forced march. So he gave orders to his large cavalry force to clear the road of obstructions.

Thus you see how, in addition to all the other difficulties which the French army had to contend with in this campaign, political considerations at the capital also entered into the contest, in their rear, and paralyzed the arm, thus helping materially to contribute to the ruin of France.

On arrival at Harricourt a halt was made so as to endeavor to collect together the widely scattered columns who were marching in a very straggling manner, for it was known that the Prussians were at Buzancy.

Very little time, however, was permitted the French, as they were at once attacked by the advancing Germans, who easily defeated the French in this combat of Buzancy, and drove them in the direction of Beaumont, where a general action took place with disastrous losses.

In this battle of Beaumont, there was not even the semblance of concerted action among the chiefs, for the active Prussian cavalry

scouts succeeding in capturing several of the French staff officers when carrying their orders and dispatches, thereby creating great confusion and the blocking up of roadways, during which the Fifth Regiment of Cuirassiers, while protecting the artillery and baggage crossing a bridge, were almost annihilated.

This bridge was over the River Meuse and many of the cuirassiers who escaped death from the enemy's cannon were drowned by endeavoring to swim the rapid river with their heavily laden horses.

Marshal McMAHON immediately sent word to the Emperor, who was at Carignan, that all chance of succoring Metz was at an end and that he was in full retreat for Sedan. During the whole of that dark night the disorder of a hasty flight, amounting almost to a panic, continued, for they were closely pursued by the Prussian cavalry scouts, who never lost sight of them and reported every movement to their own generals.

The situation that the Emperor found himself in was certainly a most pitiable one for the head of a nation to be in, but he had no choice but to rendezvous at Sedan, and this night of the 31st of August and 1st of September was forever to be a most memorable one in the history of France.

BATTLE OF SEDAN.

At the early hour of 4 o'clock in the morning the Prussians assailed the French with a heavy artillery cannonade, and shortly afterwards Marshal McMAHON was seriously wounded, and from the fast loss of blood was obliged to hand over his command to General DUCROT. Unfortunately, General DE WIMPFEM, who had two days before arrived from Africa, claimed to be the senior officer, and therefore commander-in-chief. So divided command was added to all their other misfortunes, and while this wrangling was going on 240,000 Prussians were surrounding their little army of 60,000. The battle raged until about 8 o'clock in the morning, when the cavalry were called upon to make a supreme effort to change the fortunes of the day, for the sake of France and all that Frenchmen held dear; and right loyally did they respond, as regiment after regiment galloped up the slopes to the attack of batteries of artillery in position on the crest, with rifle skirmishers upon their flank, resulting in a useless waste of life, as every cavalry soldier well knew.

The first line was composed of the First Chasseurs d'Afrique; the second line in support were the Second Chasseurs d'Afrique; the third line had the Fourth Chasseurs d'Afrique; while the reserve was formed by the First Hussars and Sixth Regiment Chasseurs d'Afrique.

All these regiments charged in perfect formations and exact distances, as laid down in the cavalry regulations drill book. But what of it? The volume of fire poured upon them as they advanced made it quite impossible over the difficult ground to reach the

enemy, so they diverged to the right and left, leaving very many dead horses on the ground. Two squadrons of the Fourth Lancers that had just arrived from Floing, where they had passed the night, seeing the failure of the Chasseurs d'Afrique, made a headlong desperate charge at the Prussian position, and retired with the loss of two-thirds of their number.

As the fire of the Prussian batteries made it impossible for anything to live on the open plateau, the cavalry retreated towards Sedan village, whither the French infantry had already gone, and were occupying the heights, and here General MARGUERITE reunited his cavalry division.

About 2 o'clock in the afternoon the incessant rain of fire from all sorts of projectiles was so great that nothing could exist anywhere in the French lines; General MARGUERITE therefore decided to make another charge, but being desirous to reconnoiter the ground, rode out himself in front, and was struck by a rifle bullet in the breast, living only just long enough to ride towards General GALLIFFET and hand over his command, and then fell dead.

This death of their gallant general nerved every heart in that brilliant array of horsemen, and General GALLIFFET, placing himself at the head of these six regiments of cavalry, gave them the command "to charge," and led the formidable post himself down the slopes of Sedan.

These wild charges were twice repeated, until on an average 240 men and horses out of each regiment were killed or wounded, and it was found simply impossible to penetrate the Prussian lines. Although these charges were ineffectual, the cavalry proved themselves to be worthy successors of those who had fought at Waterloo, Jena, Friedland and d'Eylau, for they saved the honor of the French arms, and showed their readiness to sacrifice themselves at the call of duty, and the praise given them by the Emperor of Germany in his dispatch containing the news which he sent to the Empress should be forever written upon their standards in letters of gold.

General SHERMAN, too, who was also a witness of these deeds of heroism, said he had never seen such a brilliant exhibition of devotion as was shown in these mad charges of folly to certain death. The German press were unstinted also in their praise.

By 7 o'clock in the evening the last shot had been fired and a white flag was flying over Sedan.

The remnants of the cavalry regiments in their rage at the idea of becoming prisoners of war, broke everything belonging to themselves, such as pistols, swords, lances, and tore the saddles from the horses and cut them, turning their horses loose, which increased the frightful demoralization everywhere, as these animals galloped frantically about like wild horses upon our western prairies.

When you think of it, that this battle had raged unceasingly for fifteen hours, and that 14,000 dead and wounded French soldiers, besides the immense number of Germans that lay all around the

village, in every conceivable form of misery, pain and suffering, during this dreadful night of darkness and despair, added to a heavy downpour of rain that closed the awful day and soaked the ground with water as well as blood, it is impossible to imagine anything more hideous or more frightful than what those poor soldiers endured, unless you compare it to the account of DANTÉ'S "Inferno."

The survivors of this battle were marched off just as they were, tattered, famished, distressed and broken-hearted, into exile as prisoners of war. Such was the end and such was the role played by the French cavalry and the Army of the Rhine in this war.

We cannot do less than bow our heads in sorrow for these gallant soldiers, and admit that it was indeed a hard lesson in the art of war that had been administered, and pray that a similar fate may never be ours.

CONCLUSION.

After what I have stated it is not very difficult to see what were the mistakes that were made, nor what are the requirements of modern war, for the fundamental principles of cavalry remain the same as ever—the man and the horse remain the same—but a change in tactics is necessary to meet the requirements of to-day. This the French cavalry have now accomplished in so marked a manner that there is little to choose between the 55,000 cavalry that France again possesses and the 70,000 belonging to Germany, except in the number.

The lessons for Canadians to learn are: The absolute necessity of a high-class special education for all ranks; officers, non-commissioned officers and men must be carefully selected, on account of their fitness, and highly trained; also the horses, whose quality must be the best obtainable.

Superior arms and equipment are indispensable, and as light as possible, consistent with serviceability and durability.

The weight generally carried upon the horse reduced to a minimum in order that mobility and endurance may be assured and prolonged.

The enlistment of some specialists as pioneers, who could destroy or repair railroads and bridges, and throw up a hasty entrenchment with pick and shovel if necessary; a few good telegraph operators and men who understand the handling of captive balloons, and signalling, both by night and day.

As outpost and reconnaissance work, and the obtaining of accurate information, is so important, everyone should be able to scout intelligently, be a first-class shot with either carbine or revolver, and able to work a quick-firing maxim gun on a pinch. Also being able to write a hurried report and make a rough sketch of ground cannot be forgotten and should not be overlooked when enlisting recruits.

Every section of four should be a complete little group of itself capable of being detached as a patrol, and composed of four inti-

mate friends or neighbors who have confidence in each other — and they and their horses should always be stabled together and fall in together in the same places on parade, acting under the orders of their No. 1, who should be a senior.

On the field of battle an absolute knowledge of the ground must be obtained, and its inequalities made use of to surprise infantry when out of ammunition; also to prevent supplies of ammunition reaching them.

Wide turning movements on the flanks and raids on the lines of communication, destroying railroads, bridges and supplies in rear of an enemy, are of immense importance, and had such a use as this been made of the French cavalry it would have entirely changed the whole campaign, though in might not have prevented the ultimate success of the Prussian arms.

Charges should be reserved for the attack of hostile cavalry, as at Rezouville, when, other things being equal, the cavalry that has the greatest momentum of pace and weight will win.

Keep ever in mind, too, the importance of a high sense of "discipline" in all your doings, whether on or off duty.

In Canada, though we are more of a driving than a riding people, still we possess the intelligence well suited to carry out what at first may appear to be an over-ambitious programme, but our immense territory and extensive prairies make it indispensable that the mounted arm should be cultivated and up-to-date if we are to hold our own in these progressive days.

I have, therefore, kept in view throughout my paper the "object lesson of reform," and have, I hope, interested you sufficiently to revive the old days when Montreal had four troops of cavalry, of which No. 4, the Royal Guides, was a perfect model for all beholders in those early days of the volunteer movement.—*Lieutenant-Colonel Turnbull, in Canadian Military Gazette.*

SWIMMING OF HORSES—REGULATIONS FOR INSTRUCTION IN SWIMMING IN THE GERMAN CAVALRY.

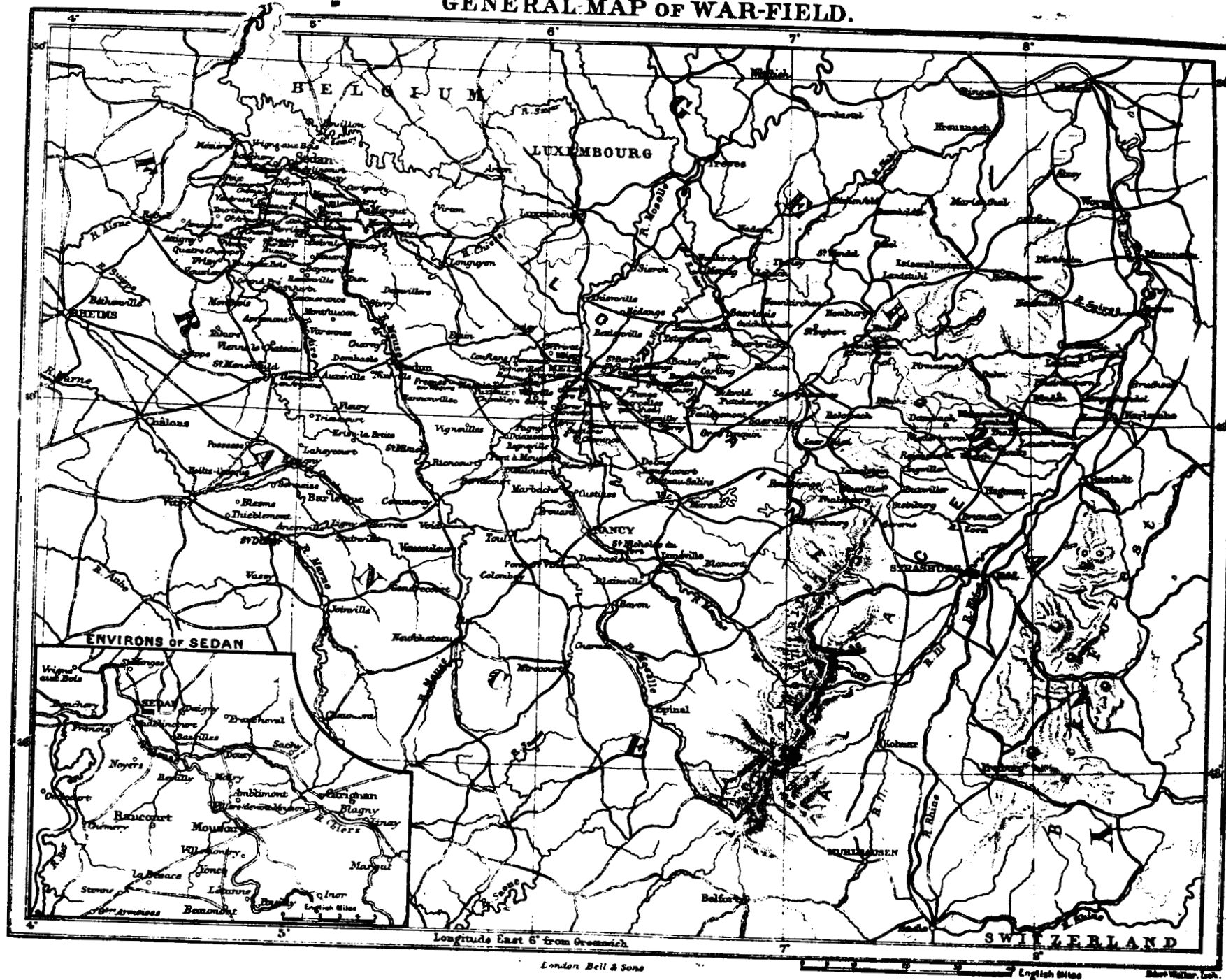
Cavalry should be able to cross all streams coming in its way. In case it comes across important rivers, where the distance to be passed in swimming is long, it will be able to make the passage only with the aid of boats or rafts.

However, an effort will be made to form in each squadron a few squads, which, lightly equipped, shall be able to swim across considerable streams without any assistance, and then continue their journey mounted, without stopping.

Whichever of these methods of crossing may be employed, it is necessary that a part of the troopers should know how to swim.

A squadron in which there are no men who can swim, cannot

GENERAL MAP OF WAR-FIELD.



undertake, with any prospect of success, the various exercises in the swimming of horses, whether it make use of boats or not.

A trooper can only be useful on the condition that he is able to reach the shore without trouble, should it be necessary for him at a given moment to leave his horse or the boat.

It is necessary therefore, considering the importance of swimming for cavalry, that particular attention be paid to this instruction. In most cavalry garrisons a large enough body of water to permit swimming exercises is to be found; if necessary, it can be deepened as desired. A sufficient number of men must also be instructed in the use of oars, poles and the rudder.

All these exercises which constitute the instruction in swimming, can, with advantage, take the place of gymnastics and vaulting, during the hot days of summer.

II.

Freely Swimming Horses.

One of the best exercises to teach horses to cross rivers, is to accustom them to going into deep water without being frightened. The fear which takes possession of most horses when they enter water, will gradually disappear. All horses know how to swim by instinct, or, at least, will know after a few exercises.

The best results are obtained by allowing swimming horses the greatest amount of liberty; this is also the best way to avoid accidents. In order to make a horse swim, it will be sufficient if the trooper—who ought to be a good swimmer—reassures him. In a deep river a current is very useful, for experience proves that a horse ceases to struggle as soon as he feels the force of the current; it is also easier to swim when there is a current. The horse, as soon as he loses foothold, swims in the direction in which his head points. All that is necessary, therefore, is to give the desired inclination to the head, that is, place it in the direction the horse is to take in swimming.

The horse is most readily directed by means of the snaffle. The reins are knotted so as to rest on the middle of the mane. The trooper takes hold of the mane with one hand and holds himself stretched out in a horizontal position along the horse on the *upstream* side. In this way he allows his horse to draw him through the water and he keeps his head in the proper direction by touching the right or left rein lightly. It is hardly probable that the horse will resist these indications if they are skillfully made at the proper moment. If that does not suffice the trooper has only to tap him lightly on the cheek with the flat of his hand. It is in this way that a skillful swimmer causes his horse to take the proper direction, from the moment when the latter loses his footing, that is when he begins to swim; up to that moment he is to use only the ordinary aids to horsemanship.

This is also the moment when the trooper should leave his horse

and take to the water. This must be done neither too soon nor too late.

The struggle which sometimes occurs between the trooper and his horse when the latter does not respond to the aids, is entirely without danger to either. In case they become separated each one reaches the shore. The blows and kicks of the horse in deep water do no more harm to the man than a short immersion does to the horse. Especially the first time we take a horse in swimming we must be careful not to let him have his own way. If a horse is very stubborn it will be best to change riders.

One ought not to be on the horse's back when he is swimming. The rider grasps the horse with his legs and brings his weight to bear on his hind quarters. The horse being thus constrained in his movements is liable to go over backwards or turn on his side.

In campaign we shall probably see men who do not know how to swim forced to enter the body of water before them. We shall have to cross the horses swimming by troops, the riders holding on to the manes.

III.

(a.) *Swimming of Horses by Means of the Longe—Used Either From a Boat or the Opposite Shore.*

We have recourse to this method only with very stubborn horses (in most cases spavined horses) or when we have no good swimmers available. The longe is to be held double, without knot or ring—a lariat will not do, therefore—and passed through the halter ring so that it can be withdrawn by slipping it through. It is a good plan to turn the horse loose as soon as he has arrived at the middle of the body of water and has started for the other shore. This longe ought not to be over twenty or thirty yards long, for otherwise it takes, on account of its weight, the form of an arc of a circle and when we pull draws the horse's head under water.

(b.) *Horses swimming near the boat and held by their riders. The latter, as far as possible, seated in the bottom of the boat, leading their horses either by the snaffle, reins or lariat passed through the halter ring.*

This method like the preceding one, should only be employed where there are no good swimmers, or if their number be insufficient. It is of no assistance to a horse to be towed in this way; on the contrary, it is more difficult for him to swim under these conditions. He has not only to make the motions of swimming the same as if he were loose, but also has to regulate his speed according to that of the boat.

We frequently see horses swimming near boats give up all effort on account of the traction exerted, and, turning on their sides, allow themselves to be towed like an inert body.

In the field, when a troop has to cross a stream, the most practical method and the one generally employed, will certainly be that of making the horses swim near a boat.

The advantage that we have of being able to cross the rider and all his equipment perfectly dry, more than counterbalances the inconvenience to the horses of being restrained in their movements.

If the stream be not too large, not exceeding an average of say fifty to sixty yards, we can with advantage employ the boat or raft as a ferry, hauling it along a rope stretched from shore to shore. This ferry, if drawn by two men, one in front and the other behind, can, even with considerable current, be maintained in the proper direction; its speed can be regulated according to that of the horse which the rider holds by the reins. In this way a part of the inconveniences above cited, and which arise from the fact that the horse swims near the boat, may be avoided.

In order to act as rapidly as possible when it is necessary to carry across the riders, their bundles, etc., and afterwards to saddle up immediately, it is indispensable that each man's belongings be securely bound together, and arranged according to ranks and files in the boat, or whatever may serve to effect the crossing. Debarkation ought to take place in the same order and at a place decided upon beforehand. This place at which the horses will also be saddled will not be too near the place where the horses come out of the water.

If discipline is rigid, and if the resources and strength at our disposal are well husbanded, if non-commissioned officers and men are suitably distributed, the passage will take place in good order and with security.

(c.) *Horses Swimming Along a Foot Bridge.*

In this case it is easiest to direct the horse by making use of the lance. Unbuckle the strap which goes around the arm, and attach it by a knot to the snaffle reins and by the buckle to the lance as near the butt as possible. The trooper who walks on the footbridge can then regulate his speed according to the swimming horse and guard against the efforts of the horse to get on the bridge. In case it is necessary, a man can accompany the horse, holding him on the side opposite the bridge, up to a certain depth of water. This man can keep the horse, as long as he has a foothold, from resisting, pulling back, or rushing out of the water. When the horse commences to swim he ought to follow the direction of his head. In campaign it will be well to put up a footbridge every time we have a large number of horses (as a regiment, brigade, or division) to cross. If we have a squadron or smaller force, it will be better to dispense with it on account of the time required for construction. In such case it will be advantageous to make use of the means indicated above.

When we use the footbridge to cross large bodies, it is only necessary to direct the leading horse by means of a lance; the others swim freely behind him. However, in such cases there must be means of easily catching up the horses on the other side. The best way is as follows: The squadrons are brought one by one to the place selected for the crossing and commence to unsaddle at once.

The men put on their caps, take off their sabers and attach them to the saddle by means of the stirrup straps, which have been crossed, and the surcingle which holds the whole in place. Divided into groups of three, No. 2 puts the blanket on his head just as it was folded on the horse, hanging his helmet on his arm; then Nos. 1 and 3 put a saddle on his head, which is protected by the blanket. When all the saddles have been carried across, the horses are passed over.

IV.

Load Carried by a Horse While Swimming.

While horses support with difficulty a weight as heavy as their riders over a long stretch, they are nevertheless capable of carrying considerable weight. Thus they support easily and without fatigue the saddle and blanket, without any special preparation. The increased weight which comes from the soaking of the blanket does not produce a perceptible effect. The mess dish with its strap floats of itself and can be left with the saddle as well as the lariat.

But it is not the same with the upper part of the pack. The best swimming horses, if they carry this load, can hardly remain above water more than a minute. The heaviest part of the pack is not near the back, but rather high up. Without support for his feet the horse quickly loses his equilibrium, turns over on one side, and is then a lost horse. Even when brought back to the ground by means of a rope, horses which are brought in turned on their sides get up with difficulty, the pack having absorbed too great a quantity of water. However, it is principally the force of the current that turns over horses swimming with the complete pack. When there is no current a horse can swim a short distance even with the full pack, which really gets soaked only gradually.

A body of cavalry arriving in close order at a stream of considerable depth and width can, therefore, not cross without the aid of boats. Nevertheless, individual troopers, or patrols may cross, taking the precaution to unload their horses and dividing up the pack among their neighbors. It is important that the men should be practiced in making this division as quickly as possible.

V.

Load Carried by the Trooper While Swimming.

A trooper, even with the complete equipment, ought to be able to stay with his horse while crossing a wide river. After some practice he can even be given the lance. Helmet, boots, and saber, seriously embarrass a man abandoned to himself in the water. But if this man holds on to the mane of his horse it is the latter that draws—and without difficulty—the man and his whole equipment. There is no danger until the man quits his mount.

A vigorous swimmer might, even when fully dressed, sustain himself on the surface of the water for some time, without the help of a horse, and swimming obliquely to the current, reach the nearest bank.

However, to avoid the danger resulting from an involuntary separation of a trooper from his horse the exercises may be simplified by taking the following precautions: Take off the boots and suspend them from either side of the pommel, tops down, attach the saber to the cantle, put on a cap instead of the helmet, etc. On the other hand we must practice in doing the following: Sling the carbine, sling passing under the shoulder flap, secure the belt of the cartridge box, put cartridges and explosives into trousers pockets. Of course at exercises of this kind special precautions are to be taken: boats will be in readiness to render assistance, etc.—*Translated from "Revue de Cavalerie," by Lieutenant J. T. Dickman, Third Cavalry.*

THE GERMAN INSTRUCTIONS FOR THE EMPLOYMENT OF CAVALRY IN PIONEERING DUTIES IN THE FIELD.

The manifold duties of cavalry in the field require its training to a high degree of independence. Dependence on the other arms diminishes celerity and surprise, deprives cavalry of the most essential means for obtaining success:

2. The cavalry is expected to be able to destroy railroads, telegraphs, and other communications. As in the presence of the enemy the available time is short, thorough previous instruction is necessary. Repairs will also frequently be found necessary. Ability to perform such work increases the efficiency of the cavalry.

3. This especially in the case of water courses.

4. Of prepared material the cavalry carries folding boats and some bridge materials on wagons. To hasten the crossing of rivers and where folding boats cannot be used, the cavalry must be able to improvise from whatever material may happen to be available.

5. The cavalry must know how to increase the defensive power of a place by the use of the most simple means.

6. In the second half of June or during July one officer or non-commissioned officer from the pioneer battalion is to be attached to each regiment of cavalry as instructor; two or three pioneers may also be attached.

7. All officers and non-commissioned officers of cavalry must familiarize themselves theoretically and practically with the subjects of instruction. Of the men as many as possible should be instructed.

8. The same instruction takes place annually at the military riding school in the second half of June or beginning of July. All officers, non-commissioned officers and lance corporals of cavalry on duty at the school must be instructed. One captain, one lieutenant, four non-commissioned officers, five lance corporals or pioneers from the railroad brigade are placed at the disposal of the riding school for seven days, to give instruction in works of destruction.

For instruction in making repairs, one captain, two lieutenants, eight non-commissioned officers, eight lance corporals or pioneers will be attached to the riding school for eight days.

12. Each cavalry regiment has two folding boats and necessary bridge material. They are to be used in exercises in bridge building, swimming of horses, so that the men may become familiar with handling them. To save these articles as much as possible—they are always to be in a state fit for the field—other boats, etc., should be used in these exercises in addition to the folding boats.

13. Instruction in destroying railroads should be given on railroads themselves after making arrangements with the railroad administration. But in addition there should be a dummy to practice on which would always be available.

14. Dummy track for a regiment consists of three pairs of rails (Fig. 1), one of double-headed rails, the other two of T rails. They are fastened to the sleepers with hook-headed spikes, on sleepers a and b with screw nails. Pairs 2 and 3 meet on a sleeper (supported joint), 1 and 2 between two sleepers (unsupported joint), (Fig. 19 and 20).

The ground on which the dummy track is laid should be carefully leveled, so that the ties will lie horizontal.

For practice with the tools of destruction they should be embedded in gravel or sand (Fig. 2). When rails are to be destroyed by explosives, there is a dangerous zone on each side of 450 meters, and of 350 meters in the direction of the rails. A small piece of track made of old rails is good enough for the purpose. All the materials of the dummy track except the sleepers may be old (a matter of economy). All the holes where spikes have been drawn must be plugged up. When there are too many spike holes near foot of rail the latter may be shifted laterally, changing the gauge, which is, however, immaterial. Rails broken by explosion can be utilized again by smoothing the broken end, etc.

15. *Telegraphs.*—For the instruction of a regiment, six telegraph poles (Fig. 3) are sufficient, three or four of them being ten, the others seven meters long.

Between pole 1 and 4 only one wire need be stretched; between 4 and 6 at least three wires. The uppermost of the wires should be five, the others four mm. thick; the poles to be sunk into the ground one-fourth or one-fifth their length.

16. Every regiment of cavalry is provided annually with fifteen explosive charges, thirty pieces of fuse and thirty caps.

In addition, sixty charges, thirty fuses and fifty caps are allotted to each general command for the use of those troops who are to practice more extensively the destruction by blowing up. Each regiment of cavalry has one set of tools.

II. WORK OF DESTRUCTION.

Means of Destruction.

17. The apparatus consists of the cartridge, fuse, caps, cartridge pouch and pouch for the fuse and caps.

(a) Cartridge is a zinc box, soldered all around, filled with 1 kgm. of explosive matter, C:88. Can be stored or transported without danger.

Explosion is effected by strong (fulminating) caps, not inserted in cartridge until the latter is to be used. It is inserted into a short copper tube, opening at top of cartridge case, opening covered by a case of hem-paper sealed on the sides of cartridge case (Fig. 4). Two wires are soldered to top of case, which are wound around fuse to prevent its slipping out after insertion.

(b) Fuse about 1 meter long (gutta percha); cap fixed at one end with rubber cement; other end covered with a rubber "muff," containing some loose gun cotton.

(c) Caps of copper, charged with 1 g. of fulminate.

(d) Cartridges placed four in a leather pouch, standing side by side.

18. Every cavalry regiment carries eight pouches of cartridges and eight of fuses, i. e., altogether thirty-two cartridges, forty fuses and forty extra caps on the folding-boat wagon.

The cavalry division carries on two cavalry ammunition wagons each, fifty-six cartridges and fifty fuses, also fifty extra caps; total, 112 cartridges, 100 fuses and 100 extra caps.

19. Tools for destruction work: One sledge (Fig. 5), one sledge (Fig. 6), two crowbars with claws (Fig. 7), two short claws (Fig. 8), two monkey wrenches (Fig. 9), four screw drivers for screw nails (Fig. 10), six chisels and two handles (Fig. 11), two spades, one pulley with nippers (Fig. 12, a and b).

Every cavalry division carries two sets of destruction tools on two cavalry ammunition wagons. (The pioneer detachment of a cavalry division consists of one officer, one sergeant, two under officers, twenty-seven pioneers, eight workers in iron, eight workers in wood, four masons and six boatmen.)

20 to 25 describes and names different parts of track. (Fig. 13-23.)

26. *Destruction of Railroads.*—Fig. 24, 25 and 26 show how charge is arranged. Charge is strong enough to blow away a piece of 25 cm. length from the head of the rail. A train may not of necessity be derailed thereby, but still it would be risky for a train to pass over the damaged place. If two cartridges are used, they should not be more than 1 m. apart nor should anything be between them, such as earth, stones; one fuse is used, the second cartridge accurately aligned on first and provided with cap which will be exploded by detonation of first cap and cartridge.

27. At stations the switches and crossings should be attacked, (Fig. 22, 23, 24.)

29. Destruction of curves more difficult to repair.
30. Importance of destroying repair material on hand at the stations along railroad. Wagons taken along to carry away small parts (metal).
31. Derailing train by shifting rails a few centimeters sideward; effective, but can easily be repaired. Appropriate where the wreck can be removed with difficulty.
33. Breaking off heads of fish plate screws, putting two men at each sleeper and throwing track off roadbed, if possible into a marsh or water or down a precipice.
34. *Stations.*—Destroy switches at entrance and exit, also crossings.
35. Destroy water reservoir, pipes and pump used in providing water for the locomotives. Blow up tank, remove essential parts of pump and pieces of pipe.
36. Search round houses and repair shops at once for tools to help in destruction.
37. Locomotives and cars are to be saved and turned over to troops for use; destroyed only to keep them from falling into the hands of the enemy or to block the road.
38. Locomotives and cars rendered useless by destroying one wheel or axle box by explosives or heavy sledge; burning the cars. Locomotives heated or containing hot water; blow up boiler. Cold locomotives, remove pressure gauge (a Fig. 28, I), head of steam chest (b Fig. 28, II), piston rods, etc. If there is no time for this, knock off all cocks and small outside pipes.

TELEGRAPH LINES.

Over and Under Ground.—Over ground: Cut down wooden poles, blow up iron poles, cut wire with nippers or hatchet. If this cannot be done, draw lariat through pulley by means of the lance, hang it over the arm supporting the insulators, tie a cross stick in bottom of rope and hoist a man to cut wires with nippers.

41. To destroy underground lines, they must first be found and dug up; cut out a piece with a hatchet or blow up with cartridge. Cover up the hole dug and remove all traces of the work.
42. Connect all wires with each other and the iron of the insulators by fine silver wire. Requires trained operators. If the line is to be used later by our own troops, such poles must be accurately located and report made to headquarters. (Fig. 31).

DESTRUCTION OF STRUCTURES.

Arrange charge in cubical shape, with or without tamping. May require several of the fuses furnished to be tied together.

Arrange cartridges accurately aligned for successive detonation by transfer of detonation; cartridges not more than one m. apart. (Fig. 34).

Wooden bridges. Attack piers as near the water as possible;

nail slats on them to align cartridges and transfer detonation. (Fig. 35.)

54 to 70. Mechanical details for destroying bridges, nothing new.

70 to 76. Destruction of guns.

CROSSING OF RIVERS AND REPAIRS MADE BY CAVALRY.

77. Cavalry must be able to cross all water courses even where bridges are not available.

(a) By swimming with the assistance of folding and other boats.

(b) On ferries or other means improvised from material available.

SWIMMING.

78. Men and baggage are crossed in boats, horses swimming alongside the boats.

80. Patrols gather all boats that can be found, etc.

81. Swimming of horses. First condition that horses be not afraid of deep water. If they have been properly trained, they can be brought up to the boat without trouble.

Almost all horses can swim.

The horses are brought to the boat by swimming men. The men in the boat hold them by the snaffle and close to the boat. The horse's neck must not be pulled in toward the boat; the horse should be able to freely stretch its neck in the direction it is swimming. In front and on both sides good swimmers (horses) should be placed for quieting timid or excited horses. As soon as the swimming horses pull the boat along, the rowers stop. A good steersman is important for uniform swimming.

82. Boats, etc., can be properly directed only if non-commissioned officers and men have had practice. Stress is to be laid on the training of a sufficient number of men in rowing, poling and steering.

83. Loading the packs can be done quickly, provided discipline is strict and improvised means are used. The equipment and pack of each horse should be tied together and put on the boat or other ferriage machine by platoons or ranks; lances to be tied together in bundles.

84. If there is an opportunity of having the men with equipments cross to the other shore by new foot bridges, it is recommended to let the horses swim alongside; a rope tied to the horse is made fast to a pole or lance and the man then conforms to the movements of the swimming horse.

85. In war water courses should not be unsurmountable obstacles for patrols. They must be able to cross them without assistance. For this purpose some swimmers in each squadron (troop) are taught in the peace exercises to swim watercourses not too

wide, in light dress (cap, shoes and carbine) with their horses (without blanket, without pack). The riders must not remain on the horses but swim themselves while holding on to the horses' mane or tail. In war also patrols will remove the horses' packs and leave them when swimming watercourses; they should take off their boots.

86. If in war a body of troops is forced by the enemy to cross a watercourse without any assistance, the riders are to hold on to the mane and tail of the horses.

87. No more time is to be spent on the swimming exercises of the horses than is necessary to accustom them to the water and teach the men what to do.

88. As only such men as can swim can know exactly what to do in bringing the horses to the boats, every squadron is to train as many swimmers as possible. Experience teaches that sometimes even good swimmers suddenly lose courage in the middle of the stream and sink as though paralyzed.

These exercises are invariably under the supervision of an officer who is personally responsible that all due precaution is taken. In a boat, properly manned and provided with undressed swimmers, poles, etc., he remains up stream. Only in such a way can he quickly render assistance in case of accidents.

CROSSING WATERCOURSES BY THE AID OF ARTIFICIAL MEANS.

90. The cavalry folding-boat consists of three parts, whose dimensions are shown in Figs. 55 and 56.

Each part of the boat has a keel, two bottom ribs, two longitudinal ribs and gunwales of elmwood. This frame is covered with canvas inside and out, fastened to the keel, ribs and gunwales with nails.

The several parts are separated from each other by a coat of white lead. The canvas is painted inside and out with Berthon boot-lack, and thereby rendered water-tight and flexible.

The bottom is formed by boards 1 cm. thick, fixed sideways on the longitudinal ribs, so that they can be folded toward the center.

When ready for use, the parts of the boat are kept extended by means of iron braces, which are inserted between the bottom board and the gunwale, and are kept from collapsing by automatic locking.

91. To prepare the boat for use, the parts are opened out on land and put together. Putting the two end pieces and the middle piece together makes a boat with three partitions; putting two middle pieces together makes a "Kaffen boat."

92. The parts are put together by hooks and eyes in the keel and two tongues fitting in corresponding places in the partitions, through which a bolt goes, and by two sets of lacing.

When the boat is unfolded, the space between the inner and outer sheet of canvas is filled with air through small apertures in the canvas. It serves to keep the boat afloat even when filled with

water. Folding up is slow, owing to the slow escape of the air from between the two sheets of canvas.

Each end piece has three oar locks, two on the gunwale and one at the end for steering.

Each middle piece has two oar locks.

Plates 93 to 105 show the bridging material, baulks, chesses, etc., which become plain from figures in book.

101. To make the boats into a bridge requires one non-commissioned officer and ten men.

106. To build a foot bridge, each boat is made into two (middle boat and "Kaffen" boat). Men with pack and horse equipments to cross by foot bridge, horses by swimming.

To unfold an end (kaffen) piece requires two, a middle piece, four men. Various combinations of these boats and their use are plain from the illustrations.

The throwing of improvised bridges is very much like what is laid down in the manual in use at the U. S. Infantry and Cavalry School.

140. Repair of roads, fords, ice.

Fill the bad places with stones, gravel, brush or wood. Deep ruts, frozen, fill with sand or manure. Marshy places, wet meadows, etc., rendered passable by bundles of brush, reeds, boards, etc., laid crosswise and covered with sand, earth, etc.

Fords are found by tracing wagon tracks to them, also by use of boats, swimmers, etc. Marked by ropes stretched on poles.

Ice, if clear and resting on surface of water, should have a thickness for infantry in file equal to the width of four fingers, in sections and for cavalry in single file equal to the width of a hand, for all vehicles equal to the span of a hand.

Ice may be strengthened by covering with boards, straw or brush; if cold, by throwing water on it.

PREPARATIONS FOR DEFENSE.

143. In defending terrain, cavalry may, under certain circumstances, use rifle trenches to advantage.

Conditions: Good field of fire; ascertaining ranges by stepping off distances and marking them.

144. Barricading bridges, streets, gates, etc., should be so arranged that they cannot be turned; that they are under effective direct, and if possible, cross-fire.

Use loaded wagons run into each other, furniture, agricultural implements, wire entanglements, lariats strung across the road. More effective to tear up pavement and pile up the stones, or put them in barrels placed in rows.

MANUFACTURE OF SMALL ARM AMMUNITION.

I have been allowed by the committee to choose my own subject for a lecture to-night, and have chosen the manufacture of small arm ammunition for the new .303 rifle, as my object is to endeavor to raise a more general interest in rifle shooting. Drill, pure and simple, on the barrack square is the basis of good discipline, and good discipline, together with good shooting, form the chief factors of success on the battlefield.

a. The Cartridge Case (or Shell).—I will first ask you to note the difference between breech fermeture and obturation. By the first term, breech fermeture, or the means of closing the breech, is meant the block, in the Snider rifle pivoting on a longitudinal axis, in the Martini-Henry rifle pivoting on a transverse axis, or a bolt as in the magazine rifle. This the breech fermeture is a matter for the rifle manufacturers, and I have nothing to say about it to-night.

By the second term, obturation, is meant the means adopted to prevent the escape of powder gas at the junction between the breech fermeture arrangement, block or bolt, and the end of the bore. This point, obturation, was the cause of much difficulty in the early days of breech-loaders, but it was soon realized that in small arms, *i. e.*, rifles, carbines and pistols, it must be effected by means of the cartridge case. (In the artillery service we still have three different methods of obturation not involving a cartridge case.) The old paper cartridges, used originally in B. L. as well as in M. L. rifles, were on this account superseded by metallic cartridge cases; one of the earliest patterns was the metallic case for the English Snider, *i. e.*, converted Enfield.

Until recently there have been two distinct methods of manufacturing metallic cartridge cases—(*a*) rolled case; (*b*) solid-drawn case.

The Snider ammunition hitherto made at Woolwich and Quebec are examples of the rolled case. A brass strip is wound on a mandril to form the case, the base being closed by an iron disc, which is fitted tightly to the case by means of the cap chamber. I have specimens here showing the various stages of manufacture, but I do not propose to spend time in a detailed description, as this pattern is now practically obsolete. It became obsolete because of two important objections: 1st, it was found to give "jams" in the M. H. rifle in 1885 in the Soudan campaign, owing to sand finding its way between the brass folds of the case and thus causing friction against the walls of the chamber; 2nd, the neck is deficient in stiffness and strength and allows the bullets to become loose and shaky; this fault can be very easily seen in the case of mounted infantry carrying their ammunition in bandoliers; a bullet slightly dented or damaged at the point does not materially affect the accuracy of shooting; a loose bullet, on the contrary, has a decidedly detrimental effect.

The latest pattern of M. H. ammunition, and that for the magazine rifle, are examples of the solid-drawn ammunition, introduced

to overcome the two objections just mentioned. Although slightly more expensive, the manufacture is simpler and more accurate than the rolled pattern, as the number of operations is less; the manufacturing limits also are smaller, *i. e.*, there is less variation in the size of different cartridge cases, owing to the method of making the case, by drawing the metal out through a series of dies; provided that the punches and dies used are accurate, the finished product must also be accurate.

A little consideration will readily show you where the manufacturer's difficulties lie in a metallic solid-drawn case. He must use an elastic metal, because on explosion the wall is pushed out against the chamber, and unless the metal is elastic will not again contract; in that case difficulty in extraction follows; on that account brass is now used, although it has other objections, being more elastic than copper, the first metal, used some thirty-five years ago.

(One advantage of the Martini-Henry rolled case was that it tended to unwind at the moment of the explosion and then contracted again, in the same manner as a spiral spring, as soon as the pressure was removed, *i. e.*, as soon as the bullet left the muzzle.)

Again, a second difficulty in the manufacture of solid-drawn ammunition is as follows: Suppose that there is any impurity, say a small particle of grit in the original sheet metal, or suppose that the copper and zinc forming the brass alloy have not properly and uniformly combined; there will then be a small defect, which the system of drawing out tends to convert into a longitudinal fissure; the case will then be liable to give way at this line of weakness on explosion; an escape of gas then takes place, which means that the chamber will be coated with fouling, and possibly the striker clogged and the lock damaged.

For solid-drawn ammunition we must therefore have an elastic metal such as brass, and we must be extremely careful that it is kept absolutely free from impurities during manufacture.

The actual steps of manufacture are as follows:

(Specimens shown.)

If black powder is used it is necessary to varnish the inside of the case, because the action of the saltpetre (in the powder) on the zinc (in the brass of the case) causes the erosion of the latter. In the case of smokeless powder, cordite, this varnishing is unnecessary.

b. Bullet.—The bullet is composed of a pellet enclosed in a metallic envelope. As is also the case with the M. H. bullet, the pellet is not pure lead, but an alloy; .303 bullet, 98 parts lead, 2 parts antimony; M. H. bullet, 92 parts lead, 8 parts tin. The reason that an alloy rather than a pure metal is used, is that alloys are generally harder than the constituent metals of which they are formed, and thus an increased penetration is obtained; a pure lead bullet, such as the Snider, is deformed on impact, and the penetration is small. In the Snider rifle, also, the bullet is of less diameter than the bore, and has to be set up by the explosion into the

grooves in order to take the rifling; a soft metal is therefore necessary; in the .303 rifle it is of a bigger diameter than the bore, and the lands cut into it.

The magazine rifle bullet is enclosed in a metallic envelope; this envelope is an innovation after the Snider and M. H. bullets, and I want to explain its necessity quite shortly. I will state the cause of the necessity first, and then give the explanation afterwards. The reason is, that if you have a high velocity at the muzzle, and wish to maintain the velocity fairly well along the range, you must have a small calibre bullet, and a small calibre bullet necessitates a metallic envelope.

Now for the explanation of the small calibre: If you throw a cricket and a lawn tennis ball, which are of much the same cross-sectional area, with the same initial velocity, we all know that the cricket ball will keep up its velocity better than the lawn tennis ball, because of its greater weight. It is apparent, therefore, that, in order to maintain the initial or muzzle velocity, the bullet should be as heavy as possible.

Again, if you throw a cricket ball and a football, which are of much the same weight, with the same initial velocity, we all know that the cricket ball will again maintain its velocity the better of the two, but on this occasion it is because its cross-sectional area being less it offers less resistance to the air. Combining the results of these two comparisons we see that, in order to maintain its muzzle velocity, *i. e.*, to suffer as little retardation as possible, a bullet should be as small in cross-sectional area and as heavy in weight as possible.

Next, for the explanation of the metallic envelope: Supposing then, that in order to maintain the muzzle velocity, we have determined to have a small calibre bullet, it can be easily worked out mathematically that the smaller the calibre the greater the amount of surface in contact with the bore proportionally to the volume of the bullet, (*i. e.*, if s = surface and v = volume of a .303 bullet and S = surface and V = volume of a M. H. bullet, the ratio s/v is greater than S/V). Consequently there will be proportionally to the volume a greater loss of lead due to friction; this simply means "leading" or "stripping," or both, which induce bad shooting. The official definition of "leading" is as follows: "A barrel is said to be leaded when particles of lead are detached from the bullet as it passes up the bore, and adhere to the lands and grooves." "A bullet is said to strip when it is driven out of the bore and across the lands without following the grooves of the rifle." The metallic envelope, an alloy of copper, 80 p. c., and nickel, 20 p. c., obviates this leading and stripping.

To explain what I have just said I would ask you to consider a big and small ice-house: in the former say a foot of ice next to the walls all round the house is wasted in the summer due to heat; that is only a small fraction of the whole quantity stored there. In a small house if one foot is again wasted it will be a big fraction of what is stored there.

There are three more points I should like to refer to in connection with the bullet: 1st. Why is a high initial or muzzle velocity necessary? The answer to this question is that by means of it, and of the power of a bullet to maintain its velocity, officially defined as its "ranging power," you get the following advantages: greater accuracy, greater penetration, and greater efficiency in covering the ground, because for the same range the bullet is not acted on for such a long time by gravity, *i. e.*, it is not necessary to give the rifle so much elevation, and the bullet does not rise so high in the air. This advantage is sometimes expressed by saying that you get a "flat trajectory," or that the "dangerous zone" is increased; it means that for the longer distance along the range a bullet is within five feet of the ground so much more are the chances increased of hitting a man; for instance, with the magazine rifle at a range of 500 yards, the trajectory never rises five feet above the line of sight.

The second point in connection with the bullet is: "If a heavy bullet is necessary in order to maintain the ranging power, why not increase its weight by increasing its length?" Now the natural way of combining small cross-sectional area with a big weight would be to make the bullet like a knitting needle, that is to increase its length, but it is practically found that for accurate shooting the length of a bullet should not be more than about four times its diameter. (In the artillery service shells are now made as much as five calibres long, to be filled with an high explosive and fired from mortars for the destruction of casemates, magazines, etc., but in this case so sharp a twist of rifling is necessary that, if used with the rifle, it would cause the bullet to "strip," *i. e.*, the bullet would be driven out without following the rifling.)

Also, you cannot unduly increase the weight of the bullet by increasing its length and give a high muzzle velocity as well, because you would get an altogether objectionable "kick" on firing, unless you also increase the weight of the rifle, which is now quite heavy enough. Action and reaction being equal and opposite, the momentum imparted to the bullet is also imparted to the rifle.

I have now endeavored to show that with a high muzzle velocity, say 2,000 feet per second, you must in practice also have a comparatively light bullet, *i. e.*, a small caliber, and a small caliber necessitates a metallic envelope. I would also like you to notice that, the lighter the cartridge the more a soldier can carry.

The third point is: How does the penetrative and stopping power of the .303 bullet compare with the M. H.? Into material, wood, earth, metal, etc., I am not far wrong in saying, from the results of experiments, that the penetrative power of the .303 bullet is to that of the M. H. in the ratio of 3 to 2. In some cases it is decidedly greater. It will penetrate a $\frac{1}{4}$ inch steel plate at forty yards range, and requires an earthen parapet to be three feet thick in order to resist it with certainty. Three feet of pine will be required to keep it out at a short range, but half that thickness will be sufficient at 500 yards. At forty yards it will penetrate two

inches into brick and four and one-half inches into the joints of a wall.

Next, as to the stopping power on a man: It is well known that a large diameter heavy bullet produces a great shock and consequent stopping effect, which is of special importance in fighting with natives at the closest ranges: it was frequently said at the time of the introduction of a small calibre rifle, that its advocates greatly underrated this important feature. The results, however, of experiments seem to show that at a close range, up to about 400 yards, where the velocity has been reduced to about 1,400 f. s., the .303 bullet "sets up" on impact, i. e., there is an explosive action presumably due to the velocity, producing, as in the case of the light bullet of the Express rifle, a shock with the same stopping effect as the heavy bullets of the M. H. or Snider rifles. For long ranges, above 1,600 yards, when the velocity has been reduced to about 725 f. s., there is a "splitting up and tearing effect," presumably due to the rotation of the bullet about its longer axis not being then properly maintained, i. e., the bullet being no longer quite steady in flight. For intermediate ranges I will read the report of some experiments by a Prof. BRUNS on the Belgian Mauser rifle, the weight, diameter and velocity being almost identical with those of the English bullet. "He also showed that at ranges above about 400 yards the small bullet hardly 'sets up' at all, while between that range and 1,600 yards the bullet as a rule makes a wound with a very small passage, with very small apertures at the points of ingress and egress, and with very little shattering of the bones or tearing away of the softer substance. These wounds almost all bear a subcutaneous character, and since the bullet, or parts of it, seldom or never remain in the body, may be readily healed without the formation of matter. As most infantry battles will be fought between the ranges mentioned above, Prof. BRUNS has some justification in calling the small calibre rifle a most humane weapon."

Specimens of bullet shown.

The cannellure in this bullet has a two-fold object: 1st, to receive some bees-wax lubrication. In the case of smokeless, and therefore non-fouling, powders, lubrication is not such an important matter as with black powder cartridges; there is therefore no wax wad as in the M. H. cartridge; nevertheless, in addition to this wax in the cannellure, that portion of the bullet entering the mouth of the case is lubricated; the real object, however, is to form a water-tight joint. The second object of the cannellure is to receive three projections or tabs from the case, which prevent the bullet being driven into the case on to the powder by rough handling.

c. *The Wad*.—Before speaking of the charge I will refer to the two remaining components of a .303 cartridge—the wad and the primer.

The wad is of stiff brown paper; its object is to prevent any escape of powder-gas over the bullet before the rifling has properly cut into it.

d. *The Primer*.—The primer consists of a cap, cap composition and anvil. The cap is made of solid-drawn copper, a non-elastic metal, which, being driven by the explosion against the walls of the chamber, remains fast in that position, and does not allow an escape of gas against the striker. The cap composition used for cordite cartridges produces a longer and more powerful, but less violent explosion than that used for black powder cartridges, because cordite is less readily inflammable than black powder. The anvil is made of brass, cut out from sheet metal and stamped to shape. (In the Mark II. cartridge the anvil is not separate, but is formed in the case.)

e. *The Charge*.—I do not propose to speak at length concerning the chemistry of cordite. It is the subject for a separate lecture, and I have not got time. The important question for us now is: Why was cordite substituted for black gunpowder? The answer is: "Because we wanted a smokeless explosive, and one that, without any increase of maximum pressure, would do more work on the bullet in the bore, and therefore give a higher velocity." The other requirements were that it should be stable under varying climatic conditions, and that it should not be liable to explosion by friction or concussion when handled or in transport.

I will take these requirements *seriatim*: First, smokelessness. Most explosive substances will exhibit two kinds of explosion, according to the initiative they receive. They will detonate (explosion of the first order) under the influence of fulminate of mercury or some other violent explosive, or will deflagrate (explosion of the second order) as in the rapid combustion caused by the ordinary firing of gunpowder. Guncotton is a very good example; when acted on by fulminate of mercury it detonates; when ignited in the air (i. e., not under pressure) by an ordinary cap, it deflagrates. The products of combustion in this case consist exclusively of gases and vapors, whilst those of black gunpowder are largely non-gaseous, even at high temperatures, and are partly deposited as fouling in the bore, and partly distributed in a fine state of division in the gases developed by the explosion, thus producing smoke. As far back as 1867, Sir FREDERICK ABEL, the War Department chemist, carried out experiments with it as a charge for guns and rifles, but there was considerable difficulty in regulating the explosion. He, of course, wanted it to inflame, but, owing to its confinement in the chamber and the consequent increase of heat and pressure, there was a liability to detonation, meaning the bursting of the gun. The experiments therefore ceased. Some ten years ago, when the necessity for smokeless powder became absolute, the matter again came forward, and it was found that by mixing guncotton with nitro-glycerine, another high explosive, a smokeless explosive suitable for military weapons, both guns and rifles was produced,—that is the present cordite. To quote from Captain NOBLE, of Lord ARMSTRONG'S Elswick firm: "Although it may seem a paradox, nitro-glycerine and guncotton, (both of which detonate easily alone, or when mixed with inert substances), have no power of detona-

tion when mixed together." The actual percentages of cordite are:

Nitro-glycerine	58 per cent.
Guncotton	37 " "
Mineral jelly	5 " "

Cordite is also found to comply very satisfactorily with the third and fourth requirements, i. e., stability under varying climatic conditions and safety in transport.

With regard to the second requirement—more work from the powder without any increase of the maximum pressure—I think that these two models will give a far better illustration than any long explanation of mine. The first is an old pattern gun, suitable for quick-burning, black gunpowder; it is, therefore, very strong at the breech, because, the powder being converted into gas almost instantaneously, the pressure, when the projectile has only had time to move forward a few inches, is very great at that point, but as the shell goes forward the pressure very rapidly decreases; thus the average pressure throughout the bore is low, and not much work is done on the projectile, which consequently leaves the muzzle with a comparatively low velocity.

Next, let us look at the second model, suitable for slow-burning powder, such as cordite. The powder is being converted into gas throughout the entire length of the bore. There is no very high pressure at the breech, because no great quantity of the explosive has been converted into gas; there is therefore no need for very thick walls at the breech, and the superfluous metal there is utilized by increasing the length of the bore; there is, however, a moderate pressure, and owing to fresh explosive being continually converted into gas throughout the travel of the projectile, this moderate pressure is sustained fairly well until the projectile leaves the muzzle. The average pressure is therefore greater than in the case of black gunpowder, and further, it acts on the projectile for a much longer distance. The work done and the velocity obtained are consequently vastly increased.

In the Lee-Metford rifle, with cordite the maximum pressure is fifteen tons per square inch, and the muzzle velocity obtained 2,000 f. s.; with black gunpowder, even when compressed into a pellet, as shown in the drawing, in order to lengthen its time of burning, the maximum pressure is about eighteen tons per square inch, and the muzzle velocity only 1,800 f. s.

With regard to the manufacture of cordite, the guncotton, after being dissolved, and the nitro-glycerine when mixed form a gelatinous mass; this is squirted out through a die of any required diameter in the form of a very long cord; it is then wound on drums; sixty cords from these drums are then collected, pushed into the cartridge case and cut off at such a length as to give the necessary weight, 30.5 gn.

I am most anxious that what I have said should not make me appear to be taking the part of an agent for a cordite firm. I only want to lay its properties, good and bad, before you. There are three objections which I have heard raised against it:

1st. The exudation or sweating out of free nitro-glycerine, a high and dangerous explosive, at low temperatures. This, if true, would be a serious objection, especially for this country, but the Ordnance Committee, who are not in any way answerable for its mode of manufacture, after trials in Canada and in refrigerating chambers, definitely state in their report: "Exudation of free nitro-glycerine need not be feared if it is made as at Waltham Abbey."

2d. The second objection I have heard raised in two forms: (a) that as experiments are still being carried out with cordite, it shows that the authorities are not satisfied with it, and (b) that cordite has been permanently introduced into the service without sufficient preliminary experiments. My answer to these is, that although experiments are constantly being carried out with all kinds of service stores in order to improve them, by far the best proof of any government store is its general use in the service, as that approximates far better to service conditions than any experimental trials under special officers, and also, that there is, as far as I am aware, no store whatever permanently introduced into the service; every store is liable to be improved or entirely changed as soon as a better can be obtained. The authorities simply act on the same lines as any progressive manufacturing firm, whose continual object is to improve the quality of their productions. At the same time I may say that, in spite of the loud protests of rival explosive manufacturers, cordite is giving satisfaction, and no change is probable at present.

The third objection is, I believe, thoroughly valid. The authorities are and have been from the commencement quite aware of it, probably much more so than many of the opponents of cordite realize. It was, however, thought that its other advantages overbalanced this objection, and it was found that for our service it was the best explosive producible. The objection is the high temperature evolved by the combustion of cordite; the heat is advantageous in that it expands the gases, and so increases the force acting on the bullet in the bore, but it is very disadvantageous in that it is a cause of erosion or eating away and consequent wearing out of the metal of the bore. (Specimen shown.)—*Captain C. E. English, R. A., in Canadian Military Institute.*

SOME NOTES ON A FRENCH CAVALRY REGIMENT OF CHASSEURS.

Last December, being in Paris, I was fortunate enough to obtain an introduction to a French general of cavalry, who was good enough to allow me to be shown all round a French cavalry regiment of chasseurs. Being much struck with all I saw, on my return to Paris I jotted down everything which I thought might be of interest to brother officers in India. I therefore venture to send them to the United Service Institution for publication in the Maga-

sive. They are only rough notes, and if of interest to anyone, I shall feel that the trouble of making them has been amply repaid to me. They are under the different headings of—

- | | |
|--------------|---------------------------------|
| 1. Officers. | 7. Rations. |
| 2. Men. | 8. Riding and Schools. |
| 3. Barracks. | 9. Horses. |
| 4. Stables. | 10. "Voltige." |
| 5. Saddlery. | 11. Carbines and Swords. |
| 6. Canteen. | 12. Training of men and horses. |

I may commence by saying that I wrote to the general and thanked him for giving me leave to come, and said I intended arriving on a certain day. At the station, on arrival, I found the general himself awaiting me, accompanied by the colonel of the regiment. The general apologized for not being able to ask me to breakfast, as he had just received a telegram to go to Paris, but that, if I would walk up to the barracks, I should find all arrangements made for taking me round. Accordingly, at the barracks, I found the "commandant," (second-in-command) awaiting me, with two or three other officers. They had full instructions to show me anything I might ask to see. The following are the notes I made under the different headings:—

1. *Officers.*—The officers were all exceedingly smart looking. Very well turned out, well cut riding breeches, and perfect figures of horsemen. Those I saw riding all had very good seats. Boots well made and fitting.

2. *Men.*—The men seemed a very sturdy looking lot. The annual batches of recruits had just come in. They came mostly from Normandy and Bretagne. Several squads were at foot drill, and not having been long at it did not look their best. The officers said they were all recruits, but I particularly noticed during my stay in France, principally in Paris, how poor an appearance a French cavalry soldier presents on foot. The monstrous looking overalls they wear, and the almost invariable custom of walking about with their hands in their pockets, probably have a lot to do with their, to English eyes, unsoldierly looking appearance. The contrast between the smartness of the officers and the slovenliness of the men is very marked. The line soldiers, pion pion, looked much smarter.

3. *Barracks.*—The barracks were excellent, large, and well ventilated. The latrines were not good, and were insanitarily placed near the cook-houses. The washing-places were very small for the numbers of men using them. Water, however, was plentiful, and there were fifteen taps for each squadron. The barrack-rooms were very tidy, clean and orderly. The carbines were placed in racks along the walls. Bedding was kept down all day; not rolled up as in our service. The men have their meals in a separate room, which is most excellent from a sanitary point of view; besides the room is available as a place to sit in, and as a lecture room. They called it "salle d'instruction." The "sous-officiers" have a small room to themselves, two to one room, very like our sergeants' rooms

in barracks in India. All the barrack-rooms that I saw were particularly well kept, clean and tidy. The "commandant" apologized before going into the first one, saying, "I fear you won't find them prepared for a visit." I replied: "If only every barrack-room one visited unawares was as clean and tidy, what a nice state of affairs it would be." The stables are immediately below the barrack-rooms on the ground floor. Each squadron has, in addition to a separate eating room, a squadron office, where the whole of the office work of the squadron is carried on. There is no regimental orderly room. Squadron storerooms take the place of our regimental quartermaster's stores. In each squadron storeroom is every single article of clothing and equipment ready for issue as fast as men take them away on mobilization, or when recruits come in. The officers told me that a recruit who joined in the morning could go on parade two hours after fully equipped and clothed. This store is entirely under the chef d'escadron. He buys everything according to sealed pattern, and replaces anything required. For this purpose he receives an allowance of thirty centimes, three-pence, per man present per day. The whole of his squadron clothing and equipment is under him. Very nice system, too, but I fancy it would require very careful looking after.

4. *Stables.*—Stables large and well ventilated. Horses bedded down all day. The grooming not up to the standard expected of a British cavalry regiment. The horses all had long coats, and in consequence looked the worse for them. The bedding did not look up to much, and its state could not be good for the horses' feet. Six men per squadron were on stable guard. The horses were separated by "bails," an excellent arrangement should a horse get its leg over.

Each horse had a large name board and card, giving year of birth, price paid, where bred, bought, regimental number, rider, etc.

5. *Saddles.*—Saddles were placed behind each horse on trees fixed to the walls. They were not good, and the French officers themselves complained about their age and the impossibility of cleaning them. I saw three different patterns in this smart regiment, mostly English made, and some of them actually bought during the war in 1870!

They looked much too narrow to sit on comfortably in marching order.

The horses' tails were cut shorter than with us, and were somewhat ragged. The day of the visit was a pouring wet day, which may have made the bedding, and the state of the saddlery, look worse than usual! Horses seemed very quiet in the stable.

6. *Canteens.*—Squadron canteens. Very small, but very comfortable, clean and tidy. The cercle des sous-officiers, (sergeants' mess) was particularly comfortable looking.

7. *Rations.*—I saw these being cut up. French soldiers certainly get an excellent ration. Meat seemed first class, and the bread as good when tasted as any to be got in any private house in

Paris. I was shown the weekly menu, and was quite surprised at the excellent fare provided. On saying so, I was told how very much rations had improved of late years. The fare provided seemed to me quite as good as, if not better than, what our men get.

The cooking arrangements in the kitchens, too, were excellent. The fires were supplied and fed from a small room at the back of the kitchens, so that in the latter no coal, coke, wood or anything could contaminate or dirty the rations.

8. *Riding*.—I saw several rides. Some of the riders had only a few days' service, and it speaks volumes for the training of the horses that these men rode so well. An officer was superintending each ride. This goes on all day, but there are nine officers per squadron. In Paris I saw a lot of cavalymen, and I was particularly struck with the way they sat their horses. I must have seen some hundreds of officers riding about in Paris. With few exceptions, they certainly knew how to sit on a horse. The riding-school was a very large building, big enough for a large musical ride. I noticed no "marks" anywhere. The rides were mostly trotting or walking. Not much attention was paid to regular pace or distances. All the men wear Wellington boots, with straight box-spurs. All were riding on the bridoon, and some pulled their horses heads about a bit.

9. *Horses*.—Horses, or rather remounts, all arrive on a regular fixed date yearly. They come at between four and five years old. The first year they are kept at light work for short periods of time. The second year, having got thoroughly accustomed to what I may call barrack-life, they are gradually trained in the riding-schools and taken out exercising on the drill grounds; at the age of seven taken into the ranks. Imagine how docile all the horses are. They looked a useful lot, but a bit heavy and under-bred and not up to much pace. The officers told me that they were not. I might mention here that I happened to see a moving photograph of a French cavalry regiment charging. Judging from the photograph, the pace seemed very slow, and when the troops halted they were all very much opened out. Unless readers have seen this new moving photography they may scoff at my remarks, and say that the pace looked slow because it was only a photograph. I saw, however, when at home a photograph of the Derby, and the pace looked perfectly correct in that!

10. *"Voltige"*.—An exercise I saw the recruits doing struck me as a particularly useful and practical one, viz: "voltige." In a large open shed, three squads of men were drawn up. Three horses, one in front of each squad. In front of, say, squad A, a horse is longed round like in a circus. Each man in squad A in turn runs alongside the horse and vaults on and off it, then vaulting on again rides a couple of times round the ring with arms crossed. Excellent practice for giving men confidence, perfectly safe, and all the men seemed to thoroughly enjoy it. Opposite squad B the horse is standing in front of the squad held by the instructor. Each man runs up and vaults on to it like the horse in a gymnasium. Opposite squad C is

a third horse, and each man vaults sideways on to this like the horse in a gymnasium from near side to off side, and vice versa. I was specially struck with this "voltige."

11. *Carbines and Swords*.—Lebel carbines. I wasn't impressed with them. Huge bolts on right hand side. Three cartridges in magazine. They seemed heavy and clumsy weapons. The men always carried them slung, and have no carbine buckets. The sword seemed very good; long, very slightly curved, well balanced. Good weapons for pointing with.

12. *Training of Men and Horses*.—Squadron officers are entirely responsible for training their remounts and recruits—admirable of course in theory and practice, but impossible with native cavalry in India. In France recruits and remounts all arrive once a year on a regular fixed date. With us recruits and remounts come at all times.

In conclusion, I cannot speak too highly of the courtesy shown by the French officers to me, and it would surprise many to learn how very good French cavalry are, and how different from reality are our prevailing notions respecting them.

"THE NILE CATARACTS."

Among all the rivers of the world the Nile may fairly claim to be the most celebrated. Its name goes back in the history of man further than that of any other river; in fact it was long known by the simple appellation of "river." When people wished to speak of other rivers they put names to them, as the River Jordan, the River Tiber, just as to-day, when Western Americans desire to specify various wines they say port wine, or sherry wine, or Madeira wine, but when they invite you to take champagne they simply call it "wine"; the illustration may appear somewhat wanting in dignity, and perhaps I should apologize for using it.

Nor, if we reflect a moment on the nature of the Nile, as compared with any other river that is known to us, can we wonder at its celebrity among the early nations of the Mediterranean. 2,500 years ago Herodotus wrote that "Egypt was a present from the Nile." That was literally and soberly true. Not only has Egypt been made out of the sand and silt of the Nile, but Egypt owes its yearly, its daily, life to the continuance of that river.

Take away this life-giving water even for a single year, and man, beast, bird, fish, must disappear. It is this one principle of life, made always present through every sense to man in Egypt, that gives to it a meaning of home, food, and even raiment, which is nowhere else found associated into a single object, but is in other lands divided or diffused over a hundred objects. Nor is that all—everywhere else in Egypt, except where the Nile water flows, man sees the evidences of pitiless surroundings; the sun blazes above him, the desert is on every side of him, the wind often comes with the

furnace breath of the hot and fevered wastes, the sky is almost rainless, these things are death. It is the Nile alone, by its never failing munificence, gives life and shade, and sustenance to every living thing.

But "the present of Egypt," which the old historian said the Nile had given, has meant a good deal more to man than the length and breadth of the land that is watered by the river. It has meant his earliest civilization, his first conception of the arts and sciences, his laws, his knowledge of justice. This river has been the cradle of human thought. Rome borrowed from Greece, Greece from Egypt, and Egypt found in the waters and mystery of the river the fount of her inspiration. I say the mystery of the river, for the things which are regarded by us in the light of peculiar characteristics were, to the ancients, mysterious.

And yet the ancients knew a great deal about the Nile which we have only recently found out. They placed the sources of the river in the 10th degree of south latitude in a range of mountains which they called the Mountains of the Moon, but about 200 or 300 years ago, the child of that period, who had not a long time before become possessed of a new toy which he called type, or printing, imagined he could teach his parents many things, and among this new-found knowledge was the source of the Nile, which he fixed in the 12th degree of north latitude, cutting off at once about 1,500 miles or so of the river's length; but, as you know, the experience of recent travellers have set back the sources of the river, and its furthest south is now supposed to lie in about the 4th degree of south latitude, not so distant from where the old geographers declared it to be. Again, in the matter of cataracts, the modern world having found Niagara and other great waterfalls in the western world, began to pooh-pooh the cataracts of the Nile, declaring them to have been much overrated; but if we examine what the ancients really did write about the Nile cataracts, we find that there was no exaggeration whatever either as to the volume of water or the steepness of the obstacle. Seneca thus wrote of the Nile cataracts:—

"This river, which at first glided smoothly along the vast deserts of Ethiopia, before it enters Egypt, passes the cataracts. Growing on a sudden contrary to its nature, raging and violent in those places where it is pent up and restrained, after having at last broken through all obstacles in its way, it precipitates itself from the top of some rocks with so loud a noise that it is heard three leagues off.

"The inhabitants of the country accustomed by long practice to this sport, exhibit here a spectacle to travellers that is more terrifying than diverting. Two of them go into a little boat, the one to guide, the other to throw out the water. After having long sustained the violence of the raging waves by managing their boat very dexterously, they suffer themselves to be carried away by the torrent as swift as an arrow. The affrighted spectator imagines they are going to be swallowed up in the precipice down which they fall, when the Nile, restored to its natural course, discovers them again at a considerable distance on its smooth and calm waters."

Here then we have an exact picture of a Nile cataract. They are slants of water down which, amid all the fury and turmoil of the raging river, a boat can live.

Neither is the force and violence with which the pent torrent rushes down these rocky slopes at all exaggerated.

It is difficult to imagine a more resistless impression of water power than that which is to be seen at any of the Bab el Kebirs or Big Gates of the cataracts between Wady Halfa and Dongola, and still more in the long series which intervene between Dongola and Abu Hamed.

But whether the ancients were, or were not, extravagant in their ideas of the dangers of the cataracts, there can be little doubt that they understood the uses to which the Nile could be put better than we understand them to-day.

All the wonders of old Egypt were the work of the Nile; the pyramids were built by the river, and could not have been possible without it; the gigantic stones were hewn by the shores of the river when it was low, and floated on rafts to the site of the colossal works when the water rose in the inundation. The obelisks which now adorn the squares and central places of the capitals of the world were quarried at Assouan, on the edge of the first cataracts, and thence floated off to Thebes, to Memphis or the Delta. The cities of Egypt, even as late as the fifth century before our era, were reckoned at 20,000. Alexandria, under the Ptolemies, had a population of 2,000,000 souls; the Egyptian army numbered 200,000 infantry, 40,000 cavalry, 300 elephants and 200 chariots. In the navy, which numbered 112 vessels of the largest class, there was one ship which was 420 feet in length and forty-five feet in beam. But perhaps the most extraordinary proof of the greatness of old Egypt, and of the sense of justice which pervaded her governing powers and financial authorities, was the fact, which we are told on the authority of a most veracious Roman historian, that the daily pay of an officer in the Egyptian army was £3 17s. 7d.; unfortunately, we are still in the dark as to what his mess and wine bills may have been.

Well, although this magnificence and opulence has long ago vanished, and Egypt has become the mightiest ruin on the earth, there are still connected with the Nile so many strange facts and peculiar phases that make it still what a learned French historian described it 150 years ago, "a wonder so astonishing in itself that it has been the object of the curiosity and admiration of the learned in all ages."

Dealing with it in its physical aspect, we are struck with certain facts which mark it as different from other rivers. It had once seven mouths, now it has only two, and although these mouths have been longer known to man than those of any other river, it is doubtful whether the real source of the extreme head has yet been discovered.

The river in its general course has few bends, usually pursuing a channel, which is visible for miles in immense reaches; but it has the biggest bend of any river, flowing almost back upon its original course at Abu Hamed to Debbab, where it again turns north; but perhaps its strangest feature is that for the last 1,800 miles of its course, the further it is ascended the larger it becomes, and that peculiarity is easily explained. In that last 1,800 miles of its course it receives no tributary stream; it flows, in fact, through a rainless region, but all the way through that desert region it is losing water; the sand and the sun are sucking it out of the broad channel, and by the time it reaches Egypt it has nearly lost one out of every three gallons which it held at Berber. It still has sufficient volume, however, to pour past Cairo a total current which is estimated, roughly speaking, at one hundred billions of tons of water in the year, the largest aggregate of water being in the month of October, when about twenty billion tons flow by Cairo, and the smallest in June, when one billion five hundred million tons pass in the month. But perhaps more curious are the figures dealing with the proportions of solids in suspension in the water; these have been very carefully measured and found to give a total of fifty million tons of most fertilizing substances in one year, the largest amount being in the month of August, when twenty-three million tons are carried down to the Delta. In addition to these enormous quantities of fertilizing matter, the river has in solution a further quantity of fifteen million tons. Up to the time of MEHEMET ALI the flood water of the Nile passing the banks of the river overlay the whole surface of the Delta for about 100 days, or say during August, September and October, but MEHEMET ALI began a system which has since been continued. It was to confine the main stream, in the season of flood, to its banks, and lead off the water through a vast network of canals through the Delta, the water from which would be regulated and let out to irrigate the land, but not to flood it. It has been said that this was a totally new system of watering in the annals of Egypt, but I am not so certain of that, for we read in the Bible, when dealing with the Exodus, these words addressed to the Israelites: "The land whither thou goest in to possess it is not as the land of Egypt from whence ye came out, where thou sowest the seed, and watereth with thy foot as a garden of herbs, but the land whither ye go to possess is a land of hills and valleys, and drinketh the water of the rain of heaven." To-day you may still see throughout the Delta the fellah watering the ground with his foot, opening and closing the mud barrier of the irrigation channel which carries the water from the canal to his fields.

Before I pass from the subject of the annual inundation of the Nile, I would mention that I once met a man who had traveled some 1,500 miles along the river before he found out that the inundation was an event of yearly occurrence. He had before imagined, he said, that it took place every two years. "The crane and the swallow observe time," says an Arabic proverb; there are some men, clearly, who would not do either as cranes or swallows.

And now it will be time to turn from the Nile of Egypt to the Nile of the Cataracts.

And first let us briefly describe a cataract. The general stone of the desert is grey sandstone, which in the lapse of ages has yielded to the action of the water, and has become hollowed out into a river channel of more or less depth and regularity. But first at Assuan, then above Halfa, and above that again, recurring at frequent intervals, ridges of granite crop up through the sandstone desert, crossing the bed of the Nile, and producing a ridge, or series of ridges and rocks, in the channel of the river; these obstacles sometimes extend over miles of continuous water, at other places they are short and abrupt, and immediately above and below them the river is smooth and navigable. But however they may differ as to length and nature, the rock that makes them is always granite, sometimes black, as at the second cataract, sometimes red, as at the first cataract, sometimes of green color. Worn smooth by the action of the water, the sides of these cataract rocks are polished as a marble chimney-piece, and their teeth-like ridges below the water are dangerous to any craft that touches them. When the Nile is in flood it runs with tremendous force, but comparative smoothness, down these rugged stairways, but, as the waters subside, the rocks begin to show their heads, the angle of descent becomes steeper, and channels of broken water begin to show themselves where, before, the river from shore to shore had been an unbroken volume; then is reached the stage of water which is easier of ascent to a small boat, but more difficult of descent; for a small boat, propelled by oars or poles, or moved by sails, or dragged by tow ropes, can in these lower stages zig-zag from rock to rock, or eddy to eddy, while the force of the current is not so determined and continuous against her, but in descent it is the other way; when the Nile is in full flood it has submerged almost all rocks beneath its waves, and the boat, left to the current, is swept along the broad river with great velocity, but with the safety to which the Roman philosopher, already quoted, has borne testimony.

It is at the second cataract, immediately south of Wady Halfa, that the real impediments to the navigation of the Nile begin. This cataract is some nine miles in length, having a total descent of about 60 feet in that distance.

It undoubtedly forms the most serious interruption to traffic in the entire distance between Wady Halfa and Dongola. There are ten "gates," or bad bits in its length, and of these the "Babel-Kebir" is a very formidable obstacle.

Twenty-six miles further south is the cataract of Semmeh, the old frontier of Egypt in the reign of Thothmes. A very striking scene it is.

The mountains closely approach the bank on either side, and on the summit of each overhanging cliff stands a ruined temple. Beneath these bordering rocks the river pours its volume, here pent to narrow limits between a great barrier of rock midway in the channel and the eastern and western shores.

From the summit of the ruin-crowned cliff on the east shore the eye ranges far over the wilderness of the Batn el Hagr—"The Womb of Rocks"—a region which for 60 miles presents on every side the extreme aspect of desert desolation.

In these 60 miles occur the large cataracts of Ambigol, Tangoor, and Dal, besides many smaller rapids, or "shillals," as the Arabs call them, places where the river makes a noise. Once the cataract of Dal is passed there is no serious obstacle until Kaiber is reached, and that crossed, there remains only the bad water of Shaban, and the so-called third cataract, to be overcome, until the open river 40 miles below Dongola is reached. This third cataract is, in reality, the seventh of importance counting from Wady Halfa. I have gone up and down it many times, and can safely say that as an obstacle to navigation it is not of greater magnitude than at least three of those which intervene between it and the second cataract at Wady Halfa. The progress of the railway, however, to Abu Fatmeh, at the head of the so-called third cataract, will obviate all necessity for using the river between Wady Halfa and Dongola, and will enable men and stores to be conveyed in two days over a tract of country which took an average of about twenty days to accomplish in the expedition of 1884.

Arrived at Abu Fatmeh, we begin an unbroken stretch of navigation which extends through the entire province of Dongola, and into the next province of Shagghiea for fully 220 miles.

And here at Abu Fatmeh it will be well to devote a few words to the people and products of the land we have now reached, the province of Dongola.

The Dongolavi, or Dangala, are of a race distinct from the people of Egypt, the old Nubian race, dark skinned, and straight haired, the true Ethiopian, whose family is still to be found in all its pristine vigor, and warlike prowess, amid the mountains of Abyssinia. This race, in its Nubian representation, has undergone a sad deterioration since its conquest by the Arabs some 400 years ago. Indeed, it may be said that the riverain population along the whole course of the Nile from Wady Halfa to Berber are marked by the same dishonest, unstable, cruel characteristics. This Nile has for hundreds of years been the high road of slavery; the Dongolavi has been the middleman, the "gillab," the slave trader; first Christian, then mixed Moslem and Christian, then wholly Moslem, he has always been a trafficker in human flesh, a drunkard, and a liar. In addition to these traits, successive waves of conquest and years of subjection have now made him an arrant coward. As to the products of the land, they are those of Egypt, but of very limited quantities; the Nile only inundates a narrow patch of level land, sometimes on one side of the river, sometimes on the other, rarely upon both sides at the same time. Undoubtedly, in the old days the cultivated extent was much wider than it is at present, and undoubtedly, too, the population must, at some period not more remote than 400 years, have been immensely in excess of its existing number. Dongola is to-day a land of rain and sand-drift; there is no

country in the world in which the tax collector can pursue his calling with so much ease as in Dongola: a boat on the river and a few Bashi Bazook tax-gatherers on either bank enable these narrow shreds of cultivation to be quickly gleaned of food or money. I have seen a Bashi Bazook tax-collector of the former Mudir of Dongola coolly firing his loaded rifle into a village at the opposite side of the river simply to hasten the inhabitants at their work of bringing the ferry boat across to him. It was also not an uncommon custom of these guardians of public order to raid a village, carry off all the women, and then sell them back to their male relations again. There has been a good deal of excitement over the manner in which the Turkish government in Armenia has carried on its authority during the last few years, but I doubt if it has very much differed in any portion of its dominions, or to any particular tribe of people within them, and there is this to be said, that the idea of government, or authority, or taxation, call it what you will, is pretty much alike in the East. When the order for the withdrawal of the English army of the Nile expedition reached Dongola in May, 1885, I received at the advanced post at Merawe, 200 miles beyond Dongola, in the country of the Shagghiea Arabs, a telegram from the chief of the staff directing me to confer upon a certain MOHAMMED WAD GANAISH, the position of governor of the district. This man had been known, with so many others, to be exceedingly doubtful in his allegiance to the Egyptian government, but he was of the race of the old Maleks, or kings of the Shagghiea, in that part of the country, and it was deemed better to make some attempt at establishing rulership, than to abandon the land to the complete confusion of there being "no king in Israel." I sent a message to WAD GANAISH and received an answer that he was ill of fever, and would come when able to travel. In a day or two he arrived, with a dozen or so followers, all mounted on excellent trotting camels; the conference began, GANAISH being supported by an attendant as he was still suffering from fever. I briefly explained the wishes of the government in relation to him; he was to rule the country as Hakeem, a grade in Eastern life below that of Malek, and above that of Sheikh. When I had finished he spoke his mind. "Government was a great and good thing," he said. "He would undertake the work of ruling the country of Merawi according to custom. By right of birth and parentage it was his place to do so, for his father had cut off heads, his grandfather had cut off heads, it had always been the peculiar privilege of his ancestors to cut off heads, and he, WAD GANAISH, was fully prepared to go on cutting off heads." That was all; we marched next morning from Merawi.

I am not at all sure that if we were to settle permanently in these parts we would not, sooner or later, approximate in our ideas of life to the people who dwell there. The man who, of all men, best knew the races of the East, was of the same opinion. "Residence in these Oriental lands," wrote CHARLES GORDON, "tends, after a time, to blunt one's sensibilities of right and justice, and therefore the necessity of men to return after a time to their own lands to imbibe the old

ideas again. The varnish of civilized life is very thin and superficial—man does not know what he is capable of in circumstances of this sort."

Quite sure am I that we should change our natures sooner than the Arabs or Sudanese would change theirs. And I will tell you why I think so. At Korti, in 1884, I was given an interpreter, one GEMAUL GHENDI by name. His history was a curious one. Twenty or more years earlier he had been taken by an English lady traveling on the Nile from his native village near Korosko. He was then six years of age; his brother, a year older, had just been devoured by a crocodile, and his mother, by no means averse to a further reduction in her family, had very willingly consented to give him to this rich English lady, for a consideration; so the imp was taken and brought to England, where he was put to school, educated with all care, and finally blossomed out into a page boy to the lady who had taken pity on him. When he grew older he became valet to his master, was taken to travel through Europe, and rapidly learned French, German and Italian. He was regarded as a marvel of civilization. Here at last was an Ethiopian who had changed, if not his skin, certainly his habits. He was presented to the emperor of Austria, the Pope had spoken to him, everybody said he was a first-class linguist; he understood all the duties of a personal attendant; to say that he rode well, and shot accurately, was only to say that he was a Barabera. Well, when this man joined me, I, too, was delighted with him; he was everything at once. He waited, made one's bed, rode always near, and was a first rate shot—no small advantage where cartridges were very scarce—and would stalk a lot of doves on a tree, until, getting half-a-dozen in a line, he could secure with a single cartridge, a change of course for dinner from the eternal tinned beef of America, even sufficient for four persons.

One day, astonished alike at the versatility of his genius and the record of his triumphant career through half the capitals of Europe, and before so many of the crowned heads, I asked him how it happened that he had come back to the Soudan again in the capacity of interpreter. He replied that he had come for the sake of the sport which he understood was to be had with large game on the Nile, that he had left a wife in Vienna who was connected with a circus and traveling menagerie business, and that he hoped to return to Austria when the war was over. Indeed among capitals, Vienna seemed always to be his favorite, and speaking of sport, he invariably expressed a preference for grouse driving.

When the expedition returned to Wady Halfa I took a short leave of absence to England before assuming the command at that station; but before starting from Halfa, I confided my horse, camel, and donkey to the care of GEMAUL GHENDI, who had also charge of an escaped slave who had joined us en route from Merawi, and about whom GEMAUL had professed philanthropic views, which, had he delivered them before an English audience, must have proved highly remunerative.

In two months, I was back again at Wady Halfa. GEMAUL

GHENDI was nowhere to be found, neither were my horse or donkey; the camel was discovered in an emaciated condition in the transport lines; the escaped slave had disappeared. After a while a native turned up who volunteered the information that he knew of the whereabouts of GEMAUL. He had not gone to Vienna, he was at a village about 100 miles lower down the river near Korosko. I wrote to this village, but could obtain no answer. Then I communicated with the commandant of Korosko, asking him to send a patrol of police to the village indicated, there to arrest one GEMAUL GHENDI, an interpreter. A week later, the escort arrived at Wady Halfa with their prisoner, but what a prisoner they had brought. Not my well-known interpreter, guide and philosopher, in neat European dress, but a mean-looking native in blue gallabeah and large white turban, with shaven face and shuffling gait. What a stupid mistake they had made! But, as I looked longer and closer, it dawned upon me that this Nubian native was no other than my late sportsman, my intelligent traveler, my excellent valet, my incomparable GHENDI! It was even so, and then, the rude awakening that came to me! He had gone back at one fell swoop to his original village, flung off his neat suit of European clothing, put on all the outward marks and tokens of Ethiopic Mohammedism, sold my large Egyptian donkey, treated the escaped slave in the same fashion, and was now the proprietor of a small sakeeyah and a large harem in the same spot from which he had been taken as an infant five-and-twenty years before.

There is a proverb in the Soudan which says that "Arab's blood and Turk's blood will never boil together." Still less, I think, will the east and west amalgamate their ideas or their civilizations. The ramparts of race are not to be thrown down by the whistle of the steam engine, but it is just possible that the engine may burst her boiler in attempting the operation.

Meanwhile, we have some distance to travel in our paper, and we must proceed with our Nile notes.

In its course through the province of Dongola, the Nile begins or ends, as we take the stream up or down, its great bend at Debbeh.

From Debbeh to Khartoum by desert is 220 miles, but by river it is 570 miles. The yellow sands again border the stream for a considerable distance, and palm trees, except at rare intervals, have disappeared. The islands, however, and they are numerous, are always rich in cultivation. This bend of the river marked the old boundaries between the Dongolavi or Nubians, and the Shagghiea Arabs, one of the most celebrated tribes on the Nile, before the era of the Turkish conquest, and before we pass on our way, we may say a few words about them.

The Shagghiea speak only Arabic, and they speak it well, while their neighbors, the people of Dongola, speak Nubian and Arabic, the latter indifferently. The Shagghiea are undoubtedly of pure Arab blood; they have been settled on this portion of the Nile for ages, and were probably some of the earliest Arabs who, penetrat-

ing from the Red Sea, ended the kingdom of Nubia above the cataracts. But their warlike days ceased when the son of MEHEMET ALI conquered the country in 1820. It is curious to compare the account of that campaign with our own experience of the manner in which the tribes fought at Souakim, and on the Nile. The same headlong rush of spearmen, the same disdain of firm-arm and wound, the same necessity for square formation; one change, however, the sixty or seventy years had brought about. In 1820, the Dongola horse was to be found in large numbers along this part of the Nile; he is now a rare animal. The Turk soon found that the mounted Shagghiea was too nimble a foe for their lazy methods; so they proceeded to destroy the horse wherever they found him.

The breed of horses called Dongola is a distinct one, and of extraordinary hardiness. They are of larger size than the Syrian Arab in use in Egypt, they have white faces, and, nearly always, four white stockings; but the best have three; the mouth is hard almost as the bit in it, the roughest ground seems able to offer no impediment to their speed, and a Shagghiea Arab is as thoroughly at home on their backs as any rider in the world. One feat these Shagghiea were in the habit of performing with their horses, which was almost peculiar to them: they were accustomed to swim these hardy little horses across the broadest parts of the Nile by day or night in any stage of water. It was this power that made them such formidable raiders in the ages preceding the Turkish conquest, and the islands in mid-channel, with three-quarters of a mile of water running swiftly on either side, were almost as liable to ravage at their hands as were the villages on the mainland.

As we approach the upper end of the two hundred miles of good water between the two great series of cataracts, a remarkable steep sided and flat topped hill becomes visible on the proper right bank of the Nile. This is Gibil il Barkal of the Arabs. At its foot, and between it and the river, the ground is encumbered with immense ruins, prostrate columns, the debris of great temples, sphinxes, etc. On the ridge of the desert, behind the hill, are many pyramids still in excellent preservation; the entire scene is a very striking one—here, 1,500 miles from the Mediterranean, the evidences of a remote civilization are everywhere to be seen.

This place was, in fact, the chief centre of Ethiopian power in the earliest recorded ages. Here stood the city of Nepata, the residence of Queen CANDAQUE, and probably of the Queen of Sheba. There is still a village on the river bank, close by, that bears the name of Shibbeh. In the days of the Shagghiea it was the residence of the magicians of the tribe, whose amulets were supposed to protect the wearer from bullets in battle; but, after the action near Korti, where so many of the Shagghiea fell under the fire of the Turkish guns, the first act of the retreating Arabs was to kill all their magicians.

Ten miles above Gibil Barkal begins once more the troubled water of cataracts, a series of rapids in every aspect more formidable than that which lies between Wady Halfa and Dongola.

For 150 miles above this point, the Nile still keeps the great bend to the north which it began at Debbeh, but throughout the greater portion of that distance it is a river rent by rocks, foaming through many channels, seldom held as a single stream between its banks, but filled with large rocky islands which sometimes overlap each other in mid channel, so that between the proper east shore and west there will frequently be three or four islands lying one behind the other, many of them being from five to ten miles in length, and all filled with precipitous rocks and rugged hills of considerable elevation. Winding among these rugged islands, the river pours its flood through channels as filled with enormous rocks as the shores and islands are themselves encumbered with the same granite masses. No wilder scene can be imagined than this waste called Dar Monassir. For miles together there is no vestige of vegetation; silence is broken only by the noise of the foaming waters; the rocks left bare by the subsiding current, and black and polished by sand and sun; whenever it is possible to climb one of the rugged hills on either shore, the eye ranges only over a wilder area of desolation, burnt and cindery rocks rise up in every direction, from amid wastes of sand. At times the channels of the river are so sunken beneath the level of the granite wilderness around, that they are perfectly hidden from sight at only a short distance from the shore. At intervals the islands disappear, the river flows gently in a single stream between shores of black granite, as though its waters were resting between the cataract behind and the next in front; but these bits of comparatively smooth water are few, and taking the entire stream from the fourth cataract at Owli to the head of the island of Sherri, a distance of about sixty miles of water, there cannot be less than twenty-five miles of actual cataract. Up to a recent period, in fact up to the boat expedition of 1884-5, little or nothing was known about these cataracts of Monassir. This was owing to the fact that they had always been avoided by travelers passing between Egypt and the Soudan; the caravans invariably quitting the Nile at Korti, and striking it again across the Bayouda at Metemmeh or Berber.

But, that they were passable at the height of inundation, was proved by the fact that, in the late sixties, or early seventies, two steamers had been taken up at high Nile from Dongola to Khartoum. It was this fact which was, doubtless, in GORDON'S mind, when, in his journal at Khartoum he wrote:—"That there was only one small cataract to pass between Abu Hamed and Merowe, which is, by all accounts, an easy one."

As a matter of fact that very portion of the river is the most obstructed by cataracts of any, in its entire length; but perhaps these misconceptions regarding its true nature are the most conclusive proof that it was an unknown region. In looking for, or thinking of the source of the great river, the explorer and the map-maker had alike forgotten the central portion of the stream where it pours its pent waters down the winding stairways of Dar Monassir.

Passing the cataracts of Owli, Kab el Abd, Umahboa, Rahami, Uss, Shear, and Sharrari, we emerge at last into quieter water, where the Nile once more, held in a single channel, and having sand instead of granite rock on its shores, flows past a small group of palms, and half-a-dozen mud huts called Hebeh. There is a small island, El Kun, opposite the group of huts, divided from the right bank of the river by a channel which is dry at low Nile. All around spreads a desert of yellow sand and gray rock through which conical hills, whiter than the prevailing color of the plains, abruptly show themselves.

It was between the little island of El Kun and the right bank of the river that the steamer "Abbas," sent by General Gordon in September, 1884, with such precious freight of man and manuscript, was wrecked; and it was in the wretched group of mud huts on the shore that Colonel STEWART, the French and English Consuls, and their servants, were treacherously cut to pieces by the Monassir Arabs.

We are here at Hebeh more than 1000 feet above the level of the sea. The desert is still all drift and desolation, yet, that at some period it must have been otherwise, is shown by the massive ruins of old castles found at intervals along the shores; two in particular, built at El Kab at each side of the river, of immense strength.

The regular courses of masonry, the burnt bricks of best workmanship built into the well designed walls, the stairways to towers and flanking defenses, all told of some period of civilization and organized community, very different from the nomad tribes that now roamed this world of drift sand.

Thirty miles above El Kab, the Nile turns off once more to the north at Abu Hamed; at this turn is the second largest island in the river's length, the island of Mograti, more than twenty miles long. The western extremity of Mograti was the extreme point reached by the advanced guard of the river column on the 24th of February, 1885, the day upon which the order to retire over the cataracts reached the column.

On that day 215 boats were assembled at Huella at the end of the Monassir country, carrying 3000 soldiers. All the worst troubles seemed to be past, exactly that day month 217 boats had left the foot of the Fourth Cataract at Owli, 215 had gained the head of the hitherto impassable cataracts of Dar Monassir, and there were still nearly sixty days' food in the boats for the entire force.

From Abu Hamid to Berber is 130 miles. In that distance there occur two cataracts, that of "El Baggada," or the "Cows," at fifty miles, and again the "Shallal el Umar," or "rapid of the wild asses," at eighty miles distance. Then comes the town of Berber, from whence it is 200 miles to Khartoum, with a single rapid, that of the Shablouka, intervening.

This cataract of the Shablouka is sometimes for some unexplained reason called the Sixth Cataract, whereas in reality it is the nineteenth.

And now, at the top of the cataracts, it is time to say a word about the life, other than human, which is to be met along the arid waste we have traversed.

Limited though it be, it still bears the stamp of the river which has given it life. The camel, the oldest of all the beasts of burden, greatest helper of man in the wilderness, is, of animals, the one most frequently in sight on the shores. In spite of all that has been said and written about him, it is doubtful if justice has ever been done to him. To the western he is uncouth, rough, ill-natured, repellent, ugly; even the Arab, in his tradition of the creation of animals, declares, with reference to the first camel, that "The Lord Himself was greatly surprised at the creature he had made." But that is only of outward shape and form. No other beast known to man is so useful to him, food, raiment, transport, these he gives, and if he gives them grudgingly we must remember that he is the oldest slave on earth, and that his very deformities of structure are supposed, by the best naturalists, to have been the slowly gathered inheritances of the immense time during which he has been the slave of man.

"There is a look about a camel," wrote an English officer from the Sudan, "which always gives me the idea that he is going a long way off." It is true, and he has come a long way, too. How many millions of desert miles has the camel traveled since that far off day when we read that Isaac "lifted up his eyes and saw camels coming afar off?"

All these ages of toil and thirst seem to have concentrated their essence in this strange beast; why should he be anything but sulky, and stubborn, and impatient? His very food is made up of things that bristle with spikes and thorns. "When I attempted to pat him after he had brought me safely through the desert in July," writes the officer already quoted, "he turned towards me with a savage growl. He had done his work, he needed no thanks."

Another remnant of old world life which the Nile still preserves, but one differing in every respect from the camel, is the crocodile. He is numerous at all the cataracts from Dal upwards, but especially on the sand banks in the Shagghiea country; but because he is not now seen in reaches of the river below the second cataract, it is not to be supposed that he has altogether abandoned these waters. During the hot season of 1885, when I was living in a Dababiba at Wady Halfa, a rumor went about among the natives that there was a very large crocodile in the river at that place. My boat had been there for months, and as the water shrunk daily into smaller volume, and there was no appearance of the monster, I thought it was impossible he could be there, but one very hot evening when I was sitting at the stern of the boat, all at once the head of an enormous crocodile was thrust above the surface a few yards distant.

During the inundation, and through the winter months, the natives seem to take little heed of the presence of the reptile; but in the hot season before the river rises, their methods are quite different; you will then see the women at all the villages in Dar

Shagghiea throwing stones and lumps of dry mud into the water to drive away the crocodiles from the proximity of the bank while their companions are filling their pitchers in the shallow margins.

The natives assert that the crocodile swallows large quantities of round stones at one season of the year for the purpose of keeping himself on the bottom of the river; certain is it that there is a period of the year when he seldom shows above the surface, and I can myself vouch for the fact that the stomach of a large crocodile, killed at Merawe in 1885, was found to contain a bushelful or more of round stones, many of them as large as eggs, quite smooth and polished.

Of fishes, the river possesses a vast number and variety, some of great size. The largest are only occasionally taken when the river is falling rapidly. Sometimes at this period a monster fish will find himself caught in shallow water, or held inside a ledge of rocks which prevents his getting into the deeper river. At Abu Fatmeh, in November, 1884, my crew of West African Krooboys secured a very large specimen of the Samous, a Nile salmon, among some rocks where they were bathing; the fish weighed 115 pounds, and was as perfect in shape as the best salmon could be; he was disabled in the shallow water by repeated blows of an axe.

Everybody knows that Khartoum stands at the point of junction of the Blue and White Niles. It was founded and made the seat of government and the center of trade by MEHEMET ALI.

Its government was Turkish, its trade was in slaves and ivory. Two ivories in fact, for one was the complement of the other, and the "black ivory," as slaves were named, was the transport used to carry to the Nile shore, from the forest swamps of the interior, the ivory of commerce which the wild elephant supplied.

But there are questions which lie outside the limits of this paper, and were I even to follow the great river along those lower shores we have been traveling, into the ramifications of its upper water, and the races of men who dwell upon them, your patience would scarcely go with me on the journey, besides, it is possible that in dealing with the relations between the governing powers in the east and their subjects, we might enter into ground forbidden to the Aldershot Military Society.

Whenever I hear or read the numerous declarations of those persons in western lands who are desirous of improving and benefiting the condition of the Mahomedan peoples of the east, I am reminded of a story of a traveler on the Nile, who, in his attempts one day to shoot a quail, had the misfortune to lodge a portion of the charge of the shot in the body of a native who was reposing on the shore. Horrified at the accident, and desirous of making compensation to the native for the injury he had received, the sportsman wrote immediately to the Mudir at the nearest government post reporting the occurrence, and begging that action might be taken in the matter. On his return journey down stream the traveler called upon the Mudir to inquire how far his wishes to ameliorate the

condition of the wounded man had been carried into effect. He was assured that everything had been done, that his wishes had received the fullest attention.

"And how much did your Excellency give the wounded man?" asked the traveler, desirous of reimbursing the governor for the expenditure incurred.

"Fifty strokes of the kourbash," solemnly replied the Mudir, "and he will receive another fifty to-morrow, Bismillah. I do not think he will ever be wicked enough to get in the way of your Sublimity's gun again."—*Major-General Sir William Butler, K. C. B., in Aldershot Military Society.*

BOOK NOTICES AND EXCHANGES.

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION. June-July-August, 1897.

1. Italian Second-Class Cruiser Stromboli. 2. The Dongola Expedition of 1896. 3. The Professional Study of Military History. 4. The Madagascar Expedition of 1895-6. 5. A Scheme for the Better Organization of the British Infantry. 6. Naval Notes. 7. Military Notes. 8. Naval and Military Calendar for May. 9. Contents of Foreign Journals for May. 10. Notices of Books. 11. The United States First-Class Armoured Cruiser Brooklyn. 12. The Education and Training of Naval and Military Cadets. 13. The Proposed Naval College at Dartmouth. 14. Two Operations in Woods, 1866, 1870. 15. The Battle of Naseby. 16. Naval Notes. 17. Military Notes. 18. Naval and Military Calendar for June. 19. Contents of Foreign Journals for June. 20. Book Notices. 21. Colonel Sir Augustus S. Frazer, K. C. B., F. R. S. 22. Military Essay for the Gold Medal Competition. 23. Army Signalling and Its Use in War. 24. A Royal Marine Reserve. 25. Naval Notes. 26. Military Notes. 27. Naval and Military Calendar for July. 28. Contents of Foreign Journals for July. 29. Notices of Books.

PROCEEDINGS OF THE ROYAL ARTILLERY INSTITUTION. July-August, 1897.

1. Abstract of the Proceedings of the Sixteenth Annual General Meeting of the Royal Artillery Institution. 2. Coast Artillery Practice: How Best to Conduct it with Regards to the Requirements of Actual Warfare. Gold Medal Prize Essay, 1897. 3. Commended Essay, (same subject). 4. Commended Essay, (same subject). 5. The Choice, Occupation and Change of Position by Field Artillery. 6. The German Method of Bringing Guns into Action. 7. The Study of Military History as a Means of Training for War. 8. Accident to 12-inch B. L. Gun on Board the Russian Battleship *Sinai Veliki*. 9. Competitive Practice in the Garrison Artillery and its Effect on the Training of Officers and Men. 10. Notes on Training Artillery Scouts. 11. Consular Experiences in Turkey.

JOURNAL OF THE UNITED STATES ARTILLERY. July-August, 1897.

1. Development of a Photo-Velocimeter. 2. The Synchronograph. 3. History of the Sea Coast Fortifications of the United States. 4. The Bicycle and its Adaptability to Military Purposes. 5. Professional Notes. 6. Book Reviews. 7. Index to Current Artillery Literature. 8. Letters on Sea Coast Artillery. 9. Notes on Armor. 10. A New Method of Indirect Laying for Field Artillery. 11. Professional Notes. 12. Book Notices. 13. Department of Scientific and Military Information.

PROCEEDINGS OF THE UNITED STATES NAVAL INSTITUTE. No. 2, 1897.

1. A Proposed Uniform Course of Instruction for the Naval Militia. 2. The Composition and Arrangement of Ships' Batteries. 3. Notes on the Yacht "Defender" and the Use of Aluminum in Marine Construction. 4. On the Perforation of Face Hardened Armor. 5. Military Training. 6. Replies to Criticisms of Essay on Torpedo Boat Policy. 7. Professional Notes. 8. Book Notices and Reviews. 9. Bibliographic Notes. 10. Officers of the Institute. 11. Special Notice.

THE PENNSYLVANIA MAGAZINE OF HISTORY AND BIOGRAPHY. July, 1897.

1. The Family of William Penn. 2. The Journal and Papers of the Continental Congress. 3. Washington After the Revolution. 4. The Religious Condition of Pennsylvania in the Year 1701. 5. The So-called Franklin Prayer Book. 6. Extracts From the Letter Book of Lieutenant Enos Reeves. 7. The French Fete in Philadelphia in Honor of the Dauphin's Birthday, 1782. 8. Notes and Queries. 9. Book Notices.

THE MAINE BUGLE. July, 1897.

1. A Private's Tribute to Gen. Geo. E. Beal. 2. In Memoriam. 3. Ancestry and Biography. 4. Echoes. 5. Thirteenth Tennessee Confederate Infantry. 6. Fort Fisher. 7. G. A. R. Encampment, Maine. 8. Five Brothers in Blue. 9. Fourth Maine Battery. 10. Ames Family Record. 11. Captain Albert Warren Stiles. 12. Captain Clifton W. Miles. 13. The Twenty-First Pennsylvania Cavalry. 14. Rockland Institute, Nyack-on-Hudson, New York.

JOURNAL OF THE MILITARY SERVICE INSTITUTION. July, 1897.

1. A Well Organized Infantry. 2. A Strategical Study. 3. Infantry and Light Artillery. 4. National Guard. 5. A System of Artillery Fire Control. 6. Preparation of Volunteers. 7. Reprints and Translations. 8. Military Notes. 9. Comment and Criticism. 10. Reviews and Exchanges. 11. List of Officers. Prize Essays. 12. Publishers' Department.

THE INDIAN FENCING REVIEW. April, 1897.

1. The Indian Fencing Association. 2. The Infantry Sword Exercise of 1895. 3. The Saber. 4. Foreign Systems of Military Fencing. 5. Foil Fencing. 6. A Hitherto Undiscovered Chapter of the Memorable Thoughts of Socrates. 7. Cuts and Points. 8. Rules of the Indian Fencing Association. 9. Calcutta Central School.

ALDERSHOT MILITARY SOCIETY. May, 1897.

1. Niger Sudan Campaign, 1897. 2. The Nile Cataracts.

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA.

THE CANADIAN MILITARY INSTITUTE.

REVUE DU CERCLE MILITAIRE.

IOWA HISTORICAL RECORD.

MILITÄR WOCHENBLATT.

THE BREEDERS' GAZETTE.

THE RIDER AND DRIVER.

THE MILITARY GAZETTE.

REVUE DE CAVALERIE.

OUR DUMB ANIMALS.

THE EXECUTIVE COUNCIL

A special meeting of the Executive Council of the Cavalry Association was held on Thursday, September 23d, at 12 m., for the purpose of electing a resident Vice-President of the Association, that office having become vacant by reason of the change of station of Lieutenant Colonel A. R. CHAFFEE to Fort Riley, Kansas. Major J. A. AUGER, Fourth Cavalry, was unanimously elected to the vacancy for the unexpired term

E. L. PHILLIPS,
Second Lieutenant, Sixth Cavalry,
Secretary.

THE UNITED STATES CAVALRY.

FIRST CAVALRY—COLONEL ABRAHAM K. ARNOLD.

Adjutant, W. S. SCOTT. Quartermaster, G. H. MACDONALD.

HEADQUARTERS, FORT RILEY, KANSAS.

Troops—*F* and *K*, Fort Riley, Kan.; *A* and *I*, Fort Huachuca, Ariz.; *E* and *H*, Fort Still, O. T.; *B* and *D*, Fort Reno, O. T.; *C* and *G*, Fort Sheridan, Ill.

SECOND CAVALRY—COLONEL GEORGE G. HUNT.

Adjutant, R. E. L. MICHIE. Quartermaster, H. H. SARGENT.

HEADQUARTERS, FORT WINGATE, N. M.

Troops—*E* and *K*, Fort Wingate, N. M.; *A*, *C*, *D*, *F*, *G* and *H*, Fort Riley, Kan.; *B* and *I*, Fort Logan, Colo.

THIRD CAVALRY—COLONEL S. B. M. YOUNG.

Adjutant, T. R. RIVERS. Quartermaster, J. W. HEARD.

HEADQUARTERS, FORT ETHAN ALLEN, VT.

Troops—*A*, *B*, *D*, *H*, *I* and *K*, Jefferson Barracks, Mo.; *C*, *E*, *F* and *G*, Fort Ethan Allen, Vt.

FOURTH CAVALRY—COLONEL CHARLES E. COMPTON.

Adjutant, C. STEWART. Quartermaster, G. H. CAMERON.

HEADQUARTERS, FORT WALLA WALLA, WASH.

Troops—*A* and *G*, Fort Walla Walla, Wash.; *E*, Vancouver Barracks, Wash.; *F*, Boise Barracks, Idaho; *B*, *C*, *I* and *K*, Presidio of San Francisco, Cal.; *D* and *H*, Fort Yellowstone, Wyo.

FIFTH CAVALRY—COLONEL L. H. CARPENTER.

Adjutant, J. M. JENKINS. Quartermaster, J. T. HAINES.

HEADQUARTERS, FORT SAM HOUSTON, TEXAS.

Troops—*D*, *E*, *F* and *K*, Fort Sam Houston, Tex.; *B*, Fort McIntosh, Tex.; *C* and *I*, Fort Clark, Tex.; *G*, Fort Brown, Tex.; *H*, Fort Ringgold, Tex.; *A*, Fort Bliss, Tex.

SIXTH CAVALRY—COLONEL SAMUEL S. SUMNER.

Adjutant, R. L. HOWZE. Quartermaster, G. H. SANDS.

HEADQUARTERS, FORT MYER, VA.

Troops—*A*, *E*, *G* and *H*, Fort Myer, Va.; *B*, *C*, *F* and *K*, Fort Leavenworth, Kan.; *D* and *I*, Fort Robinson, Neb.

SEVENTH CAVALRY—COLONEL EDWIN V. SUMNER.

Adjutant, W. A. HOLBROOK. Quartermaster, W. H. HART.

HEADQUARTERS, FORT GRANT, ARIZONA.

Troops—*B*, *C*, *E* and *F*, Fort Grant, Ariz.; *I* and *K*, Fort Huachuca, Ariz.; *L*, Fort Sill, O. T.; *A* and *D*, Fort Bayard, N. M.; *G* and *H*, Fort Apache, Ariz.

EIGHTH CAVALRY—COLONEL J. M. BACON.

Adjutant, M. F. STEELE. Quartermaster, C. C. WALCUTT.

HEADQUARTERS, FORT MEADE, S. D.

Troops—*B*, *D*, *E*, *F*, *G*, *H*, *I* and *K*, Fort Meade, S. D.; *A*, Fort Keogh, Mont.; *C*, Fort Yates, N. D.

NINTH CAVALRY—COLONEL DAVID PERRY.

Adjutant, G. H. PRESTON. Quartermaster, J. H. GARDNER.

HEADQUARTERS, FORT ROBINSON, NEB.

Troops—*A*, *C*, *E*, *G*, *H* and *K*, Fort Robinson, Neb.; *B* and *F*, Fort Du Chesse, Utah; *D* and *I*, Fort Washakie, Wyo.

TENTH CAVALRY—COLONEL GUY V. HENRY.

Adjutant, M. H. BARNUM. Quartermaster, L. HARDEMAN.

HEADQUARTERS, FORT ASSINIBOINE, MONT.

Troops—*C*, *D*, *F*, *G*, *H* and *I*, Fort Assiniboin, Mont.; *A*, *B*, *E* and *K*, Fort Custer, Mont.

The Adjutants of Regiments will please notify the Editor of changes in the Regimental Staff, and in stations of Troops.

CAVALRY OF THE NATIONAL GUARD.

NOTE.—The following have no mounted troops: Delaware, District of Columbia, Florida, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Missouri, Nevada, North Carolina, South Dakota, West Virginia, Vermont, Wyoming. Other States and Territories not mentioned below, have not been reported.

ALABAMA.

FIRST CAVALRY SQUADRON—MAJOR JAMES T. BECK.

Adjutant, Captain A. G. Forbes. Quartermaster, Captain J. F. Burns.

HEADQUARTERS, CAMDEN.

Troop "A," Montgomery, Captain W. F. Joseph; Troop "B," Camden, Captain W. P. Burford; Troop "C," Selma, Captain V. P. Atkins; Troop "D," Birmingham, Captain J. B. Morson.

ARKANSAS.

Troop "A," Panola, Major M. C. House; Troop "B," Jacksonville. (Commanding Officer unknown).

CALIFORNIA.

Troop "A," San Francisco, Captain Chas. A. Jenks; Troop "B," Sacramento, Captain John Cooke; Troop "C," Salinas, Captain Michael J. Burke; Troop "D," Los Angeles. (Commanding Officer unknown.)

COLORADO.

FIRST SQUADRON OF CAVALRY—MAJOR JOHN CHASE.

Adjutant, First Lieutenant A. H. Williams. Quartermaster, (None.)

HEADQUARTERS, DENVER.

Troop "A," Leadville, Captain Frank M. Goddard; Troop "B," Denver, First Lieutenant Wm. G. Wheeler.

GEORGIA.

FIRST REGIMENT OF CAVALRY—COLONEL WILLIAM W. GORDON.

Adjutant, Captain Wm. G. Harrison. Quartermaster, Captain Albert S. Eichberg.

HEADQUARTERS, SAVANNAH.

FIRST SQUADRON, FIRST REGIMENT—MAJOR PETER W. MELDRIM.

HEADQUARTERS, SAVANNAH.

Troop "B," McIntosh, Captain Willard P. Waite; Troop "E," Johnston Station, Captain Joseph W. Hughes; Troop "G," Darien, Captain Benjamin T. Sinclair; Troop "I," Jessup, Captain Harry W. Whaley.

SECOND SQUADRON, FIRST REGIMENT—MAJOR JAMES J. BREWER.

HEADQUARTERS, OLIVER.

Troop "A," Savannah, Captain Belme Gordon; Troop "C," Springfield, Captain Daniel G. Morgan; Troop "D," Sylva, Captain Jesse T. Wade; Troop "H," Waynesboro, Captain William H. Davis.

FIRST BATTALION OF CAVALRY (INDEPENDENT)—MAJOR JOHN M. BARNARD.

Adjutant, First Lieutenant John D. Twigg. Quartermaster, First Lieutenant Robert Dobbs.

HEADQUARTERS, LAGRANGE.

Troop "A," Augusta, Captain Albert J. Twigg; Troop "B," Atlanta, Captain J. Stapler Dozier; Troop "C," LaGrange, Captain Thomas J. Thornton; Troop "D," Hamilton, First Lieutenant John M. Bruce.

ILLINOIS.

CAVALRY SQUADRON—MAJOR EDWARD C. YOUNG.

Adjutant, Captain Pierrepont Isham. Quartermaster, First Lieutenant Milton J. Foreman.
HEADQUARTERS, CHICAGO.

Troop "A," Chicago, Captain Paul B. Lino; Troop "B," Bloomington, Captain Will P. Butler; Troop "C," Chicago, Captain Metullus L. C. Funkhouser; Troop "D," Springfield, Captain John S. Hurt.

MASSACHUSETTS.

FIRST BATTALION OF CAVALRY—MAJOR HORACE G. KEMP.

Adjutant, First Lieut. Walter C. Wardwell. Quartermaster, First Lieut. Sullivan B. Newton.
HEADQUARTERS, BOSTON.

Troop "A," Boston, Captain D. A. Young; Troop "D," Boston, Captain William A. Perkins; Troop "F," (Independent), North Chelmsford, Captain Elisha H. Shaw.

MISSISSIPPI.

FIRST SQUADRON OF CAVALRY—MAJOR J. H. COOKE.

Adjutant, First Lieutenant B. B. Hardy. Quartermaster, First Lieutenant D. W. Outlaw.
HEADQUARTERS, ARTESIA.

Troop "A," Crawford, Captain J. J. Prowell; Troop "B," Sessumsville, Captain A. F. Young.

MONTANA.

Troop "A," Billings, Captain J. C. Bond; Troop "B," Bozeman, Captain J. F. Keown.

NEBRASKA.

Troop "A," Milford, Captain Jacob H. Culver.

NEW HAMPSHIRE.

Troop "A," Peterborough, Captain Charles B. Davis.

NEW JERSEY.

First Troop, Newark, Captain Frederick Frelinghuysen; Second Troop, Red Bank, Captain John V. Allstrom.

NEW MEXICO.

FIRST BATTALION OF CAVALRY—MAJOR T. P. GABLE.

Adjutant, First Lieutenant W. E. Griffin. Quartermaster, First Lieutenant E. B. Linneu.
HEADQUARTERS, SANTA FE.

NOTE.—The battalion is now undergoing reorganization. It is to contain four troops.

NEW YORK.

SQUADRON "A"—MAJOR CHARLES F. ROE.

Adjutant, First Lieut. John Isaac Holly. Quartermaster, First Lieut. Louis V. O'Donohue.
HEADQUARTERS, NEW YORK CITY.

First Troop, New York City, Captain Oliver B. Bridgman; Second Troop, New York City, Captain Howard G. Badgley; Third Troop, New York City, Captain Latham G. Reed; Troop "C," (Independent), Brooklyn, Captain Bertram T. Clayton.

OHIO.

Troop "A," Cleveland, Captain Russell E. Burdick.

OREGON.

Troop "B," Gresham, Captain Charles Cleveland.

NOTE.—Another troop, to be called Troop "A," will soon be organized, and a squadron organization will be completed.

PENNSYLVANIA.

Philadelphia City Troop, Philadelphia, Captain John C. Groome; Governor's Troop, Harrisburg, Captain Frederick M. Ott; Sheridan Troop, Tyrone, Captain C. S. W. Jones.

RHODE ISLAND.

FIRST SQUADRON OF CAVALRY—MAJOR ALEXANDER STRAUSS.

Adjutant, First Lieutenant Thomas Child. Quartermaster, First Lieutenant Miles H. Ray.
HEADQUARTERS, PAWTUCKET.

Troop "A," Pawtucket, Captain Edward T. Jones; Troop "B," Providence, Captain Wm. A. Maynard.

TENNESSEE.

Cavalry Troop, Nashville, Captain George F. Hagar.

TEXAS.

FIRST CAVALRY REGIMENT—COLONEL J. K. WATIES.

Adjutant, First Lieut. James M. Burroughs. Quartermaster, First Lieut. Frederick Rhodes.
HEADQUARTERS, HOUSTON.

Troop "A," Austin, Captain L. B. Younger; Troop "B," Houston, Captain C. Towles; Troop "E," Dallas, Captain F. V. Blythe; Troop "F," Denison, Captain E. A. Hammond; Troop "H," Gainesville, Captain John A. Hulen.

VIRGINIA.

Troop "A," Richmond, Captain E. J. Euker; Troop "B," Surry, Captain Geo. A. Savedge.

WASHINGTON.

Troop "A," North Yakima, Captain Marshall S. Soulier; Troop "B," Tacoma, Captain Everett G. Griggs.

WISCONSIN.

Troop "A," Milwaukee, Captain William J. Grant.



GENERAL RANALD SLIDELL MACKENZIE.

JOURNAL

OF THE

UNITED STATES CAVALRY ASSOCIATION.

VOL. X.

DECEMBER, 1897.

NO. 39.

RANALD SLIDELL MACKENZIE.

BY CAPTAIN JOSEPH H. DORST, FOURTH CAVALRY.

RANALD SLIDELL MACKENZIE, who died January 19, 1889, at New Brighton, Staten Island, New York, was the eldest child of Commander ALEXANDER MACKENZIE of the navy, and of his wife CATHERINE ALEXANDER, the daughter of MORRIS ROBINSON, of New York. He was born in that city on the 27th of July, 1840, and, a few weeks later his parents moved to a farm on the Hudson, between Tarrytown and Sing Sing. After a slight sunstroke when he was three years old, he was never thoroughly strong until he went to college, and any long confinement to the house was certain to bring on headache and depression of spirits.

To those who really knew him well, his character as a child was remarkable. He was entirely truthful, entirely brave. He was never known to tell a lie or to make even the slightest untruthful excuse. From the time he could understand anything, his mother had impressed upon him that he must never hurt anyone smaller or weaker than himself, and her words had sunk deep into his generous nature.

His father returned from the Mexican War in the spring of 1848, safe but with broken health. It was only a few months later that

the child's first sorrow came. He was playing alone by the gate one morning when his father rode down, and the child ran to open it for him. Captain MACKENZIE spoke to him for a moment, leaned from the saddle to kiss him good-bye, then rode off, and was never seen alive again. He fell from his horse in an attack of the heart, and within a short distance of his wife and his home died quite alone.

From that time began the thoughtful, protecting affection for his mother, which no one who knew him could fail to remark.

Very close upon his father's death followed the loss of his home, his mother removing to Morristown, in New Jersey, in the spring of 1849.

When he was fifteen the time came when something must be decided as to his future life. He had showed no leaning toward any profession, and quietly agreed to the wish of his uncles that he should go to college with the prospect of studying law in New York afterwards. In the autumn of 1855, therefore, he entered the Freshman class at Williams College. He had not finished his Junior year, however, when his life was changed by his decision to enter the army. This determination was not caused by any change in his own wishes. It was only a change in his family circumstances, which made him feel that it would be better for his mother that he should be able at once to provide for himself. He discussed it with no one, asked no one's advice, but thought it over quietly by himself, and, when he had fully made up his mind, wrote for his mother's consent, and asked her to get the appointment for him.

Another thing which seems a little unusual in the light of his after success, was that nearly everyone of his acquaintances and relations expected him to fail at West Point. It was perhaps natural that the strength of his mind and character should be misunderstood. He was very shy and reserved, his speech was slow and a little indistinct, his manner diffident and hesitating; the great brilliancy of his youngest brother, too, threw him more into the shade, from which he was perfectly happy to admire his brother's gifts of mind and manner, and quite contented with second place himself.

His uncle, on hearing his resolution, wrote to say that he could get the appointment for him, certainly, but he must warn him of the great disadvantage it would be to him to be found deficient. Other relatives urged upon him the disappointment and grief that his failure would be to his mother—the opinion of his little public, in short, was summed up in the words of their old clergyman, who, on hearing later that RANALD stood second in his class, absolutely

refused to believe it. "No," he exclaimed to MRS. MACKENZIE, "it is not possible," and when informed that it was not only possible but true, he went on: "Madam, you surprise me; I had ventured to hint to my wife—in strict confidence—my certainty of the disappointment in store for you."

The same certainty was felt at first by the other cadets at West Point, who, in talking over their chances before they had left their first encampment, had unanimously agreed that MACKENZIE would be one of those to be "found" at the first examination. Only a few of his family, and all his teachers at school or college, held a different opinion. They alone understood the boy's quiet courage and uncommon ability, and to them no honor that came to him could ever be a surprise. As Mr. MORRIS, his former teacher, had written of him three years before, "With time he will always be equal to what is required of him."

He entered the Military Academy on the 1st of July, 1858. His sterling qualities of heart and mind soon made him a great favorite in his class and very popular with the whole corps. He was looked upon as a high-spirited, model gentleman; modest, determined, fearless, generous, loyal to his friends, and slow to anger unless he thought an insult was intended, when no one would resent it more quickly. He had a very sociable disposition, loved to be with his comrades, and was full of good nature. His love of sport and fondness for the society of his friends was the cause of his getting more than the average number of demerits, but in all essentially military matters his conduct was exemplary.

At the end of his first year he stood fifth in his class; at the end of the second year he stood second. In his third year, 1860-61, the outbreak of the Civil War and the events that immediately preceded it, produced an excitement throughout the country that was also deeply felt at West Point. At that time MACKENZIE lived in Company "D," where many Southern cadets also lived. It was probably due to his interest in his friends from the South and the exciting incidents of that year, that at its end he had fallen to twelfth place, for in the year following, although he was acting assistant professor of mathematics, and much of his time was necessarily taken up with instructing the lower classes, he graduated with ease at the head of his class. His letters show that for months before graduation he was also deeply engaged in studying the problems of the war, and that his able mind had realized in a great measure the gigantic proportions the conflict would assume. He chafed at his enforced detention at West Point, and longed to be in a life of

activity and danger, with so many gallant men, fighting for a great cause.

Upon graduating in June, 1862, he was appointed second lieutenant in the Corps of Engineers, and almost immediately reported for duty to General BURNSIDE, as engineer officer on his staff. In a few weeks, however, he was transferred to the staff of General RENO, with whom he served at the second battle of Manassas, in August. On the afternoon of the second day of that battle, while carrying a message, he stopped to ask information of a wounded soldier, and at that moment was shot from behind a fence, the ball entering at the right shoulder, passing over the shoulder blade and spine without breaking the skin, and grazing the left shoulder blade as it went out, making a serious and painful but not dangerous wound. After he fell, two of the men that had fired upon him, came up. He asked for water, and they said they would gladly give it but they had none themselves. They took his pistol and money, leaving him his watch, and then hurried off. He lay on the ground all that night, and next day was picked up and sent to Centreville, where he was placed in one of the crowded ambulances and hurried to Washington. There his brother, after a long search, found him with other wounded officers in a hotel, and though very weak and worn, quite happy in feeling that his first fight had left him nothing to be ashamed of. When his mother arrived next morning his first words were: "I am wounded in the back, but I was not running away." For his gallant conduct in this battle he received the brevet of first lieutenant.

His wound healed rapidly, and on October 9th he again reported for duty. General RENO having been killed at South Mountain, he was placed for a while on the staff of General BURNSIDE, but the chief of engineers soon had him assigned to duty with the Engineer Battalion, and he remained with it almost uninterruptedly, participating in many skirmishes, and all the great battles of the Army of the Potomac, until June, 1864.

For gallant and meritorious service at the battle of Chancellorsville he received the brevet of captain. At the battle of Gettysburg he was temporarily attached to the staff of General MEADE, was again wounded, though not seriously enough to incapacitate him, and for his gallantry was brevetted major.

Until June, 1864, his duties had been those of an engineer officer only, and by regular promotion he had reached the rank of captain. But while he performed his duties zealously and well, they were hardly of an agreeable kind, and neither suited his taste nor gave

scope for his talents. He speaks in his letters, of a pontoon as a "bore," and a pontoon train as his "pet aversion." He was far more deeply interested in the tactical employment of troops, and in the lessons to be learned from the various battles, than in the duties of his position. But his attention to those duties, his great energy, and the courage and intelligence he so frequently displayed, could not fail to attract the notice of his superiors, and when officers of the Second Connecticut Heavy Artillery—a regiment that was artillery only in name, being armed and equipped as infantry—wished to have a regular officer appointed to fill the vacancy caused by the death of its colonel at Cold Harbor, General UPTON recommended them to apply to Captain MACKENZIE. This they did, and the application received the favorable endorsement of Generals UPTON, RUSSELL, WRIGHT, MEADE and GRANT.

On June 6th, Colonel MACKENZIE, not yet twenty-four years old, took command of his regiment at Cold Harbor. He was now in a position that gave him an opportunity to display his high soldierly qualities and great genius for war, and he made use of that opportunity. He now entered upon the most brilliant portion of his military career, and considering how late in the war the opportunity came, his subsequent advancement was phenomenal. For gallant and meritorious service in front of Petersburg on the 18th of June he received the brevet of lieutenant-colonel in the regular army. On the 22d he was shot in the right hand, losing two fingers, and much against his will was compelled to take a short leave and go home. In less than three weeks he was back again with his regiment, which belonged to the Sixth Army Corps, and went with it to Washington when the Confederate General EARLY threatened that city, after which the corps was transferred to General SHERIDAN's army in the Shenandoah Valley. At the battle of Opequan MACKENZIE was slightly wounded in the leg by a piece of shell, but retained command of his regiment, and for his gallantry on that occasion and at Fisher's Hill and Middletown he subsequently received the unusual distinction of being appointed brigadier-general of volunteers—unusual because the honor was conferred as a reward for distinguished services specially mentioned. In those three battles his regiment lost more heavily, probably, than any other in General SHERIDAN's command, and bore three-fourths of the losses of its own brigade. At Cedar Creek MACKENZIE commanded his brigade, and was wounded early in the morning, was wounded in the leg later in the day, and was finally knocked from his horse by some missile, which struck him in the chest and

stunned him for a moment, bruising him badly but not breaking the skin. His arms partially paralyzed for a few moments, he made his men replace him on his horse, where he remained for a short time to see that the victory was assured. In his report of the battle General SHERIDAN says: "Colonel MACKENZIE, though severely wounded, refused to leave the field." On this occasion he won the brevet of colonel in the regular army.

MACKENZIE's high standard of discipline caused his men to consider him unreasonably strict, and until they knew him well, his rigid administration caused considerable feeling against him. The following extract from a history of the regiment, written by the adjutant, First Lieutenant T. F. VAILL, will be appreciated by General MACKENZIE's friends:

"The circumstances under which Colonel MACKENZIE became connected with the Second Connecticut are related in Chapter VI. He had chosen the trade of war before the Rebellion commenced, and it soon became evident that he had a remarkable taste and aptitude for the business. He arrived and assumed command while we lay at Cold Harbor, * * * and when the survivors were lying so supine and stupid that they could hardly be called survivors. * * * Being himself in no such exhausted condition, Colonel MACKENZIE found not the slightest difficulty in becoming master of the situation. His military experience and his thorough competency in all respects would have enabled him, under any circumstances, to command the respect of subordinate officers, but the condition of things just at that time made it a peculiarly easy task. For some days he did not tighten the screws of his discipline, but contented himself with observing his command and finding out what kind of stuff it was made of. * * * By the time we had reached the Shenandoah Valley he had so far developed as to be a greater terror to both officers and men than EARLY's grape and canister. * * * There is a regimental tradition to the effect that a well defined purpose existed among the men, prior to the battle of Winchester, to dispose of this commanding scourge during the first fight that occurred. If he had known it, it would only have excited his contempt, for he cared not a copper for the good will of any except his military superiors, and certainly feared no man of woman born, on either side of the lines. But the purpose, if any existed, quailed and failed before his audacious pluck on that bloody day. He seemed to court destruction all day long. With his hat aloft, on the point of his saber, he galloped over forty-acre fields, through a perfect hailstorm of Rebel lead and iron, with as much impunity as though he had been a ghost. The men hated him, * * * but they could not draw bead on so brave a man as that. * * * His fingers were shot off at Petersburg while his hand was stretched out in the act of giving an order, but he was in command again in twenty days. At Winchester his leg was skinned by a shell that

cut his horse asunder, but tying a handkerchief around it, and remarking with grim jocoseness that this 'was dismounting without numbers,' he went on with the regiment, through the battle of Fisher's Hill and the chase up the valley, never for a moment relinquishing command until the battle of Cedar Creek, on which day another horse was killed under him, and two wounds—one received during EARLY's morning call, and the other during SHERIDAN's return call in the afternoon—at length cleared him out. That was the last of his immediate command of the regiment. He returned, however, and took command of the brigade, which he retained until appointed to a cavalry command in the spring of 1865."

His wounds kept him from duty until about the middle of November, when he rejoined his brigade, and later accompanied it when the Sixth Corps returned to General GRANT in front of Petersburg. A good feeling had long been firmly established between him and his old regiment, and he would have liked to keep it. Nothing of striking interest occurred during the winter, though MACKENZIE was doing what he could "to try and justify General SHERIDAN's opinion in having him promoted." About the middle of March, 1865, General GRANT transferred him to the command of a division of cavalry, with which he rendered conspicuous service at Five Forks, and in the operations that terminated with the surrender of General LEE. His command was designated by General GRANT to assist in the last formalities and receive the arms and munitions of war of the Rebel army.

For gallant and meritorious services during the war he received the brevets of brigadier-general in the regular army, and major-general of volunteers.

After being mustered out of the volunteer service he returned to his duties as captain of Engineers, and from February, 1866, to May, 1867, was stationed at Portsmouth, New Hampshire.

In the reorganization of the regular army he thought it possible he might be given the rank of major in the line, but in the spring of 1867 some of his friends informed him that the colonelcy of the Forty-first Infantry, a new regiment, had been offered to several officers, who in turn had declined it, because the regiment was composed of colored men. Unknown to himself, he had been mentioned in connection with the appointment, and he was advised, if it was offered to him, not to refuse it. Eventually it was offered to him, and he accepted it, and in June was in command of the post at Baton Rouge, Louisiana. In July he went to Texas, and began at once to try and make his regiment the best colored regiment in the army, by getting its recruiting stations changed from the Southern

to the Northern States, and having great care taken to enlist only intelligent men. Until 1870 he was stationed along the Rio Grande and at Forts Clark and McKavett, the monotony of garrison life being broken by hunting and scouting. He was transferred to the Twenty-fourth Infantry, upon the reduction of the army in 1869, and while East on duty in 1870 General GRANT informed him that he would be transferred to the Fourth Cavalry. Although he had been very anxious to have a cavalry regiment, he had made no effort to obtain one, and now that his wish was to be gratified, he had the satisfaction of knowing that in this instance, as in every other, whatever promotion or favor had been conferred upon him during all his military service, had not been obtained by the slightest personal solicitation.

Upon joining his new regiment, in the spring of 1871, he wrote home: "I intend that it shall not be on account of any laziness of mine if it falls below any other," a resolution that not a single officer or man of the regiment will say he failed to follow to the letter. At that time all of that portion of Texas west of the one hundredth meridian, particularly the region known as the Staked Plains, was overrun by various bands of Indians, who were constantly making depredations upon the settlements further east. The Cheyennes and Arapahoes roamed over northern Texas, Kansas and Colorado, from the Red River to the Platte, while the Comanches, Kiowas, Mescalero Apaches, Kickapoos and Lipans had actual control of western Texas and eastern New Mexico, and wandered from the southern boundary of Colorado to many miles south of the Rio Grande. The bands of Comanches, Kiowas and Apaches were the ones that gave the most trouble on the Texas frontier, and were comfortably located on the Staked Plains south of the Canadian River, a region that had never been fully explored, and that, to the troops, was unknown. Secure in their retreats, they were constantly prowling about the settlements in small parties, mainly for the purpose of stealing horses, but also ready to attack any persons that came in their way, provided the danger was not too great to themselves. In some of these expeditions the Indians have been known to penetrate the settlements to the Gulf of Mexico. The troops intended to protect the settlers were scattered among the frontier posts, sometimes hundreds of miles apart, and employed in small detachments in trying to overtake and punish the raiders. Although the troops were constantly in a state of activity, their efforts were usually fruitless and without effect. If the Indians were followed to the vicinity of their homes, they would receive

such reinforcements as to make it necessary for the small detachments of troops to turn back. General MACKENZIE concluded that the only plan to be followed to bring the Indians to terms was to send one or more large columns of troops, each strong enough to take care of itself, into the country occupied by the Indians and make it untenable for them. Accordingly in the summer and fall of 1871 he conducted an expedition to the Staked Plains. He considered his expedition very unsuccessful, as he was not able to surprise any large party of Indians, and only a few were killed. Still, the experience gained and the knowledge obtained of the topography of the country were of the greatest value to him subsequently. In this campaign, during an affair with a few Indians, MACKENZIE became concerned about the safety of a daring young officer who had gone well to the front, and while ordering him back he was himself shot in the leg by an arrow.

In the summer and fall of 1872 he again conducted a similar expedition to the Staked Plains, and in September surprised a large camp on McClellan's Creek, defeated the Indians with considerable loss, and captured over one hundred women and children. He and his command were congratulated upon their success in general orders from the War Department.

In the meanwhile the southern frontier of Texas was exposed to raids by Kickapoo and Lipan Indians, who, when closely pressed, were in the habit of crossing the Rio Grande River into Mexico, where they were safe from pursuit, and where, unmolested by the Mexicans, they had their homes.

In the spring of 1873, MACKENZIE's headquarters were transferred from northern Texas, where they had been for two years, to Fort Clark, about twenty miles from the Rio Grande. He at once set to work to ascertain the location of the principal Indian camps in Mexico, and this accomplished, he crossed the Rio Grande one evening in May, made a forced march during the night, attacked the Indians at daylight, destroyed their camp, which was only four or five miles from a Mexican town, and then encumbered with his wounded, forty captured women and children, and two hundred captured horses, he succeeded in regaining the north bank of the Rio Grande, before sunrise the following morning, his men having had no rest for nearly fifty hours.

This affair caused a great deal of excitement at the time, and was the cause of considerable correspondence between our government and that of Mexico, but MACKENZIE had the assurance of the

support of General SHERIDAN and also of the Secretary of War, and in time the matter was amicable adjusted.

In 1874 many of the Comanches, Kiowas and Cheyennes on their reservations in Indian Territory, became discontented and joined the renegades who lived habitually on the Staked Plains. Columns of troops from New Mexico, Kansas, Indian Territory and Texas were sent out to punish them, and MACKENZIE was placed in command of the two from Texas. One he commanded personally and the other was under General BUELL, lieutenant-colonel of the Eleventh Infantry. MACKENZIE's command had a skirmish with a war party of several hundred Indians during the night of the 26th and morning of the 27th of September. At daylight on the morning of the 28th, after a night march of about forty miles, he attacked their main camp, killing several, destroyed the camp and killed or captured nearly two thousand horses. The next day, after selecting such of the captured horses as were needed for the use of the command, one thousand and forty, by actual count, were shot to keep them from falling again in the hands of the Indians. Several other small engagements took place in November and December, after which the troops returned to their posts.

In 1875 the Fourth Cavalry was ordered to take station in Indian Territory with headquarters at Fort Sill. MACKENZIE also commanded the troops at the Cheyenne Agency, where Fort Reno has since been located, and those at the cantonment on the present site of Fort Elliott. The Indians had returned to their reservations, but owing to the depredations of white horse thieves on the Indians' herds, it was a difficult matter to hold them there. It was not an unusual thing for a hundred head of ponies to be stolen from an Indian camp in one night, and horses belonging to officers and picketed near their quarters, were stolen at midday. Before the year was out, the energetic measures taken by MACKENZIE produced a complete change in that condition of affairs.

After CUSTER was killed in 1876, General MACKENZIE was ordered with six troops of his regiment to Camp Robinson, Nebraska, and on arrival was assigned to the command of the District of the Black Hills, which placed under his orders the Indians at Red Cloud and Spotted Tail Agencies. As RED CLOUD had shown a disposition to ignore his authority, and failed to obey the instructions to move his camp close to the agency, he was awakened one morning by the troops, who had ridden forty miles during the night and surrounded his camp. He was required to surrender his arms and

horses, and the latter were taken away and sold, while he was deposed by General CROOK from his position of authority in his tribe.

From November 1 to December 31, 1876, MACKENZIE commanded the cavalry force of the Powder River expedition under General CROOK. On the morning of November 25th, after a night march the cavalry surprised a hostile camp in the Big Horn Mountains, destroyed 173 lodges, captured 600 ponies, and killed and wounded probably 100 Indians. MACKENZIE's loss was one officer and six men killed and twenty-five wounded.

In May, 1877, he was ordered back to Fort Sill, where he remained until winter, when he was transferred to Texas with headquarters at Fort Clark, and placed in the command of the District of the Nueces. He crossed the Rio Grande with a large force in June, 1878, intending to operate against raiding Indians and cattle thieves, but the expedition failed owing to the illness of a guide and the failure to find water. While leisurely returning to the north side of the Rio Grande, Mexican troops appeared in his front, and demanded that he turn around and return to Texas by the route he came. This he refused to do, but notified them that he intended to return by the road to the nearest ford, which was about thirty miles distant, and that as they had formed across that road in his front, he would fight if they attempted to stop him. On his advancing the Mexicans retired, though they hovered about till the third day afterward when he re-crossed the river into Texas. The vigilance of our troops during the summer, and the measures taken by MACKENZIE soon put an end to the border troubles in his district.

In the fall of 1879, after the murder of Agent MEEKER by the Utes, and the death of Major THORNBURGH, General MACKENZIE was ordered from Texas to Fort Garland, Colorado, where he was employed during the winter in preparing an expedition, known as the Fort Garland Column, to proceed in the spring to the Los Pinos Agency on the reservation of the Uncompahgre Utes. The following summer was passed quietly in the vicinity of the agency, and in the fall MACKENZIE was ordered East. While there, the Department of Arkansas was organized, and the President assigned him to its command, placing him on duty according to his brevet rank. In April the department was broken up, when he was again sent to the Los Pinos Agency.

In that year, 1881, after certain formalities had been concluded as agreed in a treaty, the Utes were to surrender their reservation and move to another in Utah. When the time came for them to go, they at first demurred, and then flatly refused. MACKENZIE had

made himself acquainted with their views and disposition, and several months before the time for them to move, saw that their opposition would probably lead them to take this step. The military had no authority to assume control over them until they committed some act of open hostility, and no power to prevent an act of hostility taking place. A refusal to go would merely be a matter between the Indians and the Interior Department, but if they felt strong enough to defy the government to that extent and were not at once taken in hand by the troops, it was extremely probable that they would commence hostilities. MACKENZIE repeatedly represented this danger to his military superiors, and asked for instructions to govern him, but could get no satisfactory answer. The only one he got was that when the Indians refused to move he should refer the matter to Washington, where the case would be laid before the Secretary of the Interior, who would decide what should be done. MACKENZIE replied that when the emergency arose there would be no time to refer to the Secretary of the Interior or to any one else, but that action would have to be taken at once, on the spot, by the officer in command of the troops; that the responsibility for such action would therefore have to be borne by himself, and by himself alone, which placed him in a false position, for if blame should afterwards attach to any one, he would be the one that would have to bear it; but as the responsibility was to be forced upon him, he would assume it and do the best he could. Then, in a spirit of perfect subordination and in order to reduce to a minimum the danger that would result from delaying to exercise military control over a tribe of hot-tempered Indians, while waiting orders from Washington, he hurriedly constructed eighty miles of telegraph line that put him in communication with that city, and had it completed only three days before the Indians were to start. When they finally refused, the agent asked them to wait till he heard what the Secretary of the Interior had to say, to which they consented. The Secretary at once turned them over to the War Department, and the next day when the chiefs and head men came to the agency to get their answer, the agent told them that General MACKENZIE would give it to them, and was waiting to receive them at the cantonment, about four miles distant. Accordingly they went over to see him, about twenty in number, with their arms in their hands, their bows strung and in a very ugly humor. After the talk began, it soon became evident that the Indians were trying to temporize and to avoid committing themselves, proposing all sorts of expedients and compromises, and that they had no intention of moving at

all. At this point MACKENZIE told them that he had no time to waste words; that he was ordered to see that they moved to their new reservation, and he was going to see that they did; that there was no other question under discussion; that it remained with them to decide whether they would go peaceably or by force, and he wanted an answer as to whether they intended to go peaceably, yes or no. He would leave them alone in his office to come to a decision, and when they reached it, if they would send for him he would come to hear it. With that he put on his hat and went to his quarters. The Indians were dumfounded. They were unaccustomed to such summary treatment, and were so impressed by his decision, his coolness, his daring, his strong personality, that in less than ten minutes they sent for him, their air of defiance all gone, and the Ute question in Colorado was settled. It was an emergency, and MACKENZIE had been equal to it. He considered what he did on this occasion as the greatest deed of his life. The scene was intensely dramatic. MACKENZIE, with a few officers, all unarmed and surrounded by about twenty armed and defiant warriors, by his earnestness, by his determined manner, by his bold attitude, by his great force of character, in one moment struck the Indians with awe, and inspired the officers with profound admiration. As he rose to leave the meeting it seemed as if there were no one present but him, and the silence was that of death. There was hardly another man in the army that could have done it. An Indian war, with the loss of many valuable lives and millions of property, was averted.

Before the Utes were out of the country, news was received that there was an outbreak of Apaches in Arizona, and that—which happily was untrue—General CARR and his command had been massacred. General MACKENZIE was at once ordered to Fort Apache, and on his arrival was placed by General SHERMAN in command of all the forces in the field, but he did not see that he could be of any use, and asked to be recalled, which was soon done. He was then sent to Santa Fe to command the District of New Mexico, where he remained till the fall of 1883. In October, 1882, he was promoted to the grade of brigadier-general, and in November, 1883, was placed in command of the Department of Texas. A few weeks afterwards his health gave way, and in March, 1884, he was placed on the retired list for disability contracted in the line of duty.

His career was one of the most brilliant in the annals of the American army. In less than two weeks after joining his volunteer regiment he earned his fourth brevet for gallantry. In less than four months, for gallantry in his next three battles, he was pro-

moted brigadier-general of volunteers; and in the fourth battle won another brevet. He held higher rank during the war than any man in his class, and higher rank than any other officer whose military life began in the second year of the war. When made colonel of the Forty-first Infantry, he was only twenty-six years old, and, except PENNYPACKER, the youngest colonel in the army. In the next three years he converted a regiment of ignorant Southern field hands into an efficient body of troops.

In 1872 his victory over a large band of Indians was followed by comparative peace for a number of months. Called to the Rio Grande frontier in 1873, in less than eight months Indian depredations had practically ceased. After his campaign in 1874, the haunts of the Indians on the Staked Plains were abandoned by them forever. Transferred to the Indian Territory in 1875, when the country was swarming with horse thieves, in six months a horse could be tied and left alone within a day's march of the post, and there it would remain till the wind blew its dust away. In 1876 there was an Indian outbreak in the North, and CUSTER's command was massacred. MACKENZIE must go. In one fight he gave a band of hostiles a more thorough thrashing than any Indians had received during the year, destroyed their camp and left the fugitives without food, clothing or ammunition. They were the first to surrender the next spring, and were followed by the bands of ROMAN NOSSE and CRAZY HORSE. In nine months after his arrival the Indians at Red Cloud and Spotted Tail Agencies were at peace. In 1878 the border troubles again called him to the Rio Grande. In less than eight months the depredations of cattle thieves and marauders ceased and have not been resumed since. In 1879 the Utes in Colorado killed their agent and afterward killed Major THORNBURGH. Whenever there was a formidable outbreak of any kind there was one man relied upon to suppress it. In poor health, physically weak, and suffering intensely, he went with no complaint as to himself but begging some little respite for the hard-worked officers and men of his regiment who had served him so faithfully. After a delay of nearly two years, caused by a policy to which he was opposed, when he was finally allowed to use his own untrammelled judgment, in one sublime moment he averted war, and the Ute question was settled. And now there was an outbreak in Arizona; who could be trusted to quell it but MACKENZIE? There were more troubles there in 1882, and not a hostile Indian was able to set foot within the limits of the District of New Mexico. In 1883 the troubles were renewed and, though his health was rapidly failing,

only one small party succeeded in crossing the boundary line between Arizona and New Mexico. More than twenty years of active life; always equal to any responsibility; always equal to any emergency; always brilliantly successful; without a single failure, and never surpassed.

In his memoirs General GRANT says: "I regarded MACKENZIE as the most promising young officer in the army. Graduating at West Point as he did, during the second year of the war, he had won his way up to the command of a corps before its close. This he did upon his own merit and without influence."

It was upon his own merit, without personal solicitation and without influence, that he was promoted to colonel of volunteers, that General SHERIDAN recommended him for promotion to brigadier general of volunteers, and that General GRANT afterwards gave him a division of cavalry. And in various ways General GRANT afterward showed great faith in his military capacity. His influence went far toward securing MACKENZIE his colonelcy in the line of the army. When President he transferred him to a cavalry regiment, and in the critical condition of affairs following the Presidential election in 1876, when it seemed that the necessity for using troops might arise, General GRANT selected him out of the whole army and ordered him, then in the field in the Powder River expedition, to proceed to Washington to take command of all the forces that might be collected at the National Capital. And as a vacancy in the list of brigadier-generals was about to take place in 1882, it was General GRANT who finally influenced President ARTHUR to confer the promotion upon MACKENZIE, by going to the President and asking him to do this as a deserved reward for many years of active, gallant and most distinguished service, as a matter of simple justice, and as a personal favor to himself.

In 1873 the exposure incident to so much field service on the frontier brought on an attack of inflammatory rheumatism that compelled him to take a long sick leave, and impaired his health ever afterward. During the remainder of his active life there was hardly a day that he did not suffer. In 1875, at Fort Sill, a horse starting suddenly caused him to be thrown on his head from a wagon. He was in a half stupor for two or three days, and it has since been learned that his mind was not entirely clear for several months. In seeking the source of the disease that caused his retirement and resulted in his death, the physicians attached much weight to this accident, and to the sunstroke received in his childhood. His continual field service for twenty years, involving many

privations, hardships and exposures, was alone sufficient to break down the strongest constitution. But when we consider the extraordinary amount of bodily and mental labor accomplished by him, his nervous disposition, his incessant care and anxiety always to do his full duty, and the great strain upon a most conscientious mind, prolonged for many years, of responsibility of large and important commands in dangerous service, we can understand how latent weakness of the brain tissues, caused by past injury, was almost certain to be developed; such is the explanation of his malady.

He lies buried in the beautiful cemetery at West Point. His remains were followed to the grave by a large concourse of friends and relatives. Interred with the honors of war, his last resting place is beside the graves of BUFORD, SYKES, KILPATRICK, and other distinguished officers of the army.

Braver than a lion, yet sensitive and gentle as a woman—uncompromising, determined and just, yet kind, generous, and deeply sympathetic with humanity in every walk of life—imperious, impetuous and dashing, yet modest, diffident and simple—he was chivalrous, warm, loyal and pure, without fear and without reproach, with a great mind and a great soul, a grand soldier, a refined gentleman, and an exalted type of that noblest work of God, an honest man. The example of such a life can never be lost in death.

MILITARY POLICY AND INSTITUTIONS.

BY LIEUTENANT JOSEPH T. DICKMAN, THIRD CAVALRY.

MAN is a selfish and destructive animal. His natural propensities are kept within bounds by civilization and laws resulting from ages of experience. The soldier, in addition thereto, is controlled by discipline which seeks to inculcate in time of peace those habits of obedience which enable his officers in time of war to preserve order and protect the persons and property of non-combatants. But when men find themselves in regions inhabited only by savages, or when they are carried away by religious frenzy or fanaticism, or when the bonds of discipline—provided any existed at the beginning—have in the course of a war become so loose as to cause practically no restraint, then the inherited passions of mankind are only too prone to resume their sway in full vigor.

Nations are but aggregations of individuals, and as long as human nature remains unchanged we must expect to see masses of men impelled by the same motives that now control the conduct of individuals.

Fortunately the desires of an irresponsible majority are not always heeded. The government can in many cases avert war; and in republics, by the time the will of the people is expressed through an election, or an assembly of the representatives, the whole situation may have changed. In nations having the seat of government in a city of such preponderating size, wealth and influence as to control the affairs of the country, a united and aggressive public opinion may indeed compel a declaration of war.

On the other hand, wars now demand such tremendous sacrifices in blood and treasure that no government, not even a powerful monarchy, will be likely to engage in such a conflict for unimportant reasons, such as personal hatred or desire for conquest. There is a vast difference between the bands of mercenaries of the time of *FREDERICK THE GREAT* and the "Nation in Arms" of to-day.

The more autocratic a government is, the more power it will have to avert war. It is said of the late Emperor of Russia that he was the conservator of the peace of Europe. However, the prospects of universal peace, or even of frequent cases of arbitration between the strong and the weak, may be considered as remote.

The law, for the good of the whole, deprives the individual of the right to personally redress his grievances, real or fancied; yet there remain many cases in which he would incur but little, if any, risk of penalty for destroying his fellow-being. As soon as two individuals have a serious dispute they unconsciously adopt a policy towards each other; not seldom they consider it good policy to arm themselves, in violation of law.

In fact, the fear that physical inequality may have been fully compensated for by superiority of armament and skill in the use of weapons, has often inspired a wholesome restraint—perhaps more so than fear of the penalties of the law. And in communities where the law is not fully established, all men find it a safe policy to go armed.

Nations have no law restraining them in the matter of armament and preparation for a conflict, but are guided solely by questions of expediency and considerations of expense. Accordingly, all nations have more or less of an army, with all that the term implies, and all have a military policy. Owing to difference of circumstances, these vary greatly in their scope. In most cases the policy is simply self-defense—the preservation of integrity of territory. Some may be influenced by the spirit of revenge and the prospect of ultimate recovery of lost provinces; or, it may be the policy of a nation to acquire suitable territory whenever possible, as an aid in controlling the oceans through a powerful navy. We also know of a nation which considers that its manifest destiny is to secure a port open all the year, and of another which strives to be in such a state of preparation as to be able to concentrate its army at once, on any of its frontiers. The United States has a territory so vast, and is so much isolated from other powerful nations, that armed conflict seems a remote contingency. Its invariable system has been to avoid entangling alliances. Its military policy—if its course of action deserves the dignity of this term—therefore places reliance on troops raised as the emergency may require, and keeps a standing army only of sufficient size to serve as a model, to keep alive military traditions and to furnish some educated officers.

But for the necessity of a force to fight savage tribes of Indians and to support the general government in its powers of internal

police, the standing army would, in the long intervals of peace, have been considerably smaller, or perhaps have ceased to exist entirely, as has been more than once proposed.

A military policy may be defined as a system or scheme of management of the military resources of a country with reference to a possible conflict with the forces of an enemy.

The general term "military policy," in its widest acceptance, embraces all preparations made and considerations entertained to meet the contingency of war, except those relating to diplomacy and strategy.

In this class JOMINI places "the passions of the nation or nations to be fought; their immediate means and their reserves; their financial resources; the attachment they bear to their government and their institutions; the character of their executive; the character and military abilities of the commanders of their armies; the influence of cabinet councils and councils of war at the capital upon the operations; the system of war in favor with their staff; the established force of the state and its armament; the military geography and statistics of states that may be invaded; and finally the resources and obstacles of every kind to be met with; all of which are included neither in diplomacy nor in strategy."

The government should neglect nothing in obtaining a knowledge of these details, for it is indispensable to take them into consideration in the preparation of plans.

The term may be also applied to a consideration of our own military system and institutions, a thorough knowledge of which should of course precede study of foreign institutions. They will depend more or less upon:

1st. Our geographical position with regard to possible or probable belligerents.

2d. Our form of government and the genius of our political institutions.

Military Statistics and Geography.—By military statistics we understand the most thorough knowledge possible concerning the elements of power and resources of other nations as well as our own.

Military geography comprises the geographical and strategical description and consideration of the possible theaters of war, with all the obstacles, natural or artificial, to be encountered, and the examination of the prominent decisive points.

A large part of the information obtained is of a secret character and is made known to very few persons; the same may be

said of the plans based thereon. Other matters, such as descriptions of the enemy's uniform and equipment, and maps of the theater of operations, are published for the use of the whole army before, or just after, the outbreak of hostilities.

Nothing could indicate more clearly the importance attached to these subjects than the fact that certain sections of the general staffs of all important armies are charged with the duty of collecting, arranging, and discussing information under the two heads just named.

The general staff of the German army, which has served as a model for all the others, is organized as follows:

(a) A central office or cabinet of the chief of the general staff. Attached to this office there is a chancery and an administrative commission.

(b) Four sections of the general staff in charge of information from various countries, including Germany itself, as follows:

Division No. 1.—Sweden, Norway, Denmark, Russia, Austria-Hungary, Roumania, Serbia, Bulgaria, Montenegro, Greece, The Ottoman Empire and Russian Asia.

Division No. 2.—Germany.

Division No. 3.—Great Britain, France, Italy, Holland, Belgium, Switzerland, Spain, Portugal, America and Asia. (Russian possessions excepted.)

Division No. 4.—Fortifications and defensive works in Germany and throughout the world.

To these four sections there are attached:

1. A special bureau called "the bureau of information" whose duty it is to collect data concerning the organization of foreign armies (the press, literature and other sources) and to communicate them to the sections concerned.

2. A railway division, to which belong:

(a) Six military railway commissioners.

(b) The line commissions, at present eighteen in number, as follows: Fourteen for Prussia, one for Saxony, one for Württemberg, two for Bavaria.

3. An historical section, with library and archives.

4. A section of statistics and geography.

5. A general map department embracing certain bureaus such as accounts, trigonometry, topography, cartography and a depository of maps.

There is also a general supervisory board on geographical work

which is composed of delegates from the different ministries of the realm, and which is presided over by chief of staff of the army.

The mission of this committee is to give a general direction to the preparation and publication of plans and topographical maps conforming to the interests of the general public administrative departments, and at the same time to determine the manner in which the other departments are to assist in the execution of works to be undertaken or continued.

The number of officers in the general staff varies slightly. Last year it was 191, on duty as follows:

General staff at Berlin	59
Military attachés in foreign countries	8
Bavarian staff	9
Staffs of army corps	61
Staffs of divisions	45
Staffs in fortresses	9
Total	191

The amount of reciprocal mis-information existing between enemies has in the past often been remarkable. The Schwarzwald, or Black Forest, which is the designation in general terms of a large portion of the Grand Duchy of Baden, was from its name and traditions supposed to be a wild and difficult country as late as 1796: and Bohemia at a later period was supposed to be a mass of mountains. In each case the reports were far from the truth.

Some of our elder officers could probably give long accounts of the mistaken ideas of the people of different sections of the country with reference to each other, thirty-five years ago. In the "Rebellion Records" complaints may be found about the lack of accurate maps, and the fact that alleged maps, on account of their errors, were worse than none.

It is doubtful whether in our service there ever has been sufficient interest taken in these matters, in spite of the requirements of army regulations. There still are sections of the United States of which there are no maps in existence sufficiently detailed to enable one to march by them. In southern Texas there have been at least four military posts and numerous camps of troops, as well as frequent scouting and field service, for nearly fifty years, all within a radius of 100 miles; yet a reliable map showing roads was not in existence three years ago, and but little improvement has been made since. Only a comparatively small portion of the United States has been mapped so as to show topographical features in detail.

At the beginning of this century topography was in its infancy; the close finds practically all Europe mapped (and the maps published) on a scale of $\frac{1}{100,000}$ or larger.

OTHER CAUSES WHICH EXERCISE AN INFLUENCE UPON THE ISSUE OF A WAR.

The passions of a people form a powerful lever in war. They will generally support their government in a war, right or wrong; yet if they feel that the war is a just one, or if they are defending their firesides, that support will be enthusiastic and the heaviest sacrifices will be cheerfully made. On the other hand, an enemy's people driven to desperation will make the war a bitter, sanguinary and difficult one. It should therefore be the policy of the commander-in-chief and of the government to allay the fears and calm the feelings of the non-combatants of the enemy. They should, if possible, be made to understand that there will be nothing personal in the war unless they themselves make it so.

A general should do everything in his power to enhance the confidence and spirits of his army. The means must vary with the national character. A grandiloquent proclamation might have a fine effect on French or other soldiers of Latin race; but with cold-blooded and critical Teutons the effect would probably be different.

The intelligence and irreverence of the American volunteer would suggest extreme caution in this regard, lest what was intended to be sublime became the subject of ridicule in the camp. It is a question whether enthusiasm is to be preferred to steady, stubborn coolness. Presence of mind is a valuable quality in commanders of troops, and it may well be doubted whether frantic enthusiasm has a beneficial effect on the efficiency of small arms fire.

Respect and affection for the person of the general and confidence in his military ability form important elements of success; the latter quality is indispensable.

Superiority of skill will generally win, if the terms are fairly even. Poor generals sometimes stumble into a success, and a combination of trifling circumstances may defeat the most experienced, skillful and painstaking commander. The exception, however, only proves the rule, and the fortune of war will generally abide with him who provides the greatest number of chances of success. One of the earliest battles of our war furnishes a good example of how inefficiency of subordinate commanders, lack of discipline in the troops, combined with good fortune on the part of the adversary

may defeat an excellent plan. A general who expects to carry out a campaign for a country with a republican form of government and relying almost entirely on militia, needs a great deal of good luck at the beginning, for one defeat may cause him to be deposed from command. Those who are ignorant of the rudiments of the art of war can judge only by results.

Formerly the religious feeling was habitually invoked to assist in securing victory. On the eve of battle solemn services were held, and whole armies, even when they were principally robbers and cut throat hirelings, offered up a prayer to the God of battles. While a religious fervor, coupled with morality and fortitude of character is not to be despised by any means, we hear less of these invocations since the saying of NAPOLEON that the Almighty is on the side of the strongest battalions.

The influence of a cabinet council, or committee on the conduct of the war, is generally injurious to the cause it is intended to benefit. It places the commander-in-chief in an awkward position; numerous persons may be found who are ready to share the credit of victory, but none who are willing to assume part of the responsibility for defeat. The evil ought, however, to correct itself. A general of sufficient character to be fit to command armies will have force enough to insist upon unhampered control, or none at all; and when the burden becomes unbearable he will simply resign his position of responsibility. A high sense of patriotism will impel men, who feel the importance of their influence upon the success of the cause, to rise superior to councils, committees, and the nagging of Congress itself, and to continue the performance of their whole duty to the best of their ability. The American Revolution would probably have collapsed without such a leader. We may search the history of all times in vain for a character whose patience equaled that of WASHINGTON.

All nations, whatever their degree of civilization, recognize to a greater or less extent the necessity of an armed force to protect themselves against external foes or domestic violence. Wars will occur as long as human passions exist; and the integrity of a nation will depend to a great extent upon its military policy and the character of its military institutions.

Military Institutions.—The principal feature in the military policy of a state is the nature of its army and attendant military institutions. JOMINI enumerates twelve essential conditions as concurring in making a perfect army.

1. A good system of recruiting.

There are two methods of raising an army—voluntary enlistment and compulsory levies. The former system was once the rule, but of all the great European powers only England retains it. It is fair to all; the soldier receives satisfactory wages for voluntary service, and the civilian helps to pay the taxes. The character of the men received under this system will depend on the wages paid and the inducements offered for advancement, or for employment under the government after a period of service; and, of course, on the rules and regulations of the recruiting service.

Compulsory service gives a large number of men, and some writers think they are of a better class; in our service it is believed that the recruits selected from applicants for enlistment are above the average, both mentally and physically.

Conscription bears hardest on the middle class of skilled industry and professional men; consequently some system is devised to shorten the term of service for men above the average in intelligence and material means. The relative cost of the two systems depends on the size of the army. For a small army, voluntary enlistment is probably the cheaper method; but when high wages are necessary, or when large forces are required, conscription is less expensive, and may have to be resorted to as a matter of necessity.

2. A good organization.

It goes without saying that all nations feeling the strain of the struggle for survival will adopt for their armies the best organization devised up to date; others, like the United States, may retain obsolete arrangements until a defeat emphasizes the lessons of the defeats of others.

3. A well organized system of national reserves.

By the treaty of Tilsit, signed July 9, 1807, between the Emperors ALEXANDER and NAPOLEON, Prussia was restricted to a standing army of 43,000 men. The object of course was to prevent this nation from again becoming a military power of the first magnitude. It was at this time that General SCHARNHORST devised the "*Krümpersystem*," or short term system, which, while complying with the letter of the treaty, furnished a large number of instructed soldiers. It consisted simply in discharging men as soon as they were considered instructed, and filling their places with recruits. This was the foundation of the present system of all the armies of Continental Europe.

By the terms of the law of November 9, 1867, modified by that of February 11, 1888, and of August 3, 1893, military service is obligatory for every German between seventeen and forty-five years

of age. In principal there is no kind of complete exemption from this service.

In the ordinary course the young Germans are called up in the year during which they complete twenty years of age.

The class is designated by the number of the year of the call. The number of young men registered in the different countries of the empire as arriving at their twenty-first year is about 475,000 per annum, out of a total population of forty-nine and one-half millions; but, about 45,000 have disappeared, principally through emigration. This reduces the annual contingent to 430,000.

Of this number about two-thirds are put back for another year or two because their constitution is not yet sufficiently developed to enable the inspectors to pass definitely on their physical aptitude. These are of course replaced by those who have been turned back in previous years so that the number 430,000 is composed of young men of twenty, twenty-one and twenty-two years of age.

Of this number only 32,000 are rejected as being unsuitable for any employment whatever; 13,000 are excused from active service in time of peace for family reasons (only support of widows or aged parents); 46,000 are reserved for the navy; 16,000 enter the ranks in a different way (one year volunteers and others); and 13,000 are excluded for moral reasons.

The 363,000 remaining are classified in the order of physical fitness, and from these they take, beginning at the top of the list, the number fixed for the annual contingent, increased by the *Nach-Ersatz* (subsequent supply). In 1893 the number incorporated in the active army was 229,000 for the contingent and 12,000 for the *Nach-Ersatz*, total 241,000, which is the number calculated by the Ministry of War as necessary to keep up the authorized total of the army.

These recruits enter the army the same year they are called; for the cavalry early in October, and for the other services about the 15th of that month.

The remaining 122,000 who were found fit for the service but not incorporated in the active army are placed in the *Ersatz Reserve* (recruiting reserve) the operation of which will be explained further on.

The cavalry and light artillery serve three years with the colors, the other arms only two.

After this service all enter the reserve, where they remain five and one-half years and then enter the *landwehr* (first levy).

The cavalry and light artillery have three years in the first levy

of the landwehr, and the other arms five. After ten and one-half and twelve and one-half years respectively the men pass into the second levy of the landwehr, and there they remain until the 31st of March of the year in which they complete thirty-nine years of age. For the remaining six years they are in the second levy of the landsturm.

As to the *Nach-Ersatz* previously mentioned, the law permits the taking of five to six per cent. in excess of the contingent, for the purpose of supplying losses. The recruits begin in October and drill through the winter; on account of sickness, desertion, death, punishment and other causes, there are certain losses by the time spring opens. The *Nach-Ersatz* having been drilled at the same time in the depot battalions these losses are easily repaired, and on the 1st of April all the regiments are full to the legal limit.

After leaving the active army the German soldier is still liable to certain periods of drill and exercises, which are established by law. While in the reserve he may be recalled twice, for periods not to exceed eight weeks each. During his stay in the landwehr (first levy) he can likewise be called out twice, but only for periods of two weeks. In practice both these classes serve only thirteen days at a time, which makes the total service after leaving the active army fifty-two days.

Now, out of the 363,000, after taking the contingent of 229,000 and the *Nach-Ersatz* of 12,000, there remained 122,000 men fit for service. Part of this reserve undergoes training during three periods of twenty weeks in all. They stay in this class twelve years and six months and may be called to replace losses in war. After twelve years and six months the instructed men pass into the second levy of the landwehr; the others go into the first levy of the landsturm, which also comprises all young men between seventeen and twenty years of age.

After thirty-nine and up to forty five years of age all Germans belong to the second levy of the landsturm. During this period no military service of any kind is required in time of peace.

In calculating the number of men remaining in the different classes, four per cent. is deducted for the first year, and three per cent. for each of the succeeding years.

The system of recruiting now in force will ultimately give Germany about 8,000,000 men fit for military service; and from now on they count upon more than 3,000,000 instructed soldiers, as shown in the following summary:

ACTIVE ARMY:

Officers and functionaries	29,089
Non-commissioned officers and classes of 1891, 1892 and 1893	569,754

RESERVE:

Five classes 1887-91	782,036
----------------------------	---------

LANDWEHR, first levy:

Five classes, 1882-86	662,927
-----------------------------	---------

LANDWEHR, second levy:

Six classes, 1876-81	656,214
----------------------------	---------

LANDSTURM:

Six classes	530,000
-------------------	---------

RECRUITING RESERVE:

Twelve calls of 15,000	180,000
------------------------------	---------

Total	3,410,020
-------------	-----------

Taking out the one year volunteers, about 9,000 per annum, we have left in round numbers 3,330,000 men, more or less instructed and ready for military service. In time of peace all except the standing army are considered as on furlough (*Beurlaubtenstand*).

4. Good instruction in drill and internal duties as well as those of a campaign.

At the present time the duties of campaign are considered all-important; drill and internal duties are valuable in developing the physique and cultivating discipline, and are thus preparatory to the full instruction of the modern soldier fit for war. The final instruction is given in field exercises and maneuvers simulating as nearly as practicable the actual conditions of a campaign.

5. A strict but not humiliating discipline, and a spirit of subordination and punctuality based on conviction rather than on the formalities of the service.

This will vary greatly with the character of the people and the form of government. Under a monarchy the people grow up with inherited respect for the government and its officials, whereas, in true republics there is less formality, less dignity among the officers of the state, and the sovereign voter is accustomed to a certain amount of familiarity with those depending upon him for tenure of office. The superior intelligence of the independent volunteer will more than counterbalance these slight disadvantages; with a proper system there is no trouble in convincing thinking men that a reasonable discipline is not only necessary for the success of the army as a whole, but essential to the welfare of the individual.

6. A well digested system of rewards suitable to excite emulation.

JOMINI says that three-fourths of the promotion in each grade

should be by seniority, and the other fourth for zeal and merit. In the German army promotion except into the staff is practically all by roster, although they have no law on the subject and the Emperor reserves the privilege of making promotions arbitrarily. This is seldom done, the principal exception being among members of the royal family.

The main objection to promotion for merit lies in favoritism and political influence, which would probably make it unsuitable under our form of government in time of peace.

It is astonishing what an amount of medals, ribbons, orders, brevets, decorations, etc., a body of officials, be they civil or military, can accept without bringing ridicule on the system, as long as these devices continue to mean something. Handled with tact they constitute a powerful influence in raising the spirit of armies. The most valuable rewards are those given immediately after the action, in the presence of the witnesses, on the battlefield itself. This was one of NAPOLEON's favorite methods. The celebration of anniversaries of victory over a foreign foe also helps to maintain military ardor. On the occasion of the twenty-fifth anniversary of the battle of Mars-la-Tour (August 16, 1870) the same regiments were assembled; the French troops were represented by other regiments and the formation of both cavalry forces was reproduced. Again the squadrons advanced to the charge and the spectators were furnished a vivid picture of the bloody battle of twenty-five years ago. After the mimic war, the aged general, von BARBY, still vigorous and with a perfect seat, though retired long ago, reviewed the troops and received once more the salute of the standards. At the banquet in the evening the brigade commander read a telegram from the Emperor, dated on board the imperial yacht *Hohenzollern*, thanking and congratulating the troops and conferring upon their former commander the title of general of cavalry. The martial spirit does not die out very rapidly in a nation where they do things in this style.

8. The special arms of engineering and artillery to be well instructed.

Unless the artillery can hold its own against that of the enemy the army operates at a serious disadvantage.

9. An armament superior if possible to that of the enemy, both as to offensive and defensive arms.

Any serious defect or inferiority in armament is likely to have a bad effect on the morale of troops; it forms an excuse not only for defeat but also for neglect in the performance of duty. The soldier

is apt to believe that he is heavily handicapped and that the struggle is a hopeless one. He is thus defeated before he goes into action.

10. A general staff capable of applying the elements of the science of war, and having an organization calculated to advance the theoretical and practical instruction of its officers.

In the German army the staffs of commanding generals are formed of officers of different categories:

1. Staff officers proper, called in Germany *Generalstabsoffiziere*, or officers of the general staff.

2. Officers of the *Adjutantur*, or adjutants.

3. Orderly officers, or aids-de-camp.

The duties of these officers are clearly defined by the regulations.

1. For general staff officers: All that relates to marches, cantonments, stations and distribution of troops; drills and maneuvers of troops; military bridges; artillery and engineering; armament and defense of fortresses; topography and military reconnaissances of all kinds; and movements and operations of troops in campaign.

2. For adjutants: Orders; garrison duties; reports; personnel of the corps of officers and of the troops; recruiting, reserves, landwehr, landsturm; furloughs, discharges, pensions, etc.

3. The orderly officers are at the disposition of the generals, and even of the staff, and are employed in conveying orders and for special missions and duties of all kinds.

Other affairs such as military justice, administration, and those relating to the health of the army, are in charge of special departments, each with a chief under the immediate authority of the commanding general.

The officers of the general staff are divided as follows: Prussia, 149; Saxony, 11; Bavaria, 24; Wurtemberg, 7.

As a rule the German staff officers are graduates of the war schools at Berlin or Munich.

Admission to the school at Berlin follows after an examination, which is open to officers of all the arms after at least three years' service as an officer.

The annual admission is about one hundred, nearly all lieutenants. The course is three years, after which all return to their corps. There is neither examination nor classification of any kind; but from the notes made by instructors during the course the director of the school makes a minute report upon the aptitude, work, etc., of each officer. All these reports are sent to the chief of staff of the

army, who, after examining the papers, selects a certain number for a term of duty with the general staff. This is for about two years, several months of which are with a branch of the service different from that of the student.

This latter period determines the career of these officers. Those who perform satisfactorily the test work given them are classed with the staff and become captains as vacancies occur. They take the uniform of the staff and are attached to a division, a corps, or to the general staff. The others are sent back, generally to a different regiment.

From the other graduates of the war school officers of the *Adjutantur* are ordinarily selected in the same way; non-graduates may also be selected for this duty. These officers still belong to their regiments; they are simply detached and do not change their uniforms. There are about four hundred in this class.

The aids-de-camp are selected like ours, only there are not so many of them, relatively. In all about eight hundred officers are on staff duty.

The officers of the general staff may be detailed for duty with troops or elsewhere according to the orders of the Emperor.

A large part of the staff duties of the army are performed by line officers, who, when they return to their regiments, carry back with them the experience acquired in the staff; at the same time the staff remains in touch with the line.

10. A good system for the commissariat, hospitals and general administration.

11. A good system of assignment to command and of directing the principal operations of war.

12. Exciting and keeping alive the military spirit of the people.

To the twelve conditions as stated by JOMINI several minor ones might now be added, such as: 1, A good system of clothing and equipment; 2, Railroad troops and organization of railroad transport; 3, Signal corps and aeronauts.

Railroads and magnetic telegraph lines were not known in NAPOLEON's time, and aeronautics had not been well developed. Other improvements are forging to the front, and will be adopted as soon as their utility is fully established.

In conclusion, a good military policy will look carefully after the discipline of the army and the military spirit of the people, as well as after what Sir WALTER RALPH called the sinews of war, namely, men, munition and money.

THE MILITARY GEOGRAPHY OF MEXICO.

BY LIEUTENANT A. L. WILLS, FIRST CAVALRY

MEXICO extends from the United States to Central America, and from the Gulf of Mexico and the Caribbean Sea to the Pacific Ocean. In extreme limits it embraces about thirty degrees of longitude and eighteen degrees of latitude. Its superficial area is about 744,000 square miles, equal to about two and three-fourths times that of the State of Texas. The length of the northern frontier line is about 1,900 miles, of which 1,000 miles is formed by the Rio Grande River; that of the eastern coast line is about 1,600 miles. The Pacific coast line, including that of the Gulf of California, is about 4,500 miles in length; the southern boundary is about 500 miles.

Mexico's greatest length is about 2,000 miles; her greatest breadth is about 750 miles. At the Isthmus of Tehuantepec her width is only 140 miles. Geographically, Mexico, lying between two great oceans, is highly favored.

TOPOGRAPHY.

The Cordillera of the Andes, as the mountains of Mexico are called, enter Mexican territory from Guatemala, and, to about latitude 18° extend east and west, almost midway between the two oceans. From this line the mountains follow, in a general way, both the eastern and western coasts. Between these branch chains lies a great central table-land, called the Plateau of Anahuac, embracing nearly three-fifths of the entire area of Mexico. The highest portion of the plateau is in the vicinity of the City of Mexico, south and east, where it culminates in four volcanic peaks, ranging in height from 15,271 to 17,720 feet. From this locality, where the general elevation is more than 7,600 feet, the plateau has a general inclination toward the northwest, gradually subsiding until the

United States is reached. Low mountain ranges divide the great plateau into smaller ones, the general but gradual northerly tilt being shown by the altitudes of Mexico City, Durango, Chihuahua and Paso del Norte, on the frontier, which are respectively 7,600, 6,630, 4,600 and 3,800 feet. There is no point of the great plateau from which mountains may not be seen in clear weather; they are all the same in appearance—abrupt, bleak and without vegetation. No great valleys traverse the plateau, nor are there many small ones. By avoiding the mountains, according to authority, "there is a good natural carriage road from Santa Fe, N. M., to the City of Mexico, a distance of 1,400 miles, with only slight variations from the level." Between Saltillo and San Luis Potosi, a distance of 240 miles, the plateau is a treeless region, containing but little water, and is practically a desert; the greater part of the remainder is a habitable region, largely under cultivation. In 1883, Captain Doast, Fourth Cavalry, made a horseback journey through Mexico; he gives the following general description of the plateau: "Some fifty or sixty miles from Laredo, Texas, traveling by rail to Monterey, a long, flat-topped hill is seen some miles to the right, extending in the distance nearly parallel to the road. After traveling fifteen or twenty miles further, this hill is higher and broken, its top has become serrated and jagged, and it finally merges into a range of mountains. Other mountains then appear to the left, and all increase in height towards Monterey. From thence southward to every place visited on the Mexican plateau, mountains were always in sight, either near or distant, and generally in every direction. Saltillo is regarded as located at a point on the northern edge of the Mexican table land. Starting from it and proceeding southward, the traveler at once enters a chain of mountains extending in an easterly and westerly direction and more than forty miles in breadth. After passing through it he comes upon a broad and almost desert plain, flanked by distant mountains, which produces scarcely anything besides a few stunted bushes and cacti, is sparsely populated, wholly uncultivated, poorly watered, and extends without change one hundred miles further to the south. He then meets a few towns, some evidences of cultivation, and near Charcas—a town more than two hundred miles from Saltillo—the first stream of running water. The plain has become more or less hilly and broken, and both population and cultivation increase perceptibly as he nears San Luis Potosi. The country to the west of that city, however, as far as Zacatecas, is barren and almost uninhabited. Further south lie more fertile, though partly sterile plains and valleys, cultivated by

irrigation to as great an extent as the water supply will permit, and separated from each other by intervening mountains. This alternation of plains and valleys with mountains extends southward to the City of Mexico, and eastward from thence to the edge of the plateau. Except where the soil is tilled, nearly all this great expanse of country is bare, and the whole is almost treeless and but scantily supplied with water. * * * As far south as the State of Guanajuato the mountains are bleak, dry, and desolate in appearance; but there, and farther south, a partial covering of bushes, stunted live oak, or occasionally pine, is not unusual." Scarcity of water and fuel will be the greatest obstacles to military operations on the great plateau, as they have been to the development of its resources.

The mountains of the western coast, the Sierra Madre of the Pacific, are continuous, extending from Oajaca to Arizona, at a mean elevation of over 10,000 feet. The mountains of the eastern coast, the Sierra Madres of Nuevo Leon and Tamaulipas, have a mean elevation of about 6,000 feet; they gradually subside toward the north, and finally merge into the great plains of the Rio Grande River. The eastern range slopes abruptly to the sea, while the ranges of the western and southern coasts fall through a series of well marked terraces to the Pacific.

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

The territory of Lower California, comprising the peninsula of that name, has an area of 61,544 square miles. It is about 750 miles long and from 30 to 150 miles broad. The peninsula is traversed throughout its length by a continuation of the Sierra Nevada Mountains of California, which range from 1,000 to 5,000 feet high, and are bare of verdure. The soil of the peninsula is wonderfully fertile where there is water, but the greater part of it, being subject to excessive droughts, is but thinly settled. It is credited with a population of less than 30,000. Separated from Mexico proper by the great Gulf of California and the Colorado River, and its resources being comparatively small, the importance of Lower California in war between the United States and Mexico would be confined probably to some point on its coast being taken as a secondary base in operations against the ports on the west coast of the main

country; the original base being some point on the coast of California, probably San Diego, or on the Colorado River below Yuma, Arizona.

HARBORS.

The seaboard of Mexico is little varied either by deep inlets, bold headlands, broad estuaries, or large islands. On the west side is the Gulf of California, the open Bay of Tehautepec, and the smaller inlets of Acapulca and San Blas; the two last named are two of the finest harbors in the world, and almost the only safe ones in Mexico. The coast of the Gulf of Mexico is low, flat and sandy, and is without one good harbor. Those of Progreso, Campeachey, Tabasco, Vera Cruz, Tuxpan and Tampico, (the last three being of the greatest strategic importance) are mere open roadsteads, affording little or no protection from the "northers," which frequently blow, with great violence, along this coast. Vessels lying in these harbors are liable to be wrecked during these storms and often are compelled to put to sea to avoid their dangers. The best anchorage on this coast appears to be at Anton Lizardo, south of Vera Cruz, where the fleet conveying General Scott's army assembled before disembarking the troops to attack that city. The harbors on the Caribbean Sea are excellent, but owing to their distance from what must necessarily be the main objective in the event of war they have but little strategic value.

RIVERS AND LAKES.

Mexico is imperfectly watered. Its rivers as a rule are small and unimportant, and owing to the peculiar topography of the country, but a small number are navigable, and then but for a short distance. On the north the Rio Grande is navigable for large vessels but a few miles above its port, Matamoras. The Panuca, 290 miles long, and the Coatzacoalcas, 112 miles, are the principal rivers of the eastern coast; the former is navigable for small vessels for over 100 miles, and the latter, were it not for a bar at its mouth, might be navigated for a considerable distance by large vessels. The Grijalva, or Tabasco River, rises in Guatemala, flows through the two States of Chiapas and Tabasco, and empties into the Gulf of Mexico through two mouths; it is navigable for small vessels for about one-half its course. The longest rivers of the Pacific Coast are the Santiago, 540 miles long, and the Balsas, 420 miles; both of these rivers rise in the State of Mexico, the former entering the sea at the small but good port of Zacatula, and the latter at San Blas. Neither are navigable

on account of rapids; nor are any of the other rivers flowing into the Gulf of California, except the Colorado, which is open to the largest vessels from its mouth to the frontier of the United States.

Mexico has fifty-nine lakes. Most of them are shallow lagoons, the remains of what were once large basins of water. Like the rivers, they are all small and of little value for the purpose of commerce or communication. The most considerable one is Lake Chapalla, in the State of Jalisco, which is about seventy miles in length and from ten to twenty in width. The Santiago River flows through this lake. The valley of Mexico, about forty-two miles long by thirty wide, contains six lakes, which were originally one large lagoon. Their total area is about fifty-eight square miles. The largest is Lake Texcoco, directly east of the city. It, and the three lakes to the north, are salt, while the two remaining ones, about ten miles southeast of the city, are fresh. Many of the so-called lakes along the Gulf Coast, such as the Laguna Madre, Laguna de Terminos, etc., are really arms from the sea.

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

CLIMATE.

Intersected about midway by the Tropic of Cancer, and stretching across seventeen parallels of latitude, Mexico necessarily enjoys a great diversity of climate. The four seasons are more or less distinctly marked in the northern portion, but in the central and southern portions there are but two seasons—summer, or the rainy season, which lasts from May to October, and winter, or the dry season, comprising the remainder of the year. The heaviest rains fall in August and September. With reference to temperature, Mexico, in common with all the countries of Spanish America, is divided into three great terraces: The coast regions, or *tierras calientes* (hot lands); the mountain slopes, or *terras templadas* (temperate lands); and the elevated plateaus, or *tierras frias* (cold lands).

The Hot Lands include the region along each coast lying between the sea and an elevation of 2,500 feet. In these lands the usual temperature ranges from 70° to 85° F.; but near the sea level, consequently at all seaports, the summer temperature frequently rises higher than 100 degrees; during the winter months the average temperature is only a few degrees lower than in the summer.

The Temperate Lands lie between 2,500 and 5,000 feet above the

sea, and here the ordinary daily temperature ranges between 65° and 70° F. throughout the year.

The Cold Regions include the portions of the surface higher than 5,000, and this division embraces more than three-fourths the area of Mexico. The extremes of 45° and 80° F. are seldom exceeded below 8,000 feet altitude. The climate is cold as compared with that of the coast country; but not as compared with that of any portion of the United States, except portions of Florida and the Gulf Coast.

The healthfulness of the different regions of Mexico depends upon their climate, the most healthy being those enjoying a dry climate, whether hot, temperate or cold, and the most unhealthy being those in which humidity prevails. The climate of the Temperate Lands is healthful and pleasant, and that of the Cold Regions is salubrious below the elevation of 8,000 feet; but the climate of the Hot Lands is one of the worst and most unhealthful on the face of the earth. Yellow fever and black vomit are the great scourges of the coast regions. They usually set in at Vera Cruz about the middle of May and last until November. At Campeachy, Tampico and Acapulco the season often passes without a single case, but no such respite is ever enjoyed by Vera Cruz, Merida, or any of the coast towns of Yucatan, at all of which the mortality is generally great. Mexico has, therefore, every variety of climate, from tropical heat to cold, but it should be noted that the climate of any particular place will depend far more on its elevation than on its latitude.

FOOD PRODUCTS.

The soil of Mexico is for the most part extremely fertile. The comparatively few exceptions are nearly all attributable to insufficient irrigation, due to lack of water. In the Hot Lands the entire surface, excepting certain small areas of sand, is covered with a very luxuriant vegetation. Oranges, bananas, rice, hemp, and all kinds of tropical plants are found in abundance. In the Temperate Lands coffee, sugar, cotton, tobacco, and other plants, are cultivated. In the Cold Regions wheat, corn, barley, and other products of temperate latitudes, are found. The maguey, whose fruit is edible and which supplies the famous "pulque," the national beverage of Mexicans, is, however, the principal object of cultivation. Wheat is cultivated with some success in portions of all but five of the Mexican States, but corn, frijoles, or brown beans, and chile colorado, constitute the subsistence of nine-tenths of the population, and are exten-

sively produced in every State. On the plateau north of the twentieth parallel crops depend upon irrigation; south of this, the rain fall is often sufficient, but cannot always be depended upon.

Two crops of either corn or wheat are grown on the same ground every year in the various parts of Mexico, and in the States of Vera Cruz and Tabasco on the Gulf Coast, Mexico on the plateau, and in Jalisco, Guerrero and Oaxaca on the Pacific Coast, three crops of corn are cultivated on the same ground in a single year. The yield per acre per annum is considerably greater than in the United States. All this is done with the simplest farming implements.

The following items will afford an idea of the annual Mexican food production:

Corn	200,000,000 bushels.
Wheat	12,000,000 bushels.
Barley	10,000,000 bushels.
Potatoes	4,000,000 bushels.
Frijoles	508,000,000 pounds.
Sugar	158,000,000 pounds.
Rice	33,000,000 pounds.
Coffee	17,500,000 pounds.

The annual value of the food crops of Mexico is estimated at \$60,000,000, and of all agricultural productions at \$110,000,000. A large portion of the area under cultivation gives indifferent results, but the remainder is equal in fertility to any country in the world. Mexico has been described as composed of regions of great fertility, separated by mountain ranges, or by tracts of very unproductive country, which, in many cases, are simply deserts. The portions of the country not suitable for agricultural purposes are, in general, more or less suitable for grazing, and support large numbers of horses, cattle, sheep and goats. The rivers and lakes abound in excellent fish, as do also the waters of the coasts. Mexico is also rich in precious metals, which are extensively mined.

GOVERNMENT.

Mexico is a federative republic, consisting of twenty-seven States, a Federal District and two Territories, each of which has a right to manage its own local affairs, while the whole are bound together in one body politic by fundamental and constitutional laws. The powers of the Federal Government are divided into three branches, the legislative, executive and judicial. The legislative power is vested in a Congress consisting of a House of Representatives and a Senate, and the executive in a President. Representatives and

Senators are elected by the suffrage of all respectable male adults, and hold office for two years. The President is elected by electors popularly chosen, as in our own country and holds office for four years. The administration is carried on under the direction of the President and a Cabinet of seven secretaries.

Each separate State has its own internal constitution, government and laws, with its governor and legislature popularly elected.

DISTRIBUTION OF POPULATION.

In 1892 the estimated population of Mexico was 11,885,607, of which nineteen per cent. are of pure, or nearly pure, white race, forty-three per cent. of mixed race, and thirty-eight per cent. of Indian race. The great mass of the people are extremely poor and densely ignorant, the natural result of their treatment by the Spanish conquerors and their successors; but under the enlightened policy pursued by the government of the republic, a great change is in progress, and education is now compulsory. The Indian population has been very little affected by nearly four centuries of contact with the white race. They are to-day very similar to their Aztec forefathers in manners, customs and mode of life. They follow the same pursuits and use exactly the same implements as did the Aztecs.

Nearly the whole of the Mexican population live in cities, towns or villages. Detached houses are rarely seen; travelers report riding from town to town, in the most populated districts, without observing a house. Except in the Hot Lands the houses are usually built of adobe, and are very strong for defense, and almost impossible to set on fire.

The chief cities are the capital, Mexico, with a population of about 326,000; Guadalajara, 95,000; Puebla, 78,000; San Luis Potosi, 62,000; Guanajuato, 52,000; Leon, 47,000; Monterey, 41,000; Aguas Calientes, 32,000; Merida, 32,000; Vera Cruz, 29,000 (about four-fifths of the exchanges of Mexico pass through this port); Colima, 25,000; Pachuca, 25,000; Jalapa, 18,000.

For convenience in considering the military geography of Mexico, the States of the republic are divided into three groups. The northern groups comprising the States of Sonora, Chihuahua, Coahuila, Nuevo Leon, Tamaulipas, Sinaloa, Durango, and the Territory of Lower California; the southeastern group comprising Yucatan, Campeachey, Tabasco, and Chiapas; and the central group comprising all the remaining States and the Federal District.

Of these groups, the northern, containing more than half the area of Mexico, contains less than one-ninth the population; while the central group, containing less than one-third the total area, contains more than four-fifths of the population. This central region must therefore be regarded as "the heart of the country," not only in geographical position, but also in population; it is also in wealth, productions, manufactures, in fact, in everything but the grazing and mining interests; its boundaries, approximately, are two east and west lines, the one drawn through San Luis Potosi on the north and the other through Orizaba on the south.

COMMUNICATIONS.

Mexico is lacking in good roads. From the City of Mexico roads radiate to the different cities of the central plateau, but from this plateau, communication with the coast, with a few exceptions, is limited to bridle paths. There is a carriage road from Saltillo to Monterey and Matamoras; from San Luis Potosi, to Tula and Tampico; and from the City of Mexico to Vera Cruz, Tehuantepec, Acapulco and San Blas; but the Sierra Madre Mountains of the Pacific are crossed by no road from Guadalajara to Arizona. Travel from the State of Sonora to the capital must be by sea to one of the Pacific ports, or by way of El Paso in the United States. The roads of the central plateau, poor under the most favorable conditions of weather, are quagmires during the rainy season; those leading to the coast are steep, rough and always difficult to travel. The government has of late years been engaged in improving its highways, but much yet remains to be accomplished.

In railroad communications the country is much better off. It is now pretty well intersected by railways, and their construction is being pushed forward rapidly. In a short time Mexico will possess a system of railroads that will not only develop her great natural wealth, but will greatly increase her power of defense. At present her railway mileage is over 7,000 miles.

The principal lines are: The Mexican Central, from El Paso, Texas, to the City of Mexico, 1,225 miles, with branches; Irapuato to Guadalajara, 160 miles, and under construction to San Blas; Aguas Calientes to Tampico, 415 miles.

The Mexican International, from Eagle Pass, Texas, to Torreon Junction, 383 miles, where it connects with the Mexican Central. Its branches are: Torreon to Durango, 157 miles; Trevino to Tampico, 387 miles.

The Mexican National (narrow gauge), from Laredo, Texas, to Mexico City, 840 miles. Branches: Mexico to El Salto, 19 miles; Apambaro to Patzcuaro, 96 miles. (This branch is being constructed to Manzanillo, 440 miles); Matamoras to San Miguel, 75 miles.

The Mexican Railroad, from Vera Cruz to Mexico, 263 miles, with a branch to Puebla, 29 miles.

The Mexican Inter-Oceanic (narrow gauge), from Vera Cruz to Mexico, with branches from Mexico to Jojutla, 122 miles, and from Puebla to Chialuita, 64 miles. This last branch is being continued to Acapulco, 200 miles.

The Mexican Southern, from Puebla through Oaxaca, is now in operation to Tehauntepec.

The Tehauntepec Railroad, from Coatzacoalcos to Tehauntepec, 140 miles.

The Sinaloa & Durango Railroad, from Altata to Culiacan, 60 miles, is to be continued to Durango.

The Sonora Railroad, from Nogales, Arizona, to Guymas, 265 miles.

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

A glance at the direction of these roads will show how greatly Mexico is favored by them, with the advantage of interior lines for her forces.

Still more developed is the telegraph system of Mexico, which is now extended to all the State capitals and principal cities, and is connected with the systems of the United States. In 1893, there were 37,800 miles of telegraph lines in operation.

MILITARY STRENGTH.

The total land fighting strength of Mexico in 1893 was reported to be 131,523 infantry, 25,790 dragoons, and 3,650 artillery. As every Mexican capable of bearing arms is liable for military service from his twentieth to fiftieth year, there would be a general reserve of over one-half million men to draw on in case of necessity.

Her naval strength consists of one 7-knot gunboat, two despatch vessels, two unarmored gun vessels, one transport, one steel training ship, five first-class torpedo boats and one police steamer. The fleet is manned by eighty-four officers and 416 men. In 1890 the mercantile marine, of vessels over 100 tons, comprised sixteen steamers and sixteen sailing vessels. Her shipping also includes many smaller vessels engaged in the coasting trade.

The forces immediately available in case of war are about 2,000 officers and 36,000 men, as follows:

1. The regular army: Twenty-nine battalions of infantry, thirteen regiments of dragoons, four battalions of artillery, engineers, etc. Total, 1,700 officers and 30,000 men.

2. The Rural Guards and Gendarmes, mounted, 3,000 men.

3. The local troops of the several States, about 3,000 men.

The regular troops are well armed and equipped, the artillery being provided with steel breech loading guns of modern pattern. They do not lack field experience and have shown high efficiency in Indian warfare. Remarkable marching qualities, combined with ease of subsistence, are ascribed to the infantry, while the "Rurals," as a mounted body, is said to be without a superior in the world. It is to be regretted that no information has been received as yet of Mexico's partial mobilization of her forces for war, which recently seemed imminent with Guatemala. Such would be of interest now as indicating her readiness for war, and on which to base an opinion of the efficiency of her general staff.

Railroads constitute Mexico's best means of transportation, and pack animals the next; wagon transportation is undeveloped, due to the nature of the country and the kind of service her regular forces have been called upon to perform.

Mexico has no permanent fortifications of modern design. Works exist at the Capital, Puebla, Vera Cruz, Perote, Acapulco and Mazatlan, but they and the guns manning them are obsolete. An excellent military school, modeled largely after West Point, is maintained near Chapultepec. The country also has in operation a national armory for the manufacture of small arms, and works for the production of powder.

FINANCES.

The fiscal value of property in Mexico in 1892 is given as \$497,865,195, the fiscal value being taken as one-third less than the actual value. The total debt of the country, June 30, 1892, was \$174,449,510. The exports of the country, in 1892-93, amounted to \$87,509,221. The budget estimates of the government for the year ending June 30, 1895, were as follows: Revenue, \$43,074,053; expenditures, \$43,054,371; of the latter, \$10,402,866 were for the army and navy.

MILITARY CHARACTER.

Captain SHUNK, Eighth United States Cavalry, in an article on the "Military Geography of Mexico" (freely used in the preparation of this lecture), describes the military character of the Mexican as follows:

"Readers familiar with Mexican history, knowing that Mexican armies have been defeated repeatedly by greatly inferior forces of Spaniards, Americans and Frenchmen, will be inclined probably to regard the Mexican soldier as inferior to the soldiers of other civilized countries, and there is much in history to justify such an opinion. However, before accepting this conclusion as final, several facts should be taken into consideration, among them the following:

"1. In the encounters referred to, the Mexican troops were invariably poorly instructed, poorly armed, and destitute of good officers in the lower grades; disadvantages that could not be equalized by the efforts of a few able men in high command. In future wars, this state of affairs will no longer obtain in their regular forces, nor to so great an extent as formerly in any part of their forces.

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

"3. The Mexican soldier has also been accustomed to handle and use firearms from childhood, and he often displays the recklessness and prowess that we are familiar with among our native Indians. In physical bravery and contempt for danger, he will probably be found equal to any soldier he may be called upon to meet. Instances show that Mexican troops, bravely and skillfully led, fight well; poorly led, they are easily stampeded.

"4. The true point of inferiority of the Mexican soldier lies in his dense ignorance; but compulsory education is correcting this evil, and will in time eradicate it.

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

From the foregoing it appears that our neighbor on our southern frontier is not unprepared for war. Her condition is prosperous; her finances are good; her resources in soldiers and supplies are large. Nature with mountains, deserts and climate, has made her strong in defense, and her communications, giving all the advan-

tages of interior lines, increase this strength. Finally it is apparent, with a determined defense, her conquest by an enemy from without must prove to be a great undertaking.

POSSIBLE LINES OF OPERATIONS.

In the event of war between the United States and Mexico, our country will naturally assume the offensive; if not at first, then shortly after the breaking out of hostilities, and will carry the war into Mexican territory. To prosecute the war to a successful conclusion, it is evident, from what has already been pointed out, that our forces must conquer the great central plateau of Mexico from San Luis Potosi, on the north, to Orizaba, on the south. Our first objective there would be the capital city. Examining the map, we find a number of routes to it. We might base ourselves on the Rio Grande River, and assisted by the railroads, invade Mexico by way of El Paso, Eagle Pass, or Laredo; or, having control of the sea, we might establish ourselves at one of the Gulf or Caribbean ports, or at a Pacific port south of Guymas, and move thence towards the capital. Considering these several routes, reflection will show that the great distance of the Pacific ports from our resources and the lack of roads to the capital, puts these lines out of the question when compared with nearer routes; and that similar reasons—distance from the objective and the character and climate of the intervening country—throw out all sea ports south and east of Vera Cruz. Taking up the other routes, the following table gives the lengths of the remaining lines:

El Paso to Mexico City	1,225 miles.
Eagle Pass, via Torreon, to Mexico City	1,091 "
Laredo to Mexico City	840 "
Tampico, via San Luis Potosi to Mexico City	637 "
Vera Cruz, via the Mexican R. R. to Mexico City	263 "
Laredo to San Luis Potosi	478 "
Tampico to San Luis Potosi	275 "

These figures are significant. Controlling the sea as we would in the case considered, they show Vera Cruz to be the available point on the Gulf Coast nearest the capital, 374 miles nearer than Tampico, and 577 miles nearer than Laredo, the point on the Rio Grande closest to the objective. The shortest line, to fight for, if possible and an effective one, is plainly the best. In the past, Vera Cruz has been an effective point of invasion as attested by the fact that the greatest successful invasions of Mexico have been based on

it—in 1519, by CORTÉZ; in 1847, by General SCOTT; and in 1863, by the French. CORTÉZ followed the route Vera Cruz, Jalapa, Tlascala, Mexico; General SCOTT, Vera Cruz, Jalapa, Perote, Puebla, Rio Frio, Mexico; the French, Vera Cruz, Orizaba, Esperanza, Puebla, Rio Frio, Mexico. We are warranted in assuming that these lines are still practicable, for, although the armament of armies has been vastly improved since they have been tried, and railroads now follow the routes, yet, as our studies show to be true, the relative advantage of improvements, to the defense and offense, remains about the same.

The absence of suitable roads to the plateau must confine any effective invasion of Mexico, at the present time, by the Gulf Coast, to a base at Vera Cruz or Tampico. A writer in the *CAVALRY JOURNAL* of June, 1892, advocated the latter point as a better base than Vera Cruz, but its few advantages do not offset one great disadvantage. The Mexican Central Railroad runs directly from Tampico to the plateau at San Luis Potosí, distant 275 miles. This line is equally as long as the lines from Vera Cruz, and evidence is wanting that it would be any less difficult to force. The advantages of the port are that it is some 200 miles nearer by sea to the United States than Vera Cruz; that we could count on securing early in the war the control of the railroad from it to Monterey and Laredo, thus giving, in addition to the sea route, an all rail route from our country; and, lastly, the Rio Panuco River, being navigable for small vessels for over 100 miles, and following closely the line of the railroad, would afford greatly increased means of advancing. These advantages are apparent, but the controlling objection to the port as a base is that the point of the plateau we would gain by it would find our army, not at the gates of the capital and chief city of Mexico, but over 300 miles north of it, with a further advance of 140 miles to the west, to capture the City of Aguas Calientes, before we could turn towards it. The great effort that would be necessary to move our army from San Luis Potosí to the capital will be shown later, in discussing invasion from the Rio Grande frontier.

Returning to the Vera Cruz line, two railroads, the Inter-Oceanic (narrow gauge) and the Mexican (standard gauge), paralleling the respective routes of General SCOTT and the French, are now in operation from Vera Cruz to the City of Mexico; they cross each other at San Marcos, 150 miles from Vera Cruz, but for the greater part of the way are separated by lofty and impassable mountains. An old carriage road follows the course of each railroad about one-half the way to the capital. One or both of these railroads must

be the line of advance: the possession of either to San Marcos would give control probably of the other back to Vera Cruz, but possession would be obtained only by overcoming great obstacles and at the cost, certainly, of desperate fighting. Both roads abound in strong defensive positions; both ascend tremendous grades, cross deep canyons, traverse brinks of precipices and pass through tunnels; they will be easy for the enemy to destroy and difficult for us to repair, but in the light of past experience they ought not to prove insurmountable obstacles.

A short description of the course of the Mexican Railroad will be sufficient to give some conception of the obstacles that must be overcome in gaining the central plateau. Leaving Vera Cruz, the road crosses a strip of the Hot Lands, a plain thirty miles wide, to the Soledad River, where the ascent to Orizaba, eighty-two miles from Vera Cruz, begins. Orizaba is 4,000 feet above the sea, and in attaining this height the road ascends a tremendous grade and crosses the Barranca de Matlac on an iron bridge 350 feet long and ninety feet high. A few miles beyond Orizaba the road runs in the Barranca del Infierno, with numerous bridges, tunnels and steep grades, thence to the plains of La Joya, crossing which the road rises an additional 3,600 feet in a short distance and attains the plateau, at an altitude of 7,900 feet, at Esperanza, 111 miles from Vera Cruz. The road then follows, for ninety miles, a broad and generally level plain to Apam, fifty-eight miles from Mexico City, where it passes through a narrow gap into a flat valley, generally five to six miles wide, which it traverses past the northwestern shore of Lake Tezcoco to the capital.

With the difficult Sierra Madre Mountains in rear and with insufficient communications for the prompt withdrawal of a large body of troops, it is not likely that Mexico would seriously oppose invasion in the State of Vera Cruz. Her first great efforts would be met in the defense of the mountain chain. If these efforts should prove futile we must then expect to meet the Mexicans in large force on the plateau in the vicinity of Puebla, which, from its position, would be a strategic point which we would have to take. Victory there will open the way to the capital, and to the objective of the campaign—the destruction of the main army of the enemy. Preliminary, however, to any sustained operations to gain the central plateau, a large depot and entrenched camp must be established across the Hot Lands, at a sufficient elevation above the sea to afford the army security from sickness.

No time should be lost in doing so; the army as soon as de-

barked should be pushed forward rapidly to the point selected. On the line of the Mexican Railroad, Orizaba would be such a point; or, the vicinity of Jalapa, if the advance be by the Inter-Oceanic road.

With Vera Cruz as the point of invasion, our operations on the northern frontier and the Pacific Coast should be limited to diversions, having for their object the capture of important points and the detaching of bodies of troops from the enemy's main army to defend them. The seaport of Tehuantepec at present, and when the railroads now being constructed are completed, Acapulco, Manzanillo, San Blas and Mazatlan, are all especially important points and must be blockaded, and occupied if possible.

Let us now consider the northern frontier. Without entering into a discussion of the War of 1845-7, it may be safely asserted that the expeditions of General TAYLOR and WOOL proved that a decisive invasion of Mexico from the Rio Grande frontier was not then practicable, due to the great distance to traverse, the want of necessary supplies in the country, the lack of sufficient wood and water, and the impossibility of protecting long lines of supply from guerilla warfare in which Mexicans are adepts. General TAYLOR advanced with the greatest difficulty to Saltillo although successful in every battle. Urged by the War Department to push on to San Luis Potosi, he objected to doing so, and recommended that Saltillo be held only as a defensive line and all remaining troops be thrown into the column operating from Vera Cruz. Ambition, alone, would have spurred General TAYLOR on had success been probable. The Saltillo desert was in front of him, and its ruinous effects on SANTA ANNA's army, which crossed it to meet him and be defeated at Buena Vista, was known to him. Railroads did not then exist in Mexico. To-day they do, and from our knowledge of the use that may be made of them in war, it is believed the lines running from our frontier now make a decisive campaign from the Rio Grande practicable. But when we consider what such a campaign will require in men and efforts, it is not likely our government would undertake it, unless Mexico should have an ally denying us control of the sea, or making uncertain our ability to establish ourselves at a suitable point on the Gulf Coast. The probable course of such a campaign and the efforts necessary for its successful prosecution are well set forth by Captain SMUNK, in his article already referred to, as follows:

"The choice of a line of operation would be from among the railroads leading into Mexico from the Rio Grande. The first effort

of the main army would probably consist in a movement upon Monterey and Saltillo. Eagle Pass or Laredo would be the starting point. A choice would, no doubt, be largely influenced by topographical considerations. The Laredo route is more direct; but the Eagle Pass route favors an attack in a more effective direction, and would probably be preferred at first, for this reason, and because it is a standard gauge road, while the Laredo road is a narrow gauge, and especially because points thereon, such as Trevino and Jaral, must be occupied to protect the flank while moving upon Monterey and Saltillo.

"Selecting the Eagle Pass route, the army would probably advance to Jaral. Holding that place by means of a detachment, it could then advance from Trevino upon Monterey and then upon Saltillo. The Mexicans observing these movements, would probably evacuate the country from the Rio Grande to Monterey; and, concentrating all their available forces, would either fight a battle in defense of Monterey or Saltillo, or would retire without much fighting, beyond the desert, using both the railroad line to Tampico and that to San Luis Potosi for the purpose. It is plain that Mexico could not better serve our interests than by putting forth her whole strength in this region; just as the Russians in 1812 might have served NAPOLEON by fighting him on the Vistula, instead of which they preferred to retire among their deserts. But the probability is that the Mexicans would evacuate this region without severe fighting, destroying the railroads and the water tanks in the Saltillo desert. In any event it must be occupied, and an entrenched camp would probably be formed at Monterey or Saltillo, which would be occupied by a strong force to guard against an attack from Tampico and to give security to a further advance. The strategic value of this locality would be very considerable.

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

"The distances are as follows:

From Monterey to Tampico	321 miles
From Tampico to San Luis Potosi	275 "
Total via Tampico	596 "

From Trevino to Torreon.....	160 miles.
From Torreon to Aguas Calientes.....	342 "
From Aguas Calientes to San Luis Potosi.....	140 "

Total via Torreon..... 642 "

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

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

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

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

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

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

"The next operation would probably have in view the capture of Celaya Junction which would effectually isolate the capital from the north and west. But when the army finally arrived before the capital, there would be behind it a line of communications 840 miles in length. This would have to be guarded against the efforts of a hostile population, greatly addicted to guerrilla warfare. The city itself would be defended by an army behind powerful works, and an ally could land troops at Vera Cruz and send them by rail to their assistance.

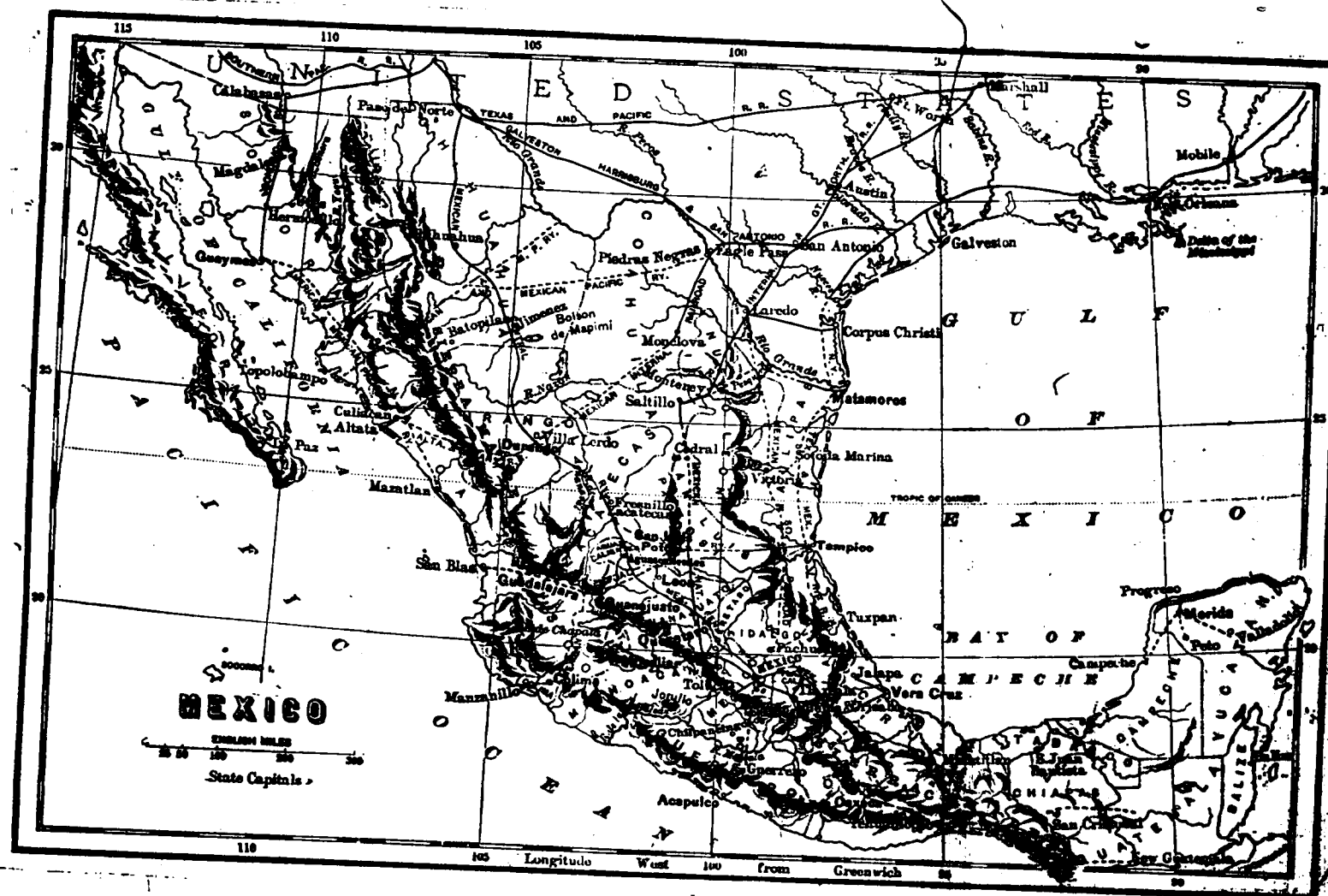
"To give an idea of the force necessary to guard such a line, 840 miles in length, let us compare the supposed situation with the very similar one on a much smaller scale of SHERMAN before Atlanta. On the 31st of August, 1864, SHERMAN had at the front about 72,000 men, and in his rear about 68,000. These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

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

"In fact, if Mexico, in the case supposed, should make a respectable resistance, according to the number of her population and the advantages of her topography, the conquest of the country by the overland line of operations (and without the use of the sea) would constitute a task of immense magnitude. And, even with control of the sea, another Mexican war will bear only a faint resemblance to the War of 1846-7, so far as the scale of the operations is concerned."

In that war, Mexico was poor, her people were not united and her government was threatened with revolutions during its progress. To-day Mexico is prosperous, her people are fairly united,

and her government is strong. The United States employed forces in the last invasion aggregating about 100,000 armed men—26,690 regular troops, 56,926 volunteers, and the balance in the navy and supply departments. In another war, these numbers will be but a fraction of the force that will be necessary to bring Mexico to terms.



THE FORT DONELSON CAMPAIGN.

BY LIEUTENANT JOHN M. STOTSENBURG, SIXTH CAVALRY.

MILITARY SITUATION AT OPENING OF CAMPAIGN.

THE Civil War had been going on since April, 1861. The main strategical ideas of the North had been to surround the Confederacy by a blockade, to cut it in twain by opening and holding the Mississippi, and to capture its capital. Nothing of consequence had been accomplished in the development of these plans. The policy of the Confederacy was to remain on the defensive. It was considered of the utmost political and military importance for the Confederates to maintain a foothold in Kentucky. Nashville was also considered an important point to hold on account of intense Rebel sentiment and sympathy there.

On January 19th, General THOMAS had defeated ZOLLICOFFER at Mill Springs and caused the Confederates to retreat, but THOMAS was unable to follow up his victory on account of bad roads and lack of transportation. Numerous feints and diversions were made all along the Confederate front, and although General JOHNSTON knew that he was going to be attacked soon, he could not determine whether the blow would come from BUELL or HALLECK, so his forces were divided, about 14,000 being left at Bowling Green in observation of BUELL and about 16,000 sent to Donelson.

Brigadier-General GRANT commanded the District of Cairo. A considerable fleet of gunboats and river ironclads was at Cairo under command of Flag Officer A. H. FOOTE, U. S. Navy.

During the latter part of this month, General GRANT, after consultation with Flag Officer FOOTE, suggested to General HALLECK the feasibility of taking Forts Henry and Donelson by the cooperation of the navy with his command. Reconnaissance had been made between the 15th and 25th both by land and water, and as report had been received that General BEAUREGARD had left the

vicinity of Richmond with reinforcements for JOHNSTON's army, the suggestion was considered timely and practicable, and the movement was ordered February 2d.

The composition of the Union army was as follows:

BRIGADIER-GENERAL U. S. GRANT, COMMANDING.

Organisation.	Commanders.	Approximate Strength.	Guns.
First Division...	Brig. General John A. McClernand...	8,000	24
Second Division.	Brig. General Chas. F. Smith.....	7,000	18
Total.....		15,000	42

Of this command there was one regiment and three companies of volunteer cavalry and one company of regular cavalry.

The composition of the naval expedition was:

Gunboats and Trawlers.	Armaments.			
St. Louis.....	4 rifled 42-pounders..	7 32-pounders.	2 8-in. guns...	1 Buckhorn mortar.
Carondelet.....	4 rifled 42-pounders..	6 32-pounders.	2 8-in. guns...	
Henrieville.....	4 rifled 42-pounders..	6 32-pounders.	2 8-in. guns...	1 12-pdr. boat howitzer.
Pittsburg.....	4 rifled 42-pounders..	6 32-pounders.	2 8-in. guns...	
Tyler.....		2 32-pounders.	6 8-in. guns...	
Conestoga.....		4 32-pounders.		

General GRANT's army received reinforcements before the attack, and at the time of the surrender his reinforcements amounted to about 27,000. This does not include NELSON's division from BUELL's army, that arrived the day of the surrender.

General ALBERT SIDNEY JOHNSTON's biographer gives the garrison at Fort Donelson as 17,000 men, but does not include in this estimate about 1,800 men sent there from Columbus by General POLK.

This force was divided approximately as follows: *

BRIGADIER-GENERAL JOHN B. FLOYD, COMMANDING.

Garrisons of Forts Henry and Donelson.....	5,000
Floyd and Buckner's command.....	8,000
Holloway's command from Clarksville.....	2,000
Clark's command from Hopkinsville.....	2,000
Total.....	17,000

FORREST's regiment of cavalry and six batteries of light artillery formed part of this command.

* "The Life of General Albert Sidney Johnston," by WILLIAM PRESTON JOHNSTON.

GRANT's estimate of the enemy's forces at Fort Donelson was 21,000.

Forts Henry and Donelson had been located by Confederate engineer officers, constructed and garrisoned. Fort Henry covered an advance by the Tennessee and Donelson by the Cumberland Rivers. Both streams were navigable to a considerable distance above, especially at this season of the year. Fort Henry, which was close to the right bank of the river, consisted of an enclosed work and an entrenched camp, with an armament of ten 32-pounders, two 42-pounders, two 12-pounders, one 24-pounder rifled cannon and one 10-inch Columbiad.

The garrison, commanded by Brigadier-General TILGHMAN, consisted of two brigades, one light battery, with a total of about 2,800 men. On the opposite side of the river the Confederates had started Fort Heiman, which commanded Henry, but could not be reached at that season with artillery on account of bad roads.

Fort Donelson, situated on the left bank of the Cumberland River, ten miles below the town of Dover, was about 100 feet above low water mark. On the water side its armament consisted of two batteries of heavy guns. The lower or water battery contained nine and the upper battery three guns. There were five guns also in the fort bearing on the river. That these batteries were much better situated than those at Fort Henry was demonstrated by their execution on the Union gunboats, and this without the loss of a man. The trace of the main work was 2,000 feet, and enclosed about 100 acres. On the land side its entrenchments extended to the hills two miles to the westward.

Practically there were two deep wet ditches, Hickman Creek northwest and Indian Creek southeast of the fort, due to the backwater in the creeks. These did not interfere much with the movements of the Union army, however, but Hickman Creek gave them an advantage, as their transport could unload in it under cover.

FRONTS OF THE ARMIES.

During January, 1862, just previous to the opening of this campaign, the Union and Confederate armies of the Middle West confronted each other; the former occupying the line of the Ohio from Cairo, Ill., through Louisville, Ky., to Cincinnati. General HALLECK and General D. C. BUELL commanded the Union forces on this line. Both at this time were under command of General McCLELLAN at Washington, D. C. They were independent of each other, but were supposed to cooperate.

The Confederates occupied a line generally parallel to the Ohio and covering all the probable lines of operation of the Union army. It extended from Columbus, Ky., which was strongly fortified with 140 guns and garrisoned by about 5,000 men, through Bowling Green to Mill Springs, Ky. The latter was an entrenched camp covering the gaps in the Cumberland Mountains through which ran the railroad connecting Richmond with Nashville and Memphis, Tenn., and through which gaps came much of the Confederate supplies from Alabama and Georgia.

The Confederate headquarters were at Bowling Green, Ky., and General ALBERT SIDNEY JOHNSTON was in command of the whole of their forces on this line.

BASES OF OPERATION AND LINES OF COMMUNICATION.

During this entire campaign the Union army was based primarily on St. Louis and Louisville, its secondary base was the Ohio River. Its lines of communication were the Tennessee, Cumberland and Ohio Rivers.

Its lines of operation were: To Fort Henry, the Ohio and Tennessee Rivers; to Donelson, the Ohio and Tennessee Rivers and the wagon roads from Henry to Donelson.

The Confederates were based on Nashville and Memphis and surrounding districts primarily, but had secondary bases at Bowling Green, Mill Springs and Columbus where large quantities of stores were collected. Their lines of operation and communication were, besides the Mississippi, Tennessee and Cumberland Rivers, the Memphis & Ohio and Louisville & Nashville Railroads and connections, and the wagon roads of the country.

SUCCESSIVE STEPS OF THE MILITARY OPERATIONS.

February 2d the expedition left Cairo, and arrived on the afternoon of the 4th.

February 5th the expedition landed the army about three miles below Fort Henry, from which point it was to proceed the next day overland and cooperate with Flag Officer FOOTE in the attack. But as the landing had to be made out of range of the guns of the fort, the army found itself below a swollen creek in a difficult country, and roads and bridges had to be made, so by starting at 11 o'clock, the time agreed upon, it was unable to cooperate with the navy.

The gunboats began the attack at noon and after about one

hour and a half bombardment, the seventy men who were left behind to serve the guns surrendered to the navy, and General GRANT's command moved up and occupied the forts. Fort Heiman was occupied by a portion of General C. F. SMITH's division.

February 6th to 11th was employed by the Union army at Fort Henry in reconnaissance towards Fort Donelson, which was twelve miles distant, though the entrenchments extending out about two and one-half miles from each fort reduced the actual distance to seven miles between outworks.

The reconnaissance developed the following facts as to country, roads, etc. The terrain between these two places according to the official report of the engineer officer was very rolling, thickly covered with timber and sparsely populated. Two good roads were found, one direct, the other known as the Wynn Ferry Road bearing southeast some distance at first, then runs essentially parallel to the first, distance about fourteen miles. These roads were found unobstructed. The bottoms were bad, but the high ground was good for the season.

On the afternoon of the 11th, the artillery and a portion of the infantry were moved back two miles over the worst part of the road to the high ground.

February 12th the Union army left Fort Henry. General McCLEARNAND's division took the southern road and went into position on the right of the Union line, extending beyond Dover. General C. F. SMITH's division took the northern or direct road and went into position on the Union left and enveloped the enemy's position on the north. The divisions came together about two and one-half miles west of Donelson and moved forward to the investment in line of battle. As the line appeared weak, General GRANT sent for General LEW WALLACE's command, which had been left at Fort Henry.

February 6th Colonel HEIMAN and about 2,800 men arrived at Donelson from Fort Henry, reinforcing garrison already there.

February 7th Brigadier-General BUSHROD R. JOHNSON arrived with his brigade and took command.

The 8th and 9th were employed in strengthening earthworks and receiving stores.

February 9th General GIDEON J. PILLOW arrived with 2,000 men and assumed command, and General B. R. JOHNSON was assigned to command of left wing.

February 11th Brigadier-General SIMON B. BUCKNER arrived with a portion of his division, was assigned to command the right

wing and took command of the fort on the 12th during temporary absence of General PILLOW, who had gone to Cumberland City to meet General FLOYD, probably to consult him about disobeying the orders of General JOHNSTON to occupy Donelson.

On the night of the 12th General FLOYD arrived with part of his division, and he assumed command.

At this time the command of Fort Donelson consisted of twenty-eight regiments of infantry, one regiment (FORREST's) cavalry, some detached cavalry amounting to about half a regiment, and six batteries of light artillery, and for defense were divided into a right and left wing.

The armament of heavy batteries on the river side need not be taken into consideration as far as the army was concerned, although they did such heavy execution on the navy.

February 13th nothing was done on either side except skirmishing brought on by the Union army making changes in their position and further reconnaissance; and an assaulting column of four Illinois regiments was severely repulsed.

On the afternoon of the 13th, the gunboat arrived below the fort with the reinforcements sent by water. A detachment was sent from Fort Henry, to disable the Memphis and Ohio railroad bridge at Danville.

February 14th the Union army was inactive except slight changes of position and closing in of the investing lines. About 3 o'clock P. M., the gunboats opened a heavy bombardment on the Rebel river batteries, and made an attempt to run by the fort; this was unsuccessful, and the gunboats had to draw off.

General GRANT concluded to invest Fort Donelson and await repair of gunboats.

At noon on the 14th, General FLOYD held a council of war, composed of his general officers, and it was decided unanimously to make a heavy attack on the Union right at once and open up their communications with Nashville by way of Charlotte. Preparations were made for this movement that afternoon, but were stopped by General FLOYD on General PILLOW's advice, the latter claiming that it was too late in the day to attempt the movement.

On the night of the 14th another council of general officers and regimental commanders came to the same conclusion. All that night the Confederates massed their army on its left. PILLOW was to be in command of the leading troops, BUCKNER was to attack the right center, and if they were successful he was to cover the movement by taking position in advance of the Rebel works on the Wyn-

Ferry Road and cover the retreat of the army and then form the rear guard.

February 15th the Confederates attacked at dawn. They were entirely successful in this attack, and by 9 o'clock had practically accomplished all that the Confederate leaders anticipated. They drove McCLEARNAND's division back and the road to Nashville was uncovered. GRANT had been called to a consultation with Flag Officer FOOTE and did not know what was taking place on his right. On his return he reinforced the right with General LEW WALLACE's division, and ordered General C. F. SMITH's division to make an attack on left as a diversion.

In the meantime PILLOW had jumped to the conclusion that the whole Union army was on the run, and withdrew BUCKNER's division from its position and prepared to make a general movement with his whole army, with the intention of pushing the enemy back upon the river. This move was fatal. McCLEARNAND's division, reinforced by WALLACE regained its lost ground, drove the enemy back and occupied his works. C. F. SMITH's division was as successful on the left, and the Confederate army defeated and broken up, was caught in a trap.

During the night General FLOYD, with a part of his command, secured the two transports remaining at Dover and slipped away. General PILLOW and staff crossed the Cumberland in a skiff and made their escape. Colonel N. P. FORREST got away with his cavalry on the overflowed river road. And General SIMON B. BUCKNER was left to surrender the command, which he did at daylight the next morning.

There is but little question that during the night many more could have stolen through the Union lines if they had been so disposed, as the weather had turned bitterly cold, the troops were tired, and outpost duty was indifferently performed.

RESULTS.

The fall of Fort Henry opened up the Tennessee River to Florence, Alabama, cut off POLK from JOHNSTON, and caused the evacuation of Bowling Green by HARDIE, which General JOHNSTON ordered on the 14th, or as soon as he learned that General GRANT was going to invest Fort Donelson.

Besides the loss of an army, its stores and materials of war, General JOHNSTON realized that after the fall of Donelson, that Nashville could not be held with the forces then available, and that place was

abandoned and occupied by the advance guard of BUELL's army on February 23d.

Columbus, Kentucky, which the Confederates called the Gibraltar of the Confederacy, was turned, and thus had to be evacuated, and Island No. 10 was occupied by the Confederates. Kentucky was thus entirely abandoned to the Union army, and the line of Confederate defense was located in Middle Tennessee. The Tennessee and Cumberland Rivers were thrown open to the North, and formed valuable auxiliary lines of communication in the subsequent operations of the Federal army.

General GRANT, in his "Memoirs," states that the results might have been greater than these if there had been one general with force of character and a strong will in command of all the territory west of the Alleghanies. He thought, and he certainly had good grounds upon which to base his opinion, that the whole Southwest was open to the Union armies, and that they could have marched to Chattanooga, Corinth, Memphis and Vicksburg. Volunteering was going on rapidly in the North, and all that was needed was rapid concentration and a forward movement.

To these material results were added some moral results none the less important. The Confederates, since their success at Bull Run, had freely circulated the opinion that it took ten Union men to whip one Rebel, and that their generals were greatly superior to those of the North. This notion was completely knocked out of their heads at Donelson. It stimulated recruiting in the North, cut off a great deal of territory where the South had received more or less assistance and encouragement and recruits. In fact, just at this time the South was disheartened and sore, and realized that it had undertaken too much.

COMMENTS.

This was on the part of the Federal authorities one of the most timely movements of the war, for just at this time the army everywhere and the navy in the Western waters was inactive, and at this particular season of the year the Tennessee and Cumberland Rivers were open to large crafts, and unprecedented floods favored the operation of the navy. The forts were both incomplete, not fully occupied and armed, and time was needed to strengthen them. But above all BRAUNEGARD, with fifteen regiments, was on his way from the Army of Virginia to join JOHNSTON; in fact he started the same day this expedition did.

As a skillful turning movement* it was the best strategical maneuver on the part of the Federals during the early part of the war. Columbus was considered impregnable and the Mississippi was closed to direct attack, yet this campaign with small loss opened it up as far as Island No. 10, and as General GRANT says, it should have opened it up to Memphis. This was not the fault of the campaign but of the system of handling the war at that time.

The Union commander had one base, the Ohio River, and two lines of communications and one line of operations, via the Tennessee River and the overland route to Donelson. These lines of communication were safe from attack and needed no guard other than the navy. The two rivers lying so close together, a change of the line of communication from one to the other could be effected without danger. They possessed all the advantages of river lines to a high degree, especially at this time, as the wet season improved them, while it had the reverse effect on the country roads. In fact it closed the river road from Donelson, which at the normal stage of the water would have furnished not only FORREST's cavalry, but the whole Confederate army a safe line of retreat.

General GRANT, perhaps, lost nothing by the delay at Fort Henry, because, as the campaign turned out, just so many more were caught in the trap. However, had the enterprise ended in disaster he would have been open to severe criticism for allowing so large a force to collect at Donelson, and the works to be enlarged and strengthened, while he was inactive at Fort Henry. The delay was made to allow the gunboats time to repair and make the circuit of the river, and for reinforcements to arrive. The movement from Henry to Donelson was well executed and skillful. The subsequent delays were due undoubtedly to the friction of the new machinery, as the army was on its maiden campaign and everything was untried.

The student of military art, with nothing to guide him but the history of the campaign and maps of the terrain, has grounds for criticising the dispositions of the Union army in the investment of Donelson, as well as its inactivity for six days. There seems to have been too great an extension of the lines. It strikes the student that the ground might have been better occupied by massing most of the forces from the junction of the roads to Fort Henry on the

* Although the Fort Donelson campaign has been called by American historians a turning movement, it is in fact a good illustration of a strategical penetration, and one made at the proper moment, viz: before the assemblage of the hostile armies. This was made all the more possible and advantageous in its results on account of the faulty resurgent position of Forts Henry and Donelson in the Confederate lines.

south to the river, as this would have cut off the Confederates more effectually, and would have prevented even their partial success Saturday morning. There was only one way for them to get out of Donelson, and there seems to have been no good reason why their disposition should not have been anticipated. A Confederate attack on any other point than where it was made would have been absurd. And that the Union army was not properly disposed, was proved by the subsequent change from left to right, which had to be made under fire of the enemy.

The Confederate leaders made the first great mistake in fighting for Nashville at Fort Donelson. They also had a mistaken idea of the value of fortifications and entrenched positions, thinking them as valuable as armies in the field. JOHNSTON appreciated the mistake and tried to remedy it afterward by fighting the battle of Shiloh. Forts Donelson, Henry and Heiman were merely useful to close the two rivers. They should have been armed and occupied with this object primarily in view. The Union army would then have had to make detachments to guard or invest them.

General JOHNSTON's second mistake was in dividing his army in holding two points and leaving 14,000 to watch BUELL. This was too large a detachment to leave in observation and too small to fight BUELL's army alone. He here violated what VON DER GOLTZ calls "the second general principle of modern war, namely, to have, if possible, all the forces assembled at the hour of decisive action."

General JOHNSTON's not going to Donelson himself and sending his troops in dribbles and under incompetent general officers, was not among the least of the Confederate blunders. B. R. JOHNSON, PILLOW and FLOYD succeeded one another so quickly in the command that no definite or harmonious plans could be made to meet the impending attack; and when a plan of action had been decided upon, it was not followed when everything pointed to success.

The Confederate depots of supplies were too far to the front, and too much exposed to BUELL's army; they bound the Confederates to them and General JOHNSTON thought they were too valuable to lose without a severe struggle, but he lost anyway when he abandoned them in the evacuation of Nashville.

While General GRANT was lying inactive at Fort Henry, the Confederates had three courses open to them. They might have gone out of their works and attacked the Union army while it was inactive at Fort Henry and only 15,000 strong; or they might have abandoned Fort Donelson, concentrated with HARDIE's command and defeated GRANT in the open field; or they could hold Donelson.

This latter course General JOHNSTON decided to follow, though he did not expect his subordinates to lose his army. He did not appreciate the trap that his army had entered as he telegraphed to FLOYD as follows: "Do not lose the fortress if it can be helped, but do not lose the army anyhow."

The wagon roads from Fort Henry to Donelson might have been obstructed and contested and time gained for the Confederates, but



Fort Donelson.

this would have done no good ultimately unless they received reinforcements.

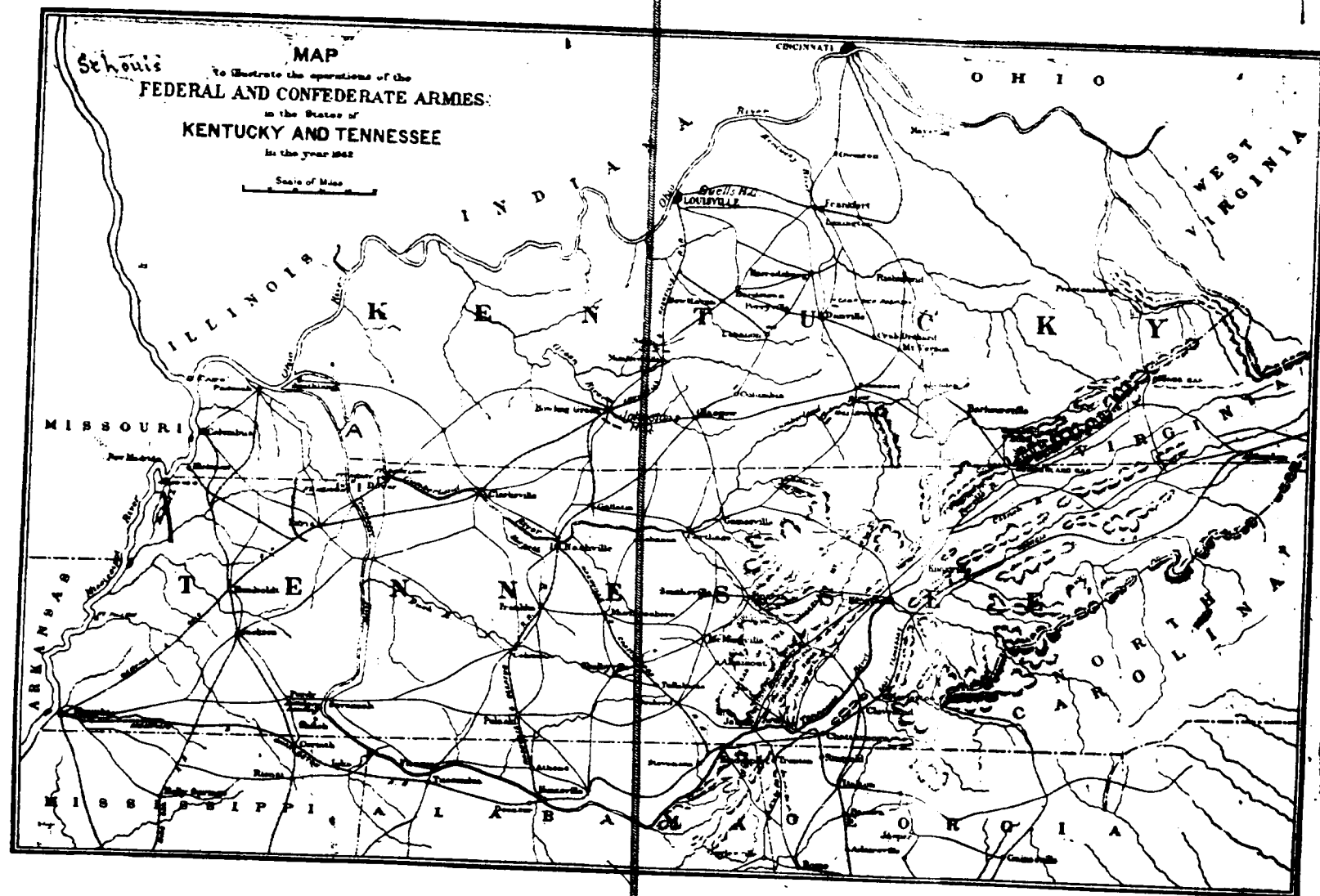
General BEAUREGARD points out that a strong position and one on the line of defense from Columbus to Bowling Green, about thirty miles above Donelson, where the rivers are only three miles apart, could have been prepared and both rivers closed by a much smaller force. Had this position been assumed, the Confederates' defensive line at this point would have been very strong. The Tennessee River and Cumberland would have been more secure

than the Mississippi, the position being so confined that a detachment was as good as an army.

The Confederates seem to have acted on the supposition that a fortress and entrenched camp were the same thing and required the same method of treatment.

Fort Donelson was a fortress pure and simple, and yet they occupied it with an army as an entrenched camp. After they sought it, as a place of refuge, reinforcements should have been sent forward to relieve it. This they had the rail and steamboat facilities to do and they had six days to make the movement in. Their failure to do this cost the Confederacy the loss of their army in Donelson at least. An army can get into one alone, but it needs another one to get it out.

That the Confederates might have occupied Fort Donelson with the garrison from Fort Henry and the troops from Columbus, concentrated their army of thirty thousand against GRANT'S twenty-five thousand or less and then turned and defeated BUELL'S army either at the crossing of the Big Barren or Cumberland Rivers may now be regarded as one of their lost opportunities of the war.



SCOUTING WITH MACKENZIE.

BY MAJOR W. A. THOMPSON, SECOND CAVALRY.

THE Llano Estacado, or Staked Plains of Texas, consist of a plateau twenty-five hundred to three thousand feet in altitude, three hundred and fifty miles or more north and south, two hundred and fifty or more east and west. To the eye perfectly level, but it is undulating, with long imperceptible rolls, that run north and south. A treeless plain covered with a carpet of very nutritious grasses. The greater portion of this great plateau is dotted thickly with depressions in shape of a wash bowl, that vary in size from one hundred yards to half a mile in diameter. During the rainy season, July and August, these basins are filled to overflowing with water, which percolates through the sand and limestone which underlies the whole plateau, breaking out and flowing upon the surface at the heads of the many cañons that indent the whole eastern side of these plains, forming beautiful limpid brooks, that are the headwaters of the Texas rivers.

This whole section of Texas was for ages the home and general rendezvous of that portion of the Comanche tribe of Indians known as the Twa-ha-das. The Staked Plains had numerous and very large herds of antelope, and as Twa-ha-da is the Comanche name for antelope, it was known as the Twa-ha-da country and the Indians as Twa-ha-das. These Twa-ha-da Indians are a bright, quick-witted race, brave, venturesome, bold and dashing fighters, splendid horsemen, and not cruel to their prisoners. They had been for years raiding Texas, New Mexico and Old Mexico, stealing horses and cattle, fighting and killing the frontier settlers. The United States forces as well as the Texas Rangers had for a long time been fighting these Twa-ha-das, but with meager results, simply because the custom had been to follow these raiding parties to within fifty miles or less of the edge of the Staked Plains and then return.

In 1870, General MACKENZIE was transferred and assigned to the command of the Fourth U. S. Cavalry. For some time previous to this transfer he was colonel of the Fortieth U. S. Infantry, and owing to his superior soldierly qualifications, great talent and untiring energy, both in the field and garrison, he left that regiment with a reputation as first-class soldiers, and surpassed by no regiment in our army. The most important question in the Department of Texas, was how to subdue and rid Texas of these bold Twa-ha-da raiders. The department commander, General AUGUR, selected General MACKENZIE to accomplish it, and authorized him to adopt such plans as he might see fit. At that time, 1870, the Staked Plains, as a whole, was an unknown country to the whites. MACKENZIE's plan of operations was very simple, and it was to take a force strong enough into the enemy's country and attack him wherever he could be found.

The campaigns of 1870-71 were mainly for exploration, for, as he expected, the Twa-ha-das would keep out of his reach and only stampede his horses at night whenever they could, and which they did do, with the loss to his command of eighty horses and several pack mules during 1870.

In 1872, with six troops of the Fourth Cavalry, having become acquainted with the topography of the northern portion of the plains, he made a night march that placed his command in a section of country which enabled him to discover and surprise a large camp of Twa-ha-das on McClellan's Creek near its confluence with the North Fork of the Red River, Texas. The Indians saw the command three or four miles off, as it was passing over a ridge. But dust enveloped the column so that they thought it was only a party of their own people driving a herd of buffalo towards camp for slaughter, as they were drying meat and making pemmican for their winter supplies. The command was thus enabled to reach within half a mile of the camp before the Indians discovered the true state of affairs.

The charge was made in echelon, troops in columns of four. The General rode by the side of the commanding officer of "A" Troop, which was the base troop. When the troop was near the center of the camp and parallel with a small ridge thickly covered with high grass, about ten or fifteen yards off, about seventy-five Indians raised in line and gave the troop a volley, but fortunately, and what will be the case nine times out of ten, with very little damage, as the volley was high. Like all close Indian fighting it then became general and more or less individual. The fight com-

menced on the 29th of September about 4 P. M. and by 5 o'clock the battle was over. It was one of the most satisfactory victories over Indians the General ever had, for it was complete.

He burned up all their winter supplies and at least one hundred fine wigwams, captured two hundred squaws and children, about 3,000 horses, and killed fifty-two warriors; all this with the loss only of four or five men slightly wounded. It was the most terrible blow these Twa-ha-das had ever received. In making his official report of this engagement, General MACKENZIE reported seventeen dead warriors, as only that number was found and counted. The Twa-ha-da chiefs, after they had surrendered and were living at Fort Sill, Indian Territory, in talking over their fights, and this one on the 29th of September in particular, said that they lost fifty-two warriors.

The commanding officer of "A" Troop cut off and enclosed about eighty warriors in a crescent-shaped ravine, through which ran a good sized brook. About the center was a deep pool some twenty-five or thirty feet long and eight or ten feet wide. When the troop was deployed the flanks commanded the exit of both the lower and upper portion of this ravine. The fighting was close and desperate; the Indians charged the line twice, but were driven back with great slaughter. As fast as the Indians were killed their bodies were thrown into this deep pool, from the fact that almost all Indians have a perfect horror and dread of being scalped after death, as they do not want to appear in the "Happy Hunting Grounds" scalped. This particular portion of the fight can best be pictured by imagining a troop of men in line on a stage firing into a crowded theater pit.

Until 1874 the General had carried on his campaigns against these Twa-ha-das during the spring, summer and fall months. With the exception of his 1872 fight he had not by any means subdued them or stopped the raiding. In 1874 he decided upon a winter's campaign and made his preparations accordingly. Fort Griffin, Texas, was his base. On the 12th of September he left there with six troops of the Fourth Cavalry and thirty Indians as scouts, and established his sub-base of supplies in Cañon Blanco. On the 27th of September, after a night's march of some thirty miles, from Tule Cañon, he discovered and surprised a number of large camps of Cheyenne Indians in Palo Duro Cañon. A running fight took place, in which three Indians were killed. All the wigwams and supplies in the several camps, were burned and 1,800 head of horses were captured. A few days afterwards he moved north and west of Palo Duro Cañon, and while scouting that section of the Plains, his scouts

captured a party of Mexicans from New Mexico, who had three or four ox teams loaded with supplies and ammunition that they intended to trade to the Twa-ha-das. The wagons were burned up and the command had plenty of beef for some days. Among this party of Mexicans it was discovered that two of them had been raised from children among these Twa-ha-das, and they agreed to pilot the General, for releasing the others, to where the Twa-ha-das had their winter camp.

The command returned to Cañon Blanco and after resting and fitting out for the winter's work left there on the 3d of November, moving southwest into the center of the Plains. It had been the custom for these Twa-ha-das to break up in small bands and establish their winter camps where water flowed. On the 5th of November his scouts discovered and surprised a party of these Indians, with a herd of twenty-eight horses, killing two of them and capturing twenty-seven horses. This party proved to be a raiding party that had just returned from the settlements with the stolen horses. As no white men had ever before been in that portion of the Plains an attack from that quarter was least expected. Night marches were of frequent occurrence, and, a few days after the above noted affair, he surprised a camp of Twa-ha-das, killing three warriors, capturing sixteen squaws and 155 war horses. The General was constantly on the move, from water to water, and while not being able to reach within shooting distance of any more bands of Twa-ha-das he forced them to flee from their camps with the loss of their winter supplies, and this caused a great deal of suffering. The weather was very trying, a day or so of lovely June-like weather followed with cold rains, sleet and snow. His command was clothed, and lived, so far as rations were concerned, with the most Spartan-like simplicity.

This method of scouting was continued for over two months, and when the horses were about worn out, the clothing about thread-bare, and the food all gone, the command returned to Fort Griffin in the latter part of February, 1875, where it was broken up and the troops returned to their different posts. As this was the first time the Twa-ha-das had ever been disturbed and routed out of their winter homes, and the first time the whites had ever explored and become acquainted with that portion of the Plains, the moral effect, as well as the damage inflicted, was more than any kind of a human creature could stand. So the chiefs collected their scattered bands, numbering 1,500, marched to Fort Sill and surren-

dered to the Indian Agent in March, 1875. Ever since this occurrence the people of Texas have enjoyed the blessings of peace.

A study of General MACKENZIE's Indian campaigns will show that the results were the perfect and complete subjugation of the Indians, and the frontier people ever afterwards enjoyed a permanent peace and security. Such has been the fact since he left Texas with his regiment, both in 1875 and in 1879, when he put an end forever to Mexican cattle stealing, and established law and order along our side of the Rio Grande River. His winter's campaign, after a hard, close and desperate fight against the Northern Cheyennes, 1876-77, ended in their complete and lasting subjugation. His expedition against the Ute Indians was a successful one, and while it partook more of diplomacy, it added much to his credit and reputation, for, by his skill, decision and wonderful energy he subdued them completely without the loss of a life. The people of Colorado have him to thank for the peace and security they have enjoyed ever since.

General MACKENZIE endeared himself to all who ever had the honor to serve under his command. He possessed many noble traits of character. He had the faculty of imparting to all under him a high sense of duty, and by his own example educated his officers and men to a high state of discipline and efficiency. He was a man of very deep and intense feeling, of a high-strung and nervous temperament, and those who did not understand him fully, gave him the credit of bordering upon the martinet; but all who did understand his character, knew him to be a man of such a noble heart and of such courage that it was impossible for him to possess a particle of such a spirit.

REMINISCENCES.

By MAJOR JAMES M. BELL, FIRST CAVALRY.

AS personal experiences will enter largely into the make up of this paper, I will necessarily lay myself open to the charge of egotism, but I desire to disclaim at the start any such motive, and present my recollections in the hope that they may recall to the older readers of the JOURNAL similar scenes, and convey to the minds of the younger officers an idea of what the cavalry service was on the Plains thirty years ago, under conditions that can never exist again.

The time was when the favorite weapon of the cavalryman was the sword; when the campaign, the scout, the affray, the chase, the long dreary march through blinding sands and scorching sun, over barren wastes of sage brush, cactus and mesquite, taught him fortitude; constantly in danger of a shot from a lurking savage foe, often without food or water, caring little where night overtook him, deprived of all the refining influences and comforts of home, shut off from the pleasures and benefits of civilized life, disregarding considerations of personal comforts, constantly carrying his life in his hands, always on the alert, cemented to his comrades in arms by a friendship that can only be formed in the school of privation and danger, with "*semper paratus*" for his motto, the bold sabreur of early days was the beau ideal of a soldier. Lucky was he, if, in the midst of his active life, he gained a few months rest during the winter. Field service was the rule, garrison life the exception. But all these have passed away, and have, under the enervating times of peace, been replaced by lyceums, essay writing, schools and books. From the present trend of military affairs we are forced to the conclusion that the sword is no longer the weapon of success, but that the pen has opened up the royal road to military honor and preferment. Our biblical friend, Job, was evidently in error

REMINISCENCES.

35

when he wished to punish his enemies by having them write books, or else conditions have mightily changed since then.

During the time of which I speak but few officers were married; now bachelors are the exception, and it is not much wonder that the old Irish captain, when reflecting upon the changed conditions of things, exclaimed: "I have little use for the modern second lieutenant; he reports for duty with a bride on his arm and an application for a school detail in his hand."

Like many young men, who passed through the exciting scenes of the Civil War in the volunteer service, I returned to my home in a condition of unrest, and with a feeling of doubt as to the future. My life plans had been broken up; the prospect of settling down to study, or devoting myself to business was distasteful to me, resulting finally in my acceptance of a commission as second lieutenant in the Seventh Cavalry. Having passed my examination, I joined my regiment, then being organized at Fort Riley, Kansas, in December, 1866. A number of the troops had already been organized and sent to the more remote posts of Harker, Hays, Wallace, Dodge, Lyon and Morgan. The Kansas Pacific, now the Union Pacific Railroad, had been completed as far as Junction City, and most of the grading had been done as far west as Fort Harker. The overland stage lines to Denver, Colorado, and Santa Fe, New Mexico, were protected by two lines of posts, one on the Smoky Hill River, the other on the Arkansas River. These posts, seven in number, were all of a temporary character, rudely constructed of cottonwood logs and rough lumber, and at some of them, particularly Fort Dodge, the officers and men lived in dugouts, with dirt coverings and no floors except what the earth furnished. The comforts now enjoyed by the troops were not dreamed of in those days. Temporary bunks with pole or board slats, supplied with a straw tick, empty boxes, cross sections of cottonwood logs, and empty barrels with the sides cut out and stuffed with hay, made up the sum total of barrack room furniture; tallow dips supplied the illumination; the clothing was poor in quality and often deficient in quantity; the rations were meagre, and as a rule, much deteriorated from lack of proper storage facilities; the Subsistence Department did not furnish the delicacies, such as canned vegetables, fruits and meats that it now supplies, and the few articles of this kind that could be procured were gotten through the post trader at the most exorbitant prices—prices almost prohibitive to the enlisted men.

The personnel of the army at that time also differed very much from what it is now, and was by no means satisfactory from the

standpoint of discipline. All the officers and a majority of the men had served during the war, many of the latter on the Confederate side. These, upon returning to their homes after the surrender had found all their earthly possessions swept away, and nothing was left for them but to seek new fields for their energies. Many from the Union side were induced to enter the service from love of adventure, or the hope of advancement. They were a fearless, yet restless and turbulent lot of fellows, and yielded reluctantly to the discipline imposed upon them by their new environments. Chafing under this new restraint, and rendered dissatisfied by the many hardships they were called upon to endure, desertions became alarmingly prevalent.

The vast undeveloped empire lying between Fort Riley, Denver, the Platte River and Red River, was completely dominated by the powerful tribes of Cheyennes, Arapaboes, Kiowas and Lipans. Their subsistence was furnished by the innumerable herds of buffaloes that roamed over these Plains. Across the home and hunting grounds of these Indians passed annually hundreds of trains laden with provisions and other necessities of life for the hardy pioneer of the mineral regions of the Rocky Mountains and the Pacific Coast, as well as emigrant trains, carrying the families and earthly possessions of men seeking homes in the far, unknown West. How many of them failed to reach their destination was sadly manifested by the numerous neglected graves scattered along the dreary overland highways, lured to their death by the deceptive mirage, or ambushed by bloodthirsty and relentless savages. These Indians for some time had been restless and had threatened hostilities, due to the rapid advancement of white settlements and the building of railroads across their favorite hunting grounds. To hold them in check, and to afford protection to the settlements and the builders of the roads, was the purpose of sending the newly organized cavalry regiments into this region. A suspicious circumstance connected with the Indians was their urgent demands upon the government for arms and ammunition. They had not then discarded the bow and arrow as a weapon of war, and improved firearms could not be so readily procured as in later years. Every concession on the part of the government was regarded by them as an evidence of fear, and only served to make them more arrogant and aggressive. Such was the situation when, about March 12, 1867, I was ordered to proceed to Fort Wallace with a detachment of recruits for my troop, "I," Brevet Colonel KROGH, captain. My first march was to Chapman Creek. Shortly after dark I made an in-

spection of my camp and found to my astonishment that about half my men had taken their revolvers and gone away, and, as I supposed, deserted. I spent a sleepless night in consequence. Fortunately the horses were all present. I anticipated having to continue my march the next day with half my command, but to my surprise the missing men were all present at reveille. They had returned on foot to Junction City to have a night of it, and had walked in all about twenty-five miles. We reached Harker, and proceeded thence to old Fort Hays, located eighteen miles southeast of where the new post of that name was built that year. Here we began to receive rumors of Indians, and it became necessary to exercise the greatest vigilance. My command consisted of twenty-five men, and all, like myself, totally inexperienced in Indian warfare. On the evening of the first day out from Fort Hays, and just as we were going into camp, a small herd of buffaloes was seen grazing on the south side of the Smoky Hill River, and seemed, to my inexperienced eye, to be about a mile away. After giving orders for the night, I crossed the river and started for my maiden buffalo hunt. I fully expected to be on them in a little while, but after riding for half an hour at a good gait, they seemed as far away as at the start. I quickened my pace and in another twenty minutes I had reached a point close enough to make the run. I singled out a young bull, and, after firing several shots at him, brought him to bay, but, unfortunately for me, my horse was so frightened that he lost his head and resisted all the argument I could present with my spurs. I saw by the flashing, angry eyes of the buffalo that he would be upon me in a few seconds, but the horse could not be moved from where he was, apparently rooted to the ground. I saw with dread the charge of the furious beast, and, with all my strength, managed to turn the horse so that he would receive the shock from the rear. The blow was so great that the horse was tossed for several feet and, suddenly realizing the danger of his position, made off at full speed. I was thrown out of the saddle by the shock and found myself sitting on the horse's rump, holding on to the cantle. While the horse was running I managed to regain my seat and get him under control. The shots I had given the bull proved fatal, and when I returned to the scene of the exciting conflict he was dead. In the excitement of the chase I had lost all record of distance and direction, and it was not till 9 o'clock at night that I caught sight of the fire the men had lighted to guide me back to camp. The next day's march brought us into countless herds of these shaggy beasts, grazing in the valley of the Smoky Hill River, and covering the plain north

and south of the river as far as the eye could reach. For three consecutive days and for a distance of seventy-five miles we marched through these herds. The river at this point was very shallow and sluggish, and we camped each night on or near its banks, drinking the water that was a mixture of alkali and filth.

One night my tents were pitched with their backs on the edge of a steep bank devoid of trees or brush. The common tent used for cooking and storage of my rations was only a few feet from the wall tent in which I slept. I arose in the morning expecting to find my breakfast in course of preparation, when I was informed by the cook that all the rations had disappeared. As we had been treated to a vigorous serenade by the wolves during the night, I at once charged the theft to them, but I soon realized the propriety of the man's suggestion that the wolves would not carry off the sacks containing the flour, sugar and coffee. Upon making an examination of the premises I found numerous moccasin tracks in the sand on the river bank. The Indians had stealthily crept up under the bank during the night, raised the back of the tent and stolen everything I had to eat, within a few feet of where I slept. I did not pitch my tents so near the bank again.

I arrived at Fort Wallace early in April and served there till the following November. The garrison was made up of Troop "I," Seventh Cavalry, Brevet Colonel KEOGH, captain, commanding troop and post; Company "E," Third Infantry, Lieutenant JOSEPH HALL, now captain, commanding, and Company "D," Thirty-seventh Infantry, Lieutenant D. MORTIMER LEE, now retired, commanding. Lieutenant BEZCHER, who was killed with General FORSYTH the following summer, was on duty at the post. WILLIAM COMSTOCK, who was also killed by Indians the following year, was the scout and interpreter, and one of the most valuable men I have ever known in that capacity. Shortly after my arrival, Company "D," Thirty-seventh Infantry, was ordered to New Mexico. The construction of a permanent post had been begun, the work being done mostly by the labor of troops. The material used was a very soft magnesian limestone, found in that vicinity; the only tools necessary were cross-cut saws and jack planes. The dust formed by shaping the stones made an excellent cement for laying the walls.

On account of the threatening attitude of the Indians an expedition was prepared at Fort Riley under command of General HANCOCK, Department Commander, and left that post on March 27, 1867, its destination being a large camp of Cheyennes, located on Pawnee Fork, not far from Fort Larned. The purpose of the ex-

pedition was, if possible, to compel the Indians to go upon their reservation and observe treaty stipulations, or fight them if they refused. A point three miles from the camp was reached on April 14th, a council was held that afternoon with the chief men, and an agreement made for a general council the following day. The Indians, as usual, were full of promises; but General HANCOCK found, much to his surprise the next morning, that the Indians had fled precipitately during the night, leaving their lodges and entire camp outfit on the grounds. Everything was at once destroyed, and CUSTER was ordered to follow the fleeing Indians with all the mounted force—eight troops of the Seventh Cavalry. Here began the war of 1867, 1868 and 1869. The Indians fled in a northwesterly direction towards the Platte River, and in crossing the Smoky Hill Stage Line, destroyed a number of stations, killed the keepers and stole the horses. These relay stations were situated from ten to fifteen miles apart; two relays of horses were kept at each and two men were employed to take care of and guard them. Early in June a band of Cheyennes, numbering about 300 bucks and known as the Dog Soldiers, under the leadership of ROMAN NOSE, a bold and intrepid warrior, made a persistent and successful effort to destroy this line. Troop "F," Seventh Cavalry, had been detached from CUSTER's command to act as escort to trains and stages between Russell Springs and Chalk Bluffs, and on June 8th had an engagement with this band at the latter place. The Indians were so active and persistent, however, that nearly all the stations were destroyed, horses stolen and keepers killed for a distance of 150 miles east and west of Wallace, so that it became necessary for a time to haul the stages over this part of the route with government mules. Two coaches were run together, one carrying the passengers and mail, the other an escort of soldiers. About June 15th an attack was made upon one of these parties near Big Timbers, twenty miles west of Wallace, resulting in the death of two passengers and two of the escort. General HANCOCK about this time decided to make a personal inspection of the situation, and reached Wallace about June 20th, on his way to Denver, taking with him as escort Colonel KEOGH and forty men of his troop, leaving a garrison of about sixty men. ROMAN NOSE was not long in discovering the depleted condition of the garrison, and on the morning of the 22d he paid his respects to the post in a decidedly vigorous manner with his band of 300 warriors. They first attacked the stage train, on its morning trip to the quarries, three miles east of the post, killed several of the drivers and captured a number of mules.

They then made a determined assault upon the garrison, but were finally repulsed with considerable loss, and driven to a ridge about a mile north of the post. The small cavalry force, about twenty-five men, supported by what infantry could be safely spared from the post, pursued them and drove them still further north, the troops occupying the ridge previously held by the Indians. There was temporarily at post a detachment of a sergeant and six men of the Thirty-eighth Infantry (colored). While the fight was in progress I saw this detachment coming from the direction of the garrison in a wagon as fast as the mules could carry them and, upon their arrival, I directed them to deploy on the right of the skirmish line, where they immediately went into action. In a few minutes I observed that one of these men had separated himself from the others by a considerable distance, exposing himself to a heavy fire from the Indians, but before I could order him back to his proper place I saw him fall and throw his legs about in an agonizing manner. I thought of course he was killed, and when the Indians finally withdrew beyond the range of our guns and the men were assembled, I directed the sergeant to take his wagon and bring in the dead darky, but just then, to my surprise, I saw the fellow get up and walk leisurely towards us, with his gun on his shoulder. As he came up I said, "Are you not shot?" He replied with a grin that absorbed his whole countenance, "No sah, Mr. Lieutenant, I'm all right." I replied, "Why I saw you fall and throw your legs and arms in the air, and thought you had been killed; what in the devil do you mean by doing such a thing?" To which he replied, "Golly, Mr. Lieutenant, I jist did dat to fool 'em; I tot dey would tink I was shot, and when dey come to get my scalp I'd git one ob dairs." While it was a foolhardy and dangerous piece of strategy, I could not help admiring the fellow's nerve.

On the 26th of June a surveying party of the Kansas Pacific Railroad, under the direction of General W. W. WRIGHT, arrived at the post, running a line to the Pacific Coast. They were escorted by Troop "G," Seventh Cavalry, Brevet Colonel BARNITZ, retired for wounds received in the battle of the Washita the following year, commanding. On the following morning, the 27th, ROMAN NOSE again paid us a visit; the attack was made just at dawn of day, and in a more vigorous and determined manner than the previous one, but he was driven off after a severe conflict, in which six men were killed and as many more wounded. The Indians also lost heavily. The day following, ten miles north of Wallace, they attempted to capture a train escorted by Troop "A," Seventh Cavalry, carrying

supplies to CUSTER's command, but were again repulsed with some loss.

CUSTER, having failed to find the Cheyennes who had fled from Pawnee Fork, went to Fort Sedgwick, on the Platte River, for supplies, and, after resting a day or two, started across country to Wallace. When about midway, he discovered an Indian trail leading westward, which he followed. The day after his departure from Sedgwick, General SHERMAN arrived at that post, and wishing to communicate with CUSTER, sent Lieutenant KIDDER, of the Second Cavalry, with thirteen men and Indian Scout RED JACKET, to carry his dispatches. To avoid being seen, the detachment marched at night, and for this reason failed to discover the sharp turn made by CUSTER's trail to the westward, and while searching for the lost trail by daylight, was discovered by a band of Indians under the leadership of PAWNEE KILLER. After a desperate struggle the entire party was killed, RED JACKET being the last to fall. In this fight the Indians lost more than man for man. The dead and horribly mutilated bodies were found a day or two later by CUSTER's command on his way to Wallace.

Early in July a battalion of the Fifth Infantry reached Wallace on its way from New Mexico, Brevet Brigadier-General BANKHEAD commanding. It had not been in camp but a day or two when the cholera made its appearance, a number of deaths resulting. The only woman with the command was the wife of General BANKHEAD, who fell a victim to the disease. A few days later General CUSTER arrived, and had no sooner made his camp than the terrible scourge broke out in his command. The men, much reduced by hard marches and improper food, rapidly yielded to its fatal influences. While CUSTER's command was scouting the country north of Wallace, there was so much dissatisfaction on account of the wretched quality of the rations that the men began to desert in squads, taking their horses and arms with them. The evil was so threatening that the severest measures had to be resorted to. At one of the camps a squad of men left, mounted and armed, in broad daylight. Lieutenants COOK and CUSTER were sent in pursuit with a detachment of men. The deserters were overtaken some distance from camp, a fight ensued, the horses and arms were brought back, but the men were never seen thereafter. A wholesome check was put upon desertion in that command. CUSTER was severely censured for administering such summary punishment, but I think he was justified by the circumstances.

A striking example of the wholesale desertions of that period

occurred at Fort Morgan, on the South Platte, in January, 1867. The post was garrisoned by Troop "L," Seventh Cavalry, Brevet Colonel MICHAEL SHERIDAN, now of the Adjutant-General's Department, captain. Shortly after tattoo one evening the first sergeant entered the barracks and ordered the troop to prepare at once for field service. Forty men of the troop were quietly formed and marched out of the post without the knowledge of Colonel SHERIDAN, who was the only officer present. The detachment continued its march as an organization to within a few miles of Pueblo, when the first sergeant coolly informed the men that they were deserters, and that every man must look out for himself. I was at Fort Riley at this time, from which place Lieutenant ABELL, who had been assigned to SHERIDAN's troop, was ordered to conduct a detachment of forty recruits to Fort Morgan, to replace the deserters. He was ordered to proceed across the country to Fort McPherson and thence up the Platte River to Morgan. A few days out from Riley he was overtaken by a terrific snow storm, which stampeded and demoralized his command so completely that he had only one man left when he arrived at McPherson, and he was only saved by being so badly frozen that he could not desert. This solitary remnant of the command was placed in the hospital, and ABELL reported to his post with nothing but his personal effects and the descriptive lists of his detachment.

Early in July General HANCOCK returned to Wallace from his trip westward, and directed that an effort be made to reestablish the stage line. That part of the line west of the post fell to my lot. Pond Creek Station, three miles west of Wallace, had not been burned. Upon my arrival there with my detachment I found the place deserted, the horses and men nowhere to be found. Search was made, and the dead bodies of the two keepers were found in a Buffalo wallow about a mile north of the station. The horses had been driven off while out grazing; the men had gone to search for them and had been surrounded and killed by the Indians. They had made a hard struggle for their lives, as was shown by the pile of empty shells, but they were too far from the fort for the firing to be heard; the assistance the poor fellows so anxiously looked and hoped for never came, and the Indians added two more to their long list of victims of that fatal summer. I was directed to place at each station a guard of a non-commissioned officer and three men, and to provide them with means of defense. For this purpose circular pits were dug in the ground about ten feet in diameter, just deep enough so that a man standing in them could comfortably aim

over the top. Around the edge of this pit was built a heavy wall of sod, pierced at intervals with loopholes. Across this was laid a frame of logs and brush, on top of which was placed a heavy covering of earth. These little underground forts were connected with the buildings by a subterranean passage, and were supplied with a barrel of water, ten days' rations, and a supply of ammunition, to serve in case of siege, or the destruction of the building by fire. After completing this duty I sent my transportation and escort back to Wallace, and went on to Denver for a few days. Upon the day of our arrival the Indians attacked a large ox train thirty miles east of the town, and had only abandoned their efforts to capture it a short while before our arrival at that point. As the driver and I were the only occupants of the stage, we congratulated ourselves on our narrow escape. The people of Denver, including the stage officials, were badly stampeded, and it was with difficulty that I persuaded them to send out a stage to take me back to my post. Passenger could not be induced to take the chances of the trip, so the driver, one man employed as mail guard, and myself, started on our journey, uncertain as to what the outcome would be. The country was full of Indians, and it would be an extraordinary piece of good luck if we succeeded in getting through without encountering them. Thus we three traveled for 140 miles, when to my delight, I found three men of my troop at one of the stations, who had been sent out as guard to a west bound coach. At the next station I found one of the guards sick with fever. I placed him on a bed spread for him on the top of the coach. The day was perfect and we congratulated ourselves that so far we were all right. We reached Cheyenne Wells a short while before noon, and stopped to get dinner and rest our tired team. The buildings here had not been burned, although several attempts to do so had been made. The wife of the station keeper had been with him through the trying experience of the summer and, being anxious to get out of the country, begged me to let her go with us. I told her she could go if she was willing to take the chances, which she decided to do. All went well till we reached a point midway between Cheyenne Wells and the next station, Big Timbers. At this point the trail crossed a dry fork of the Smoky Hill River. The animals were tired, and while they were slowly dragging the stage through the deep sand of the creek bed, we were startled by a heavy volley fired into us by a band of twenty-five Indians, concealed under a steep bank seventy-five yards away. The stage was riddled with bullets, the glass lamps at the driver's feet were broken into a hundred

pieces, and it was as if by a miracle that any of the party escaped instant death. A number of the shots passed through the top of the stage, scattering the splinters about the woman and me. The three men of my troop were sitting on the top of the stage where the sick man was lying. We seized our Spencer rifles and returned a rapid fire. As we reached the opposite bank of the creek I called to the men to jump to the ground and, seizing the woman, forced her to the floor of the stage, telling her not to move, knowing that if the Indians saw her they would have an additional motive in capturing the stage, and also that the heavy frame work would be a protection to her. I hastily opened the door to get out and while doing so the sick man swung himself from the top of the stage, down through the opening of the door, and as he did so said, "I am killed," and began to deliver to me his dying message to his mother; but there was no time even to listen to such a sad message, for the lives of the entire party were trembling in the balance. We had now reached ground high enough to see that our fire had been effective, and observed the Indians placing the bodies of two dead warriors on their ponies. Those of their party not thus occupied had left their place of concealment and were rapidly riding around our flanks to cut off our line of march. The country was much broken and traversed by ravines. In these they concealed themselves and opened fire upon us as we approached. Fortunately a third Indian was killed who had ventured too close to our trail, but, nevertheless, they kept up the fight for two hours over a distance of more than five miles. Several of our animals were badly wounded, but were fortunately able to keep going till we reached Big Timbers. When the attack was made, seeing how greatly we were outnumbered, none of us entertained the slightest hope that we could by any possibility escape, and we made up our minds to sell our lives as dearly as possible. It was the only time in my life that I experienced the feeling of absolute hopelessness, and I trust I may never be called upon to undergo it again. When we had descended from the high rolling ground into the valley of Big Timbers, and about a thousand yards from the station, the Indians gave up the fight, and watched us from a bluff on which they had assembled. I never in my life was so glad to reach any place as that station.

When we stopped I went to the stage, opened the door, and told the woman that she could now get out. She arose from her prostration and, as she stepped from the stage, remarked, "But I have not seen the Indians yet." I pointed to where they had assembled and told her to gratify her commendable curiosity. She

did not seem to be in the least disturbed or excited by the trying experiences through which she had just passed, and related to me in her impressive manner the trials she had been subjected to in the coach for the two hours she had been lying on the floor. The wounded man had laid down on the back seat and in a few minutes was dead. Every time the stage struck a depression on the trail the dead body would roll off the seat on top of the crouching woman, and it required all her strength to force it back upon the seat. While she was having this ghastly experience she could hear the firing going on outside, not knowing what moment the stage would be captured, subjecting her to a fate worse than death. I listened to her recital with perfect amazement. She showed not the slightest evidence of nervousness or trepidation, and when she had finished her story, I exclaimed: "By Jove, you are a rare specimen; you certainly deserve a chromo."

We proceeded on our journey to Wallace, a distance of twenty-eight miles, without further molestation, the rough and dangerous parts being traversed on foot. This was truly an eventful summer for the troops serving at Wallace. Not a pound of fresh beef was supplied by the Subsistence Department; the rations on hand had been sent there for the use of the volunteer troops in 1865 and were not fit for human food. Buffaloes were to be found within fifteen or twenty miles of the post, but being unsafe to send out small hunting parties, it was rarely that sufficient men could be spared for a force large enough to make it safe, so we usually were without fresh meat of any kind, and were very much in the condition of the troops of the old German captain, who, complaining of the manner in which his troops had subsisted during a long tour of field service, remarked: "My men they don't had any fresh beef for six weeks exceptin' tree ducks." We did occasionally get a stray duck from the pond near the post. For three months no man's life was safe a half mile from the garrison, and during that time we were practically in a state of siege. At the time of my arrival, in April, no graves had been dug in the grounds set aside for the post cemetery, and at my departure, in November of the same year, sixty mounds marked the final resting place of the victims of cholera and Indians, divided about equally between the two. I was not sorry when in November an order came appointing me quartermaster of my regiment, headquarters Fort Leavenworth, and I sang with light heart:

"Oh, Smoky Hill, my Smoky Hill,
The day has come when we must part,
And candor bids me freely own,
How few regrets oppress my heart."

SHALL NOT OUR LEGAL ORGANIZATION BE RESTORED?

I.

IN November, 1897, the Judge Advocate General of the army rendered the following opinion: "By Section 1102, Revised Statutes, Congress has prescribed the organization of the cavalry regiments. To skeletonize some of these troops, which, as I understand it, would be to discontinue them for a time, would be practically to change the organization, and it is, in my opinion, open to serious doubt whether the executive has the power."

Let us consider the laws which established the organization of the army, referred to in this opinion.

In Section 1094 Revised Statutes of the United States it is enacted that the regular army shall consist of five regiments of artillery, ten regiments of cavalry and twenty-five regiments of infantry.

Sections 1090, 1102 and 1106 Revised Statutes, state that each regiment of artillery shall consist of twelve batteries, each regiment of cavalry of twelve troops, and each infantry regiment of ten companies.

By Section 1103 the law requires that each of these troops of cavalry "shall consist of one captain, one first lieutenant, one second lieutenant, one first sergeant, one quartermaster-sergeant, five sergeants, four corporals, two trumpeters, two farriers, one saddler, one wagoner, and each number of privates, not exceeding seventy-eight, as the President may direct.

Similar provisions establishing the enlisted strength of each battery of artillery, and of each company of infantry may be found in Sections 1100, 1101 and 1107 Revised Statutes.

These provisions are still in force. It is clear, then, that the opinion of the Judge Advocate General, rendered with the diffidence of one who regrets to be obliged to censure the action of a former superior officer, expresses between the lines this truth, that no one who has

II.

a fair knowledge of law or of the English language can characterize the action taken in 1890, in skeletonizing fifty companies of infantry and twenty troops of cavalry, as anything but illegal.

The procedure directed by General Orders 79 and 120 of 1890 was, therefore, not justified by law. Was it justified by policy?

The laws organizing our army as it now stands, were made in 1870, at the close of our greatest war, when the country was full of military talent educated in the school of experience. These laws may thus be said to embody the military policy of the United States, as determined upon by that talent. Our great generals, GRANT, SHERMAN, SHERIDAN, HALLECK, MEADE, THOMAS, HANCOCK, some of the greatest soldiers of this century, were then still living. Their influence in public affairs, and especially on military legislation, was great. Congress was filled with gallant officers, men who had held high commands. These men were guided in their acts not by a makeshift policy, but by what was thought to be the best plan for the future military defense of the country. While the size of our army was necessarily limited by considerations of economy, its organization was founded on wise and statesmanlike principles.

The principal features of the plan were as follows:

1. To instruct, by actual service with troops, as many officers as possible.
2. To maintain a large staff, to be ready to assist in the organization and supplying of our volunteers in case of war.
3. With an army small in numbers, to maintain as many organizations (regiments, companies, etc.) as possible, these organizations to be kept at the minimum strength compatible with fair efficiency but to be filled up to double or triple strength in case of hostilities.
4. To maintain a large proportionate force of cavalry and artillery.

In pursuance of this plan, while but 30,000 men were provided for in appropriation bills, the number of companies of artillery, cavalry, infantry and engineers established by the laws I mention was fixed at 435. The maximum strength of any company was fixed, for the artillery at 147 men; cavalry, 99 men; infantry, 119 men, and engineers, 150 men. What the minimum strength is, is not so apparent; it would seem to be the total of the sergeants, corporals, musicians and artisans, added to the smallest number of privates consistent with the existence of the company as an organized body of soldiers.

These laws thus provided an expansive military organization, suitable for war or peace. The maximum strength of the artillery as contemplated, was in officers and men, 9,190; of the infantry, 30,825; of the cavalry, 12,410, and of the whole army, 55,618.

It is also manifest that the law permitted the expansion of certain corps at the expense of the others, as, for instance, the filling up of the companies of cavalry while companies of infantry were reduced in strength, or *vice versa*, as the necessities of Indian warfare or other contingencies might require. But that to enlarge others, certain companies could be altogether abolished as organized bodies, was, I think, never claimed by any legal authorities.

When, as in 1879, the total enlisted strength of the army was reduced to 25,000 men, it became difficult to provide all the companies in the army with a force of men sufficient to maintain their full effectiveness. Twenty-five thousand men divided among 435 companies, gives fifty-six men to a company. But companies engaged in active service in the Indian country had to be kept full, and this, on the other hand, made it necessary to reduce companies not thus engaged to a depleted strength. Nevertheless, it did not occur to our authorities to abolish or "skeletonize" companies until our greatest emergencies in connection with Indian warfare had long ceased. While our whole army was commonly called a "skeleton" army, we were not yet familiar with the term "skeletonize," which in 1890 came to mean "abolish," "destroy," "wipe out."

Our skeleton companies of those days were not without the strong frame work, the backbone, of living entities. They contained the sergeants, the corporals, the trumpeters, the artificers, and enough experienced men to quickly leaven a mass of recruits, no matter how large, that might in emergency be forced into the company. With the machinery of administration running smoothly and easily, the army might, in case of war, be quickly and easily raised (with the authority of Congress) to the full maximum strength contemplated by law; since these new recruits, who in the volunteers learn only at length after many mistakes and by many hard knocks and much hardship, in the regular army have no such difficulties. Such things as guard duty, the care of arms, pitching tents, making themselves as comfortable as possible, and a thousand other details which volunteer troops find a difficult problem, would be required at once and easily, there being always an old soldier at hand to show the recruit how. Accordingly, his drill would be much more promptly advanced than would be the case in the volunteers.

These great advantages were gained by the retention of the

small company. A further advantage gained was connected with the instruction of our officers. Our policy must needs be that in order to bring our volunteer armies into effective shape as quickly as possible, we must educate and keep on hand a large number of trained instructors and officers. (A similar necessity of expansion makes England keep on her lists over 200,000 trained officers.) The proportion of officers in our army was therefore made large. While the companies are small there are plenty of them, in order to afford experience in command, administration, drill, etc., to as many officers as possible. The importance of this instruction cannot be overestimated. The commanding of large bodies of men differs only in degree from the commanding of small bodies. Regiments are but larger companies. The reduction in the number of companies made the chances of a subaltern obtaining or exercising command much more remote. By the abolition of twenty troops of cavalry and fifty companies of infantry in 1890—the equivalent of seven regiments—our lieutenants are made to seem wholly as file-closers and largely deprived of the experience heretofore had in commanding companies, an experience which would be of priceless value to them when as volunteer officers they shall command battalions or regiments.

I think we may, therefore, safely conclude that the skeletonizing of our companies was opposed to the measures for the instruction of our officers and the expansion of our regular army in time of war, and thus, in these respects, subverted the policy of the law of 1870. A skeletonized company is a company that does not exist. In the haste of mobilization for war it is likely to be lost sight of, or if not, its rehabilitation can not be accomplished without great and serious difficulties. Skeletonization, therefore, defeats expansion to war strength.

III.

Let us consider the few arguments brought forward in defense of this measure.

1. That the abolishing of seventy companies of cavalry and infantry gave an opportunity to fill up the foot batteries of artillery to a more effective strength.

This was quite true. Further, this increase of strength, to a certain extent, relieved Congress of the necessity of providing for the artillery a new organization.

2. It added to the effectiveness of the infantry company by

making it possible to maintain those companies not skeletonized at a more effective strength than formerly.

This was true in part. The effectiveness of the infantry company depended largely on the post commander. With good administration the former company of fifty men was efficient. With bad administration the company of sixty men was inefficient.

3. That the regulation provided a more modern organization for the infantry. The infantry regiment consisted of ten companies; the orders of 1890 cut it down to eight companies. As a regiment of eight companies is divisible into two modern battalions of four companies each, and one of ten companies is not, ergo: eight companies will accomplish more than ten companies. It is pardonable to dissent from this view. And it has to be pointed out that the same order cut the cavalry regiments down from twelve troops to ten troops, thus *destroying* the three battalion organization they had formerly enjoyed.

4. That a larger number of officers being at that time detached from their companies, the abolition of some of the companies would result in the remaining companies being more fully officered. This result did not follow. But in these later years active field service being more rare, and by consolidation the number of garrisoned posts diminished, a less number of officers is needed, and a larger number of officers became available for detached service, and were thus utilized. Further, it may be said that the absenteeism of officers (when they are not absent improperly) resulted formerly in affording an opportunity to exercise command to young officers who are perfectly capable, but have waited vainly for promotion. But with our surplus of officers this does not now occur.

5. Greater economy and care of administration was expected. It is not believed that this has been accomplished in any considerable degree. The measure has lessened the number of non-commissioned officers in the army by some 650, but the small amount of extra pay thus saved is not to be compared with the advantage of affording to so many men a practical military instruction, which often goes far towards fitting them for the duties of an officer or volunteers in case of war.

6. By this measure the number of enlisted men in the cavalry was reduced. The strength of the infantry remained about the same, while the artillery was largely increased. By some this was justified on the ground that the proportion of cavalry in our army is too large.

There are some who even favor a further reduction of the cav-

alry regiments from ten troops to eight troops, arguing that in this way we may assimilate European regiments, which each contain four squadrons, each squadron being composed of two troops or companies.

IV.

Taking the last point first, it is difficult to understand why on this continent we should copy accurately the European regimental organization of cavalry. Our cavalry is, and always will be, required here and there in small bodies. A glance at the distribution of our troops shows that while the infantry is maintained in comparatively large bodies, it rarely occurs that more than four troops of cavalry are found at one station together. In many cases we find isolated troops at posts. Over one-third of our domain is, and always will be, sparsely inhabited. Whether the Indians give trouble or not, the necessity for preserving order, protecting the mails, policing the government reservations and national parks, and patrolling the frontiers, will always give work for our troops, which, owing to the vast distances and remoteness from railroads, can only be properly performed by cavalry. Troops, not squadrons, are units which can best be utilized for this duty. A large part of our cavalry must necessarily always be employed in this service. To make our smallest unit the squadron of two troops, will entail needless expense, or else a lack of efficiency.

This, during peace. But in war, also, our organization is not without its merits. It is true that a line of twelve troops, of 100 men each, would make a somewhat unwieldy regiment for one man to maneuver mounted. But if, in war, regiments of four squadrons, each of two troops, are a *sine qua non*, then our 120 troops of cavalry may easily be converted into fifteen regiments* of the desired size, and this merely by the promotion to a higher grade of five lieutenant-colonels, five majors, five captains, five first lieutenants and fifteen second lieutenants. And for any foreign war in which we may become involved, it surely will not be said (after the ball has opened) that fifteen regiments of cavalry are too many.

But, with our single rank formation, four of our troops in line occupy the same front as four double rank European squadrons. Our squadron, then (which consists of four troops, commanded by a major), is equivalent, as a drill or maneuver unit, to the European regiment. An American squadron, in fact, in point of handiness,

*15 x 8 = 120.

maneuvering power and ability to dismount and deploy on foot, is preferable as a combat unit to the European regiment, being inferior in its strength of officers and men only.

V.

Regarding the contention that the number of our cavalry is disproportionately large, it may be well to quote the words of one of our deepest thinkers and best soldiers, who in 1877 wrote:*

"Keeping in mind the fact that the 60,000 to 80,000 cavalry maintained from the beginning to the end of the Rebellion, did not become really efficient till the battle of Beverly Ford, in 1863, after it had been trained for nearly two years; * * * we ought, from our own experience, to follow the example of European nations, and as far as practicable maintain our future cavalry either on a war footing or else on a basis capable of such expansion as to meet quickly the demands of war."

These words are to-day even more true than when written. To reduce our cavalry would be to strike a deadly blow at what is the pride and may be the salvation of our army. Gibed at in 1862, our cavalry, as the war progressed, each day more fully justified the wisdom of those who believed in it and maintained it, until finally, in the closing year of the war, when at last it was allowed to act, in the Shenandoah Valley, at Five Forks, in the campaign ending at Appomattox, in the Selma expedition, and throughout the West, it covered itself with glory, that even the most prejudiced could not but agree that it was, in every sense of the word, indispensable to our final success. It was SHERIDAN's troopers who threw the iron net around LEE's exhausted footmen, that ended the war. And we all know what SHERIDAN himself, one of the greatest of modern generals, said, as he gazed on a European battlefield, as to what would be the effect there of a sufficient force of American cavalry handled according to American methods.

Since the War of the Rebellion the cavalry has for many years engaged in a struggle in the West, not as dangerous but as full of hardships, often, as our war in the South. In subjugating the Indians, nine-tenths of the real work was done by the cavalry. This experience has resulted in methods which are superior in many respects to those of any other mounted troops in the world. It is believed that we may truly claim that in equipment, methods of supplying a marching column by pack transportation, knowledge of

*"Armies of Asia and Europe," by Major-General EMERY UPTON, U. S. A.

scouting, the care and preservation of horses on the march, the handling of isolated commands, and the knowledge as to when or when not to fight dismounted, we are ahead of any European cavalry. We are free from the superstition that it degrades a cavalry soldier to fight on foot. Our troops when on foot ask no odds from any infantry, or when mounted from any cavalry.

It is the fact that our cavalry is not ashamed to assume the rôle of mounted infantry, when by doing so it may win success, that makes our cavalry so valuable. A military writer has truly said that a force of 20,000 men which can march twenty-one miles a day is equal in fighting power to 30,000 men who can march but fourteen miles a day. If anything, this is understated. Our volunteer infantry is deficient in marching power, and the range of modern firearms and the extent of battle lines is such that the great distances which have to be traversed in making flank attacks or in pursuing effectively a defeated army will surely call in the future for the employment of mounted troops.

But it is only the ignorant who decry cavalry. It is true that the precision of range and volume of fire has increased, and that over an open plain, cavalry, except at night or in a fog, cannot charge unshaken infantry. But battlefields are never open plains. As for fighting infantry, the functions of cavalry as a force are three. First, to fight cavalry mounted. Second, to fight foot troops. Third and last, and that seldom, to fight foot troops mounted. Nearly all military writers agree that in future wars fighting armies will be preceded by immense masses of cavalry, whose duties are to mask and conceal the movements of their own infantry, while they strive to discover, harass and thwart the movements of the opposing infantry. To succeed in this calls for a preponderance of mounted troops. During the Franco-Prussian War of 1870 the German cavalry accomplished this result so thoroughly, owing to the faulty manner in which the French cavalry was handled that the Prussians were at all times kept informed of the movements of their adversaries, while the French on the other hand were at all times in the dark as to the position of the Germans. To this fact is attributed the overwhelming success of the Germans.

In Europe where the keenest intellects of the nations are devoted to the solution of military problems this lesson has not been without its fruits, and thus we see in the armies of Russia, Austria, Germany and France, immense forces of cavalry kept up as part of the regular establishment, Germany and France each maintaining 65,000 cavalry, and other nations in proportion. On her western

frontier alone Russia keeps constantly arrayed menacing Austria and Germany 45,000 cavalry, ready at the first note of war to swarm like a stampede over the borders, inundating the hostile country with fast moving squadrons, tearing up the railways, cutting the telegraph wires, and preventing the assembling of the enemy's forces, while behind this unpuncturable screen of firebrand and pillage, will move slowly forward in hundreds of thousands, the dark masses of the Czar's infantry and artillery.

Russia since 1894 has made a large increase in her cavalry, which now in all has a war strength of 175,000 men, and this increase neighboring powers have hastened to meet. England, in her comparatively small army, maintains a cavalry force of 20,000 men; but this by no means represents her mounted strength, for in the numerous regiments trained as "mounted infantry," she has a force which (while she is unconscious of it) is destined to perform the same duties as her cavalry, the only difference being that war once commenced, some time will elapse before it is discovered that a cavalry soldier must be prepared to fight on foot as well as on horseback. It is evident, then, that the tendency in those countries where the art of war is most deeply studied and where mistakes in military policy are most dangerous to national existence, is to increase rather than to diminish the cavalry force.

Returning again to the proper policy of the United States as regards cavalry, we find that the late war proved that the employment of large bodies of cavalry trained to act when necessary as mounted infantry is particularly suited to our terrain, our resources and our adaptabilities. Horses are more numerous than in almost any other country, and they are cheap. In large sections of our domain railroads are far apart, good roads are scarce, and distances great. On our northern and southern frontiers we find nations with whom we are liable to come into conflict, and in each case we find that the early employment of large bodies of cavalry would be attended with unusual advantages. At the beginning of a campaign great raids into the enemy's territory to break up his communications and disturb his mobilization are found to be an important preliminary. Such was the policy developed by us in 1861-5, and such is the line of action recommended to us by our best military advisors in case of a war with either Mexico or Canada.

In many respects our position as regards an extended use of cavalry is the same as Russia's, and we have every reason to expect the same advantages. As for the excessive cost of cavalry, that is a bag-bear which deserves to be exploded. Instead of cavalry cost-

ing two or three times as much as infantry, the actual cost of our cavalry horses probably averages little over \$100 per year, a sum which is less than one-third the cost of the infantry soldier. Thus, if, as according to the military writer I have quoted, the value of infantry depends on marching ability, our cavalry, considered as "mounted" infantry, are an economy to the government. Since readiness for war often prevents it, a respectable force of cavalry always mobilized and ready for invasion may go far toward securing peace on our borders.

As for duty in times of peace, the scattered condition of our cavalry in the West shows, as has been said, how much it is needed there. But further, in case of riot or disorder in large cities, no force can be employed more advantageously than cavalry. In European capitals it is the cavalry that the mobs erect their barricades against—their object is not so much to stop bullets, as to obstruct the free passage of a force which they fear far more than infantry. The isolated cavalry command can march unchecked in the midst of a riot in which the same number of infantry would be lost. While in order to repel a riot, infantry has no resource but to kill, cavalry is able to preserve order and clear the streets without bloodshed.

Infantry can be extemporized—cavalry cannot. Besides our regular infantry, we rely for defense on the National Guard, practically all infantry. We also, as far as infantry is concerned, hope to utilize masses of volunteers, hastily trained. But no volunteer cavalry can be made fairly efficient without a long course of training. At the outbreak of any war, for cavalry we must depend on our regular regiments. Spare them.

The above facts would seem to indicate that the proportion of cavalry in the army is not greater than it should be, and did not justify the reduction of 1890.

VI.

When we consider the injury that has been done the cavalry, and the service at large, by the skeletonizing of 1890, it is difficult to understand how, to-day, it can have any apologists. When it occurred, the blow was sudden and wholly unexpected. It received little comment. Its expediency and propriety could not then become the subject of public discussion by those best qualified to judge of it, viz: the officers of the army, for the reason that when first announced it had become an accomplished fact. Moreover, its far-

reaching consequences were not fully understood. Now, that its legality has been denied by the highest authority, it is right and proper to set forth fully its pernicious results as revealed by time.

In each regiment of cavalry two troops, and in each regiment of infantry two companies, were skeletonized in 1890—a total of twenty troops and fifty companies—an equivalent of two regiments of cavalry and five regiments of infantry. The men were transferred to other organizations, the property was turned in to the supply departments, the books were sent to Washington. The officers were borne on the army register as belonging to the skeletonized troops; in reality, they were transferred to other troops. No nucleus remained—no skeleton that could be clothed with flesh; the troops and companies ceased to exist.

This suddenly wiped out of existence many organizations with famous records. In our cavalry it is the troop that is the fighting unit, and the same is true more or less of the infantry company. Many of these troops and companies had existed continuously since the original formation of their regiments. They had taken part in many battles and skirmishes, sometimes, as in Indian fighting, detached and unsupported; their history was the possession and pride of the men who served in them, and their traditions were a precious aid to their discipline and efficiency. The abolition of these organizations destroyed the results of the labor of years of their captains, and dispersed comrades who were endeared to each other by profound ties. The troop was a living thing, with a life, a character, a conscience—it was killed ruthlessly, uselessly.

By this act 210 officers were displaced. These officers are borne on the Army Register as belonging to certain troops and companies when in fact these troops and companies have ceased to exist. The officers are, as a matter of fact, supernumerary; in the administration of the army they are superfluous; made so by the non-existence of their commands. This has resulted in the necessity of sending a largely increased number of officers to duty with schools and colleges, or similar details. When on such details they have little or no opportunity to improve their military efficiency, and on the other hand, owing to the very elementary nature of the military instructions which must be given to those they are sent to teach, (more befitting a corporal's ambition than an officer's) their usefulness is greatly limited. Their services are rarely needed for more than three or four hours per week. Such officers do not earn their pay, and however much they regret this, their sense of soldierly responsibility is dulled. This large number of supernumerary and

partly idle officers attracts the attention of those who are anxious to cut lower the expenses of the government and leads to assaults upon the army. A reduction of our commissioned strength may result, and thus the function of the army as a school of instruction for war be greatly curtailed.

Another harmful result which has come from this measure is in the matter of harmony. In no army in the world is there less discussion and criticism of rule. It is unique in this respect. But when law and regulation are opposed to each other, which should the soldier respect? Is there impropriety in discussing the regulation when it is plainly opposed to the law? The spirit of our institutions, which rests ever on the law as a basis, is too deeply implanted in the hearts of our rank and file to allow them to approve of such an extraordinary contradiction. There has been, accordingly, much discussion, and this discussion has been hurtful to the coordination that should exist in a military body.

VII.

The last resort, in case the laws of the United States are defied, is the army. Back of the law, stand the courts; back of the courts, stands the army. There was a time (in 1861) when men in authority in the government knowing this, and wishing to overthrow the law, tried in every way to cripple the army. What has happened may happen again. If such precedents as these are allowed, how easy to accomplish this baneful result!

Law, policy, propriety, justice, demand that the legal organization of the army be restored.

REPRINTS AND TRANSLATIONS.

THE QUESTION OF THE CAVALRY HORSE.

Should the state encourage the breeding of the cavalry horse? Has it the means?

Such is the double question which, raised some months ago by various persons in the hippological and political world, discussed in public, has finally been brought before the Parliament.

Breeders, keepers of studs, sportsmen, deputies, each has had his turn in the debate, but no one has said the last word. The evil has been diagnosed, its reality has been in turn denied and affirmed, but the remedy has not been formulated.

So there would seem to be still some utility before public attention, always so mobile, is diverted from this subject, in bringing into the discussion a few arguments, and especially in seeking to deduce some practical conclusions.

Improvement of the Type.

Improvement of the type of the cavalry horse is at the present time necessary in order to put our cavalry of the first line upon the level demanded by its mission, and permit it to struggle with equal chances against the cavalry of foreign nations.

Increase in Production.

Increase in the production of saddle horses is equally essential if there are to be found, when requisition for horses is made, the resources that mobilization will require for our cavalry of the second line.

Being desirous of abbreviating this study, we shall look at the question solely from the point of view of the first line. Besides, on the day when French breeding can see an object in the production of the cavalry horse because this production has become remunerative instead of being onerous, the number of saddle horses will be augmented quite naturally, and the resources of mobilization largely increased. Let us hasten to add that all the measures that the state

can take, transitory though they may be, to improve the mount of our second line, will constitute a useful work for the national defense.

Is it Necessary to Improve the Type?

Why is it needful to improve the type of the cavalry horse? Such as he is, does he not answer our needs? Has not the cavalry long been content with him?

Opinion of the Optimists.

It is in this manner that the adversaries of all change, of all encouragement, express themselves; and many, it must be said, among the most serious minds adopt this too optimistic view.

French breeding, according to them, gives everything that can be desired. The cavalry horses exist; we have only to look for them and pay the price they are worth; upon this single point of the increase of the purchase price we shall all be able to agree in asking of the state some sacrifices. Those who claim otherwise are soreheads who are simply seeking a pretext for debasing the stock; there are, perhaps, behind them some officers who would like to see the remount department lay its hand on the management of the studs. The latter possesses in its half bred trotting stallions, the stock needed for making very satisfactory saddle horses; it has, however, other interests to consider than those of the national defense. Everybody must live, and the breeder lives only by raising horses for commerce—driving horses. These are saddle horses like any others—when they have saddles on their backs. Perhaps they do not gallop very fast, but is that necessary? In the field, say some old generals who have seen service, you always march at the walk; one may charge once by chance, and in order to renew the legendary exploits of REICHSHOFFEN'S cuirassiers there is no need whatever of hippodrome charges; it is sufficient to have brave and determined cavalymen, like those our army is now proud to possess.

Contrary Sentiment of Cavalry Officers.

Those are the arguments brought against the innovators who think that everything is not perfect, and that there is reason for trying to get out of the rut.

Well, we think we voice the sentiment of the great majority of cavalry officers when we cry aloud: "No, our cavalry is not mounted as its rôle in modern war demands!"

The Half Bred Galloper Does Not at Present Exist.

The half bred galloping horse the remount department does not find, or finds too rarely, because it exists only exceptionally; and this for the reason that its breeding is not remunerative under present conditions. The breeder must be led to produce him. To modify these conditions by means of well considered inducements to thus set horse production in the direction of the needs

of the cavalry, this is the duty of the state. The whole question of the cavalry horse lies within these few lines. It remains for us to prove the truth of our assertions, and to show afterwards that some, at least, of the means that may be employed to attain the desired end are more simple and less onerous than is generally imagined.

The Cavalry Horse Must Gallop.

To-day, more than ever, the cavalry horse must gallop and gallop rapidly.

The German Gallop.

The Germans have adopted the lengthened gallop of 560 meters to the minute, while with us the gallop of 440 meters constitutes a maximum gait painfully reached, with difficulty maintained; so much so that at the command "charge," the acceleration is hardly perceptible. This very long gallop, as understood by the Germans, should be familiar, not only to a few horses in each squadron, as is now the case, but to all our horses without exception; and this for two reasons: The first is that all cavalrymen may be called upon to use it at any moment; the second (and perhaps the more important) is that for horses capable of giving, when called upon, this more than average speed, the ordinary gallop is only a promenade, instead of being, as happens with heavy and common animals, a cause of exhaustion and ruin.

Utility of the Gallop in the Various rôles of Cavalry.

If we pass in review the different rôles that cavalry may have to play, whether it is a question of individual duties or mass action, everywhere and always we shall find *speed* constituting an indispensable element.

Rôle of the Officers.

Is there need to speak of the special obligations that rest upon the officers? It is only with very fast horses that they will be able in reconnaissances to attempt bold strokes, to slip between the hostile columns, and defy pursuit from the patrols.

MARBOT relates that in the campaigns in Spain and Portugal the English profited greatly from this manner of operating on the part of their cavalry officers, who, mounted on thoroughbreds, came up and got information from under the very nose of the outposts, and disappeared like arrows at the first sign of pursuit. In a few strides they were out of reach.

Let us take a commonplace example. In the division maneuvers the commanding general and the brigadiers have each behind them officers detached by the regiments and charged with transmitting the orders. Suppose the division commander wishes to order any movement whatever, a change of front or anything else; he gives the order to the officers beside him, detached by each brigade. The latter gallop towards their brigade commander, who in their turn send the order to their colonels by the officers who follow

them. This transmission must be made instantly, and for this the officers must have horses endowed with great speed.

Let us remember also the staff officers who supply themselves with fresh horses from the cavalry corps; no one will deny that they must have very fast horses.

Use of the Gallop by the Troop.

It seems, however, that so far as the officers are concerned, the question is settled. For the troop the necessities are the same. The ordinary gallop, whatever one may say of it, is a normal gait; there are no maneuvers possible without making the largest use of it; the squadrons must be thoroughly broken to it. Now, if the horses have no blood, if they are not gallopers, they will not be able to bear long the labor of the gallop, especially when they are loaded; their riders will have to hold them up; strained tendons, falls will multiply. This is what happens to-day in too many regiments; and the result is that, through a legitimate fear of being cashiered, officers no longer dare execute the drill at a gallop, even moderately prolonged; as to the fast gallop, one is led to consider it a fantastic gait to be taken twice a year, when one is forced to do so, whereas the drill should be in that gait almost daily. But let us leave general theories and look at some particular cases.

Individual Duties.

The officers' reconnaissance has attained its end; it is necessary now to have information of the highest importance reach the general; a courier is sent toward him; he must get there. Gallop, my man! Kill your horse if necessary, but get there!

The division is marching to the fight; around it are buzzing the covering patrols. Suddenly one of them perceives the enemy; this information must be taken to the general at full speed in order to allow him to make his dispositions in due time.

A courier is bearing a dispatch; discovered by a hostile patrol, he sees the latter give him chase. If his horse has in his legs only the gallop of 440, while those who are pursuing him gallop at 560, at the end of only three minutes he will have lost 360 metres start; at the end of from five to six he will be taken.

From isolated cases let us pass to the squadrons; the principle will appear with the same obviousness.

Rôle of the Cavalry in Ranks.

There is a squadron which is the support of the horse artillery of its division; the latter receives an order to move rapidly and take position at 1,500 or 2,000 metres, and starts at the gallop. The squadron, which is on the outer flank, which must pass over an enveloping line and, moreover, gain ground in advance so as to assure the safety of the batteries, is going to make two or three kilometres at a very rapid gallop. A certain other squadron is charged with

going to occupy a bridge, pending the arrival of the infantry. There is urgency; it is necessary, at whatever cost, to bar the road of the enemy. There are two or three kilometres to cover as quickly as possible; on a few moments may depend the most important results. Many other analogous examples might be found.

Rôle of the Cavalry in Action.

Let us come to the combat. In the action of cavalry against cavalry, the second and third line will have to face unexpected attacks on the flanks; the effect will be produced only if due to the rapidity of the pace, formation is absolutely instantaneous. Conversely, every offensive movement of the second line in advance of the first will necessitate a march at the rapid gallop.

In action against artillery the foragers must melt away before the pieces, whatever the gait, or else they will succumb under the rapid fire of the machine guns.

Shall we charge yet against infantry? Many deny it. We cavalrymen believe so still, because there will always be critical moments in war when this glorious sacrifice will be asked of us; because there will always be circumstances of time, of place, of atmosphere, which will render a surprise possible; because, finally, if one admits that infantry, in spite of modern bullets, can still march to the assault, there is no reason why our horses, which move more quickly, should not still carry us to the charge. But this charge will have no chance of success unless it be conducted at a desperate pace. The faster we go, the fewer volleys we shall receive; at the same time the moral effect produced on the enemy will be augmented—it will be the *procella equestris*, the equestrian tempest, which overturns everything; otherwise, it will be only the "rush to death," glorious, but useless.

The Cavalry Horse Does not Really Exist, Except in the South.

I think it has been sufficiently demonstrated that the cavalry horse must be a "galloping horse." Does French breeding produce this horse? Yes, in the South; nowhere else. The South and the Southwest furnish the light cavalry excellent little horses; there one can improve the instrument, but it exists. In the other regions saddle horses are made only by accident. The Normans especially, in order to produce the prize winners of Vincennes or Neuilly-Levallois, sacrifice the type, the conformation, seeking only trotting speed. If, by chance, a breeder possesses a really handsome horse, outside of racing stock, ten to one it is a fancy coach horse.

If one wishes to convince himself of the reality of this assertion, he has only to examine with some attention the classes of saddle horses in the horse shows; in that reserved for small animals one finds remarkable subjects, and in great number; in the class of large horses, nothing; coach horses big enough to break the shafts, but not a saddle horse worthy the name, not a heavy-weight hunter.

This hunter, which is nothing but the ideal cavalry horse, must be sought in England or at the specialist dealers, BARTLETT, HENSMANN, etc., who make a business of importing. All the hunt clubs are provided with English or Irish horses.

The breeders work with a view to the trotter and the fancy coach horse. They are equipped for that and will not admit that those rôles are insufficient. However, it must be said, they serve in this their own pecuniary interests, since they find remunerative markets for only those two classes of horses. Perhaps it would be ungracious to think ill of them if, above private interests, above the interests of a province, they were unable to place the superior interests of the country, of the national defense.

Present Conditions of Breeding in France.

In what direction, under present conditions, must an intelligent breeder work in order to obtain from his half-bred colts the most profitable results? What is his objective, his ideal? His colt, after having won a few trotting races, or at least satisfied the trotting tests of CAEN or PIN, may be bought as a stallion by the management of the studs, who will consider, before everything, in fixing the price, the performances of the subject—his successes on the track.*

If, through his less illustrious origin, through the aptitudes that he manifests, the colt does not seem to be able to aspire to so high a destiny, or if the studs refuse him, it is necessary for him to sell as a fancy coach horse. To be sure the breeder does not get the five, ten, or twenty thousand that the state would give him, but he can still hope that the trade will pay for his horse, if he has the appearance and gait, two, three or four thousand francs.

If, finally, his colt has failed, he will say of him disdainfully, "that one will do for a troop horse," and he will present him to the remount department.

As to the thought of producing a good saddle horse, nearly thoroughbred, built for galloping and jumping, it will never even cross his mind. For no one would ask him for that type, and it would be necessary for it to cross the channel in order to come back with the English label; the amateurs who are able to buy high-priced saddle horses know so well that they are not to be had in France, that they do not think of seeking elsewhere than among our neighbors beyond the channel or their representatives in Paris. And we are in this respect so really tributary to England that our cavalry school at Saumur, having need, a few years ago, of horses capable of galloping and jumping smartly across country, was compelled, following the example of the similar schools of Belgium and Italy, to send its chief equerry to get them in the markets of England and Ireland.

So the ideal saddle horse exists in France only exceptionally.

*The horse that wins a certain race at Vincennes is bought on the spot for cash at 25,000 francs, even though he may be as ugly as the horse of the Apocalypse.

It results from the conditions surrounding breeding, and from the object the producers set before themselves, that the ordinary saddle horse does not exist either. The one that the remount department purchases, for want of better, is anything whatever; if he is capable of galloping, so much the better; if he is made for hauling wagons, so much the worse; he will carry his cavalryman nevertheless, and will follow along as he can.

At present one can affirm that our cavalry of the line and of the reserve have in their ranks a large proportion (about a third of the effective strength) of carriage or wagon horses. It is permissible to wish, without having dreams too ambitious, that there should no longer be in our squadrons anything but saddle horses.

Opinion of the Germans.

To those who would accuse us of overdrawing the picture, we shall oppose the opinion of the German officers upon the value of our horses in 1870; if French breeding has made progress since that epoch, the increased needs of the cavalry in horses must rather have lowered than raised the general average, the purchasing boards being compelled, through necessity, to show themselves less fastidious.

We borrow from the history of a Prussian regiment which took part in the great cavalry engagement at Ville-sur-Yron on the 16th of August, 1870, the following quotation: "The French cavalrymen had a martial appearance, a bold presence, but they rode heavy, massive, awkward horses."

The report of the First Regiment of Dragoons of the Guard, published by the general staff, expresses itself thus:

"The horses taken from the French cavalry have, with respect to endurance and strength, answered the conditions of good service. But they were heavy in gait and less manageable than the horses of the Prussian remount department. They are in all respects very inferior. About the best of our captured horses were the little barbe stallions, which, however, are irregular in their gaits, often have bad feet, and are too little for our men."

Remedies Proposed.

As things now are, is it possible to find a remedy, with the means and resources at the disposal of the state?

Thus is stated the problem whose solution we have to seek.

Certainly, such a question is very complex, and we cannot pretend to analyze all the systems that are proposed so as to succeed in satisfying the legitimate claims of the cavalry, nor to put forth new theories on a subject already quite hackneyed.

We shall limit ourselves to developing a few ideas, those whose applications seem likely to give the most fruitful results, and which are the following:

1st. Necessity of parallel action, except from all feeling of rivalry or mistrust of the management of the studs and the remount service, taking for a principal objective "the cavalry horse."

2d. Possibility of giving to breeding a direction, a rational orientation, by accentuating the difference of purchase price between "saddle horses" and passable horses bought for lack of better.

3d. Creation and development of running races for half-bred horses, and optional substitution of the gallop test for the trot test for stallions presented to the management of the studs.

4th. Supply of all the light cavalry with horses from the South and distribution of the small horses from other regions among all the chasseur and hussar regiments, where they would fulfill a special rôle.

5th. Revision of the regulations on military races with the object of making them concur usefully in the breeding of the cavalry horse.

Parallel Action of the Stud and Remount Departments.

Without wishing, far from it, to manifest any hostility, any bias against the administration of the studs, we are obliged to declare that a part of its efforts, a part of the sacrifices it makes, are lost to the breeding of the cavalry horse.

We do not wish to criticise the trotter; he creates one of the branches of the horse industry in France, a source of wealth in certain provinces, and meets certain wants. But for the very reason that the trotting type is not what is sought for the cavalry horse, it should not be the object of the exclusive preoccupation of the stud department. Now, is not one warranted in believing that this is the case at present, when we see all the half-bred stallions subjected before their purchase by the state to a trotting test, without any account being taken of their aptitude for galloping?

Undoubtedly the department buys thoroughbred stallions also; but there again they do not seem to us to act for the best interests of the production of the cavalry horse; their purchases profit especially the breeders of thoroughbred horses. Would it not be better to increase the number of thoroughbred stallions (who are in reality the only efficacious agents of improvement) by selecting animals from a class less exalted, but irreproachable as to conformation, which would make good cross breeding stallions, rather than acquiring at great price a few exceptional subjects? Why contest with commerce, or rather with private industry, for which budget considerations do not limit the prices (sometimes of fantastic exaggeration), for the winners of grand prizes, in order to reserve them afterwards for thoroughbred mares of the first grade, who alone should be bred to them? Only the dealers in thoroughbreds, in race horses, profit by this; and these breeders who can find by paying dearer for their horses as good or better in the private studs, and who have hopes of selling their yearlings at 5,000, 10,000 and

15,000 francs, sometimes more, are they as interesting from the national point of view as the producers of cavalry horses? Is it quite necessary that the state should impose upon itself heavy sacrifices in order to obtain the get of "Berenger," "Bruce," or "Krakatoa"? Would not its money be better employed in multiplying the cross-breeding stallions?

If, finally, we look at the question of heavy draft stallions, is it not permissible to think that the action of the department might be more restricted. Could it not limit itself to stationing stallions of this class in certain deserted regions, while leaving in the breeding centers stands duly supervised and encouraged, so as to assure proper service?

This production of heavy draft horses, and in particular that of the Percherons and Boulogne horses, is interesting; but should we sacrifice to it the interests of the army?

Means of Directing Breeding.

How can the remount department indicate in a tangible manner to the breeders the road it desires to see them enter upon?

The process is simple; it is sufficient, without increasing the average purchase price, or by augmenting it only in the proportion allowed by the budget appropriation, to pay dearer for the good horses, those which are really saddle horses, and to give, on the contrary, a very inferior price for the merely passable animals that one is obliged to take for lack of better.

When the breeder realizes that he is paid for the fleet, blooded horse in proportion to the sacrifices made in producing him, and that in getting rid of his troop horses of inferior quality he scarcely pays expenses, he will try to have good breeding mares, choose for them stallions having blood, and improve his breeding processes.

In order to obtain this result it is necessary to give great elasticity to the purchase price, to raise the maximum for the different classes, and to appeal to the intelligent interest of the commanders of the remount depots.

It is by operating in this manner that the purchasing board of the Cavalry School can to-day procure good thoroughbred horses without exceeding the average price fixed for it.

Direct Purchase by Officers in Open Market.

On this same subject of the purchase price of horses, we may be permitted to insert a parenthesis. The present regulations allow every officer to buy in the market for his personal use a horse of from five to eight years of age (four to eight years if it is a thoroughbred) and sell it back to the remount commission of his corps. But under what conditions is this transfer effected? The commission can not surpass the maximum price fixed for the arm of service. The result is that the officer who has bought a very good

horse five or six years old, ready to enter service, and who wishes to cause the state to profit by it, sees himself paid the price of a colt three and a half years, which will cost from 1,000 to 1,500 francs for feed, care, etc., before it can be utilized. There is in this a flagrant anomaly; and what is the consequence? Simply that this complementary resource of the remount department, which should bring into the regiment many fine horses, is rendered almost useless. Only the fortunate officers who can take from their pockets several hundred francs in order to get a horse of their choice make this sacrifice, which it would be only rigorously just to spare them.

Means of Modifying the Conditions of Breeding.

We have tried to indicate in what direction the efforts of the stud and remount departments should be directed. But, it must be said, these efforts will remain sterile if we do not succeed in modifying the conditions of the horse industry and rendering it remunerative to the producer of saddle horses. Under this condition alone can the breeder be made to produce this horse, as he now produces the trotter and the high-class coach horse. Now, what is necessary in order that the breeder, breaking off from routine, shall decide to raise half-bred gallopers? He needs to be shown, alongside of the ordinary expedients by which he gains a livelihood, the possibility of winning a big prize that will enrich him. He must be given the hope, the day he possesses an animal of the first grade, of selling him at an exceptional price, that is to say, a price that is never attained except by the stallion or the race horse. That amounts to saying that we must give the half-bred galloper the entree to our studs and race courses.

Tests of Stallions at the Trot and Gallop.

From this point of view a first reform is imperiously demanded. At present every half-bred horse presented at the studs as a stallion must undergo a trotting test and cover a certain number of kilometers in a minimum time fixed by the department; that is to say, the latter intends to buy, outside of thoroughbreds, only trotters. If it is desired to introduce into the national studs half-bred gallopers, hunters whose type corresponds to the real cavalry horse; if it is hoped in this way to offer breeders a remunerative market for their best stock, it is absolutely necessary that the test preceding purchase should be, according to the aptitudes of the animal presented and the choice of its owner, a trotting test or a galloping test. This reform has, moreover, recently been demanded in the Senate.

However, if one relies upon this method, the end will be but imperfectly attained. Purchases of stallions can be made only from a restricted number of animals, and the mares do not deserve less interest than the males.

Running Races for Half-Bred Horses.

Running races for half-breds will permit this gap to be filled up. The good race horse, whether he has won his laurels on the scales,

over obstacles, or by trotting, acquires a value that cannot be approached by the cavalry horse, be he a model of beauty and endowed with every quality. On the day when, at all the tracks, prizes are reserved for the half-breds, there will be created a new sport; with as much eagerness as they now try to get trotters, the breeders will try to produce horses galloping fast enough to take part in these trials, because their interest will be the same. Among the horses thus raised and brought out on the tracks, all will not possess sufficient speed to justify the hopes of their owners; the less favored will be put aside at the beginning and given over to high-class trade.

The horsemen, the dealers, will find in this class horses which, on account of their build and their aptitude as hunters, will easily compete with the English and Irish horses, which are at a premium to-day. A new market will, by this means, be opened to breeders, to those at least who are willing to run the risk of raising their stock and keeping it up to the age when trade takes it—four-and-a-half years. But there is every reason to think that many would prefer to profit by the advantages offered in the remount department by bringing it their three-and-a-half year old colts. The animals thus bought will be, for the cavalry, chargers worthy the name.

Finally, those of the colts which, while belonging to the same type, could not, on account of their conformation or their parts, pretend to become race horses or fill the stables of the rich, will quite naturally furnish the cavalry the bulk of its quota, and the regiments will receive, instead of defective coach horses, saddle horses more or less distinguished but built for galloping, spiritedly carrying their riders—the kind, in a word, for which the cavalry are sighing.

Beginning of the Application of this Idea.

This idea of running races for half-breds will, moreover, begin to be carried out this year. The Steeple Chase Society has offered, on eighteen tracks in the provinces, prizes for this class of horses. This is only a first step, but it is one of the duties of the government to encourage and second this initiative.

Difficulties to be Overcome.

It is not necessary to dissimulate the numerous difficulties that will be met, especially at the beginning. The code of rules for these races will have to be studied with the greatest care, so as to surround them with all the guarantees desirable. To enter into the details of these arrangements, notably the measures it will be necessary to take in order to limit the qualification of horses, would carry us too far. We shall restrict ourselves to answering briefly the principal objections of the adversaries of this institution.

Scarcity of Competitors in the First Years.

"The races for half-breds," they say, "will exist on the programmes; there will be nothing lacking but the horses! The fields

will be so restricted that the prizes will be at the mercy of a few specialists, and we shall give up very quickly a sport that will fall of itself."

Undoubtedly we must not delude ourselves. The first years will not be very encouraging; the fields will be meagre. But how could it be otherwise? We create these races to produce a type of horse; we cannot hope to immediately find this type matured. The results cannot be appreciated until a generation of half-bred gallopers has had time to develop. Until then we should have to possess ourselves with patience; but these trials will at once attract the attention of breeders and give the first impulse. It will be necessary, besides, to keep from multiplying them at first and trying to do too much. We must begin modestly and increase little by little the number and importance of the prizes, in proportion to the increase in strength of the competitors called to dispute for them.

Danger of Lightening the Type too Much.

Another serious argument is the following: "Will not the races lead to an exaggerated lightening in the type of the horses destined for the army? In seeking the qualities that give speed, shall we not lose sight of the necessity of having a powerful, stout animal?"

This danger exists, but it rests with the track regulations to ward it off by giving the qualification of "half-bred" only with full knowledge. The maximum degree of blood that is fixed will have to be such that after two or three generations it will be necessary to stop, for the moment, infusing pure blood into the race.

This process is employed in the south to determine the qualification or class of the Anglo-Arabians: so it is neither new nor complicated. The Anglo-Arabians cease to be considered as such when they have more than seventy-five per cent. pure English blood. For the half-breds there will be reason, believe us, to lower this maximum a little in order to remove still farther the thoroughbred type. It is to be considered, moreover, that if the too nearly thoroughbred horse loses its roughness, this only increases its endurance, and there is in this a sort of compensation.

Dangers of Fraud.

There remains to be met one last argument. "Half-bred races are a chimera! The competitors that present themselves under the name of half-bred, with some chances of success, will be disguised thoroughbreds; fraud will reign triumphant on the race tracks, false registry papers will be at a premium, and the aim will be missed." Such an apprehension is in no wise justified.

Have we not seen the Anglo-Arabian races succeed in the South in the last few years, so much so that last year they acquired citizenship in Paris and figured on the programmes of the *Maisons-Lafitte*. Are these Anglo-Arabians, therefore, disguised thoroughbreds? Assuredly not; otherwise public opinion would have caused

the suppression of races that had become fraudulent. Why, after that, assign to the half-breds the monopoly of fraud?

Let all necessary precautions be taken to prevent its occurrence, nothing more rational; but even when isolated cases appear in spite of everything, would that be a reason for condemning the institution? It is claimed that at the horse shows unscrupulous dealers bring in American horses with borrowed papers. No one, however, thinks of suppressing the horse show.

Means of Fighting Fraud.

The best means of combating fraud is to be pitiless towards the cheats. At the first attempt duly proven, let the guilty party be decisively ousted from the tracks and declared barred from selling a horse to the remount bureau. After an execution like this the rogues will reflect.

There will, nevertheless, be reason to regulate in a very precise way, the qualification of the horses. To the registry papers, which cause faith, new guarantees may be added; we could render the document more complete by requiring that it be provided with periodical signatures under the charge of the majors. It could be required that the horses race first in the region where they have been raised, where they can be known, before being taken elsewhere. These matters of detail need to be studied; they have an importance upon which it is good to insist.

Budget Difficulties.

The principle of running races for half-breds being adopted, the budget question must not be a bugbear. The prizes given by the state, modest and few in number at first, will not constitute a heavy charge upon our finances. However, the necessary funds must be found. Their source is quite well indicated.

Means of Overcoming Them.

Each year the state deducts from the results of the mutual pool a considerable sum, appropriated at present to the improvement of the remount studs. It is very presumptuous to ask that it divert a small part to encourage more directly the breeding of cavalry horses? One hundred thousand francs in prizes allowed by the department of agriculture, added to the eighteen prizes that the Steeple Chase Society gives already, would suffice to obtain this result. We may be allowed to ask if the tax-payers' money would not be more usefully employed in this manner than in buying a single stallion for 125,000 francs.

Moreover, why should not the local racing associations, if duly solicited, become the allies of the state in this praiseworthy enterprise? Why should they not leave on their programmes a little space for half-bred races? These would advantageously replace some of the hurdle races or steeple chases ordinarily contested by

two or three poor thoroughbreds, often geldings, rag ends of the suburban races. Interest in the spectacle would lose nothing by it, and breeding would gain a great deal.

In view of this happy initiative on the part of the state the great racing associations could not look with an evil eye upon the progress of this new sport, which could give them no umbrage. One day, perhaps, the association for half-breds, recognizing that no design were had upon its trotters, would consent to enlarge its programmes and give mixed meets in which the half-breds would alone pay the expenses, as trotters and as steeple-chasers. It would have thus a fine rôle to play and would attract to its special races a public that shows itself somewhat rebellious to the charms of trotting alone.

The Light Cavalry Remount.

The greater part of our light cavalry is supplied with horses from the south or center. However, in seven regiments all or part of the quota still comes from the depots of Caen, Saint Lô, Angers, Fontenay, Paris, Suippes and Mâcon. There results for these corps an incontestable inferiority of supply which we have an interest in stopping. No one indeed dreams of denying the superiority of the southern horse as a light cavalry horse, and if the present state of things is maintained, it is in order to give a market for the product of the other districts in small horses.

Now, it is possible to reconcile the interests of the army and those of the breeders. To do this it must be decided that all the light cavalry shall be supplied principally with horses from the south; at the same time each regiment will be allotted a certain number of horses coming from other sections, which, being heavier, would answer special needs. Those which are of good enough stock would be sought by the rather heavy officers who find difficulty in procuring a mount in the horses from the south; the class reserved for superior officers of infantry and unassigned officers would receive a part of the lot; furriers, hospital men, telegraph operators, who carry some baggage on their horses, would also utilize a certain number. Finally the rest could advantageously replace, upon the heavy baggage and supply wagons, the horses from Tarbes and the like, which, if they are incomparable saddle horses, are in nowise suitable for heavy draft.

The remount bureau purchases annually about 400 horses in the departments of the north and west. By distributing this contingent among the thirty five regiments of chasseurs and hussars, the quota of each would comprise about a dozen animals; on the other hand the fact of sending twelve southern horses less into the twenty-eight regiments where this class forms the total of the present strength, would render disposable about 350 animals, which would assure the remount of the seven other regiments.

For a few years the regiments where the substitution took place would probably suffer a little from the lack of homogeneity. But this inconvenience would be largely compensated by the final result.

Besides, the experiment has already been made. In 1888 the Fifteenth Chasseurs, supplied up to that time with horses from Saint-Lô, began to receive horses from d'Aurillac; and the juxtaposition of these two elements gave rise to no serious complaints.

Military Races.

Nothing could be more natural than to make the military races serve as an encouragement to the breeding of cavalry horses; we may add, that nothing could be easier. The military authorities have it in their power to attain this important result without having to appeal to Parliament, without its costing the treasury a cent; it is sufficient to amend the regulation which has governed the "military" since 1892. This regulation admits thoroughbred horses to all the officers' races, and limits itself to imposing a weight handicap upon them. The result is, that to have a chance of winning a prize one must have a thoroughbred horse, for the half-bred horses taken from the ranks capable of figuring honorably upon their arrival are met with only exceptionally.

Officers desirous of entering are forced to buy thoroughbreds, which they sell back to the state at a loss of several hundred francs; that is to say, the wealthy officers, and those who act as if they were so, can alone take part in the military races. The others are discouraged and abstain. The "military" are at the mercy of a few specialists, who transport themselves with their "cracks" throughout France and distance the other contestants; whence those slender fields, reduced often to two or three starters.

There is nothing, even to the interdiction against giving a prize to the second horse, an interdiction whose cause escapes us but which the regulation prescribes, that does not contribute to aggravate the evil. As soon as there is a good horse in the race the others give up the struggle.

Revision of the Regulations With a View to Encourage Breeding.

The regulation of 1892 is, for many reasons, condemned by all the cavalry; the conditions of distance, of weight, that it exacts are recognized as defective. Its revision, awaited with impatience, would be welcomed with enthusiasm.

But from the special point of view with which we are concerned we ask only the introduction of the following provision:

In the races reserved for officers (outside of the "military" of the first and second series, whose conditions are to be modified, which perhaps could be united in a single series, but which must in any case remain open to thoroughbred horses) there is created a special series, reserved for cavalry horses coming from the remount depots, and not to those bought back from officers by the corps remount boards. Qualified as half-bred by their registry papers or recognized as *bona fide* such by a regimental remount board.

Premiums to Breeders.

In every race of this series there will be awarded a premium of 100 francs to the breeder of the winning horse.

No horse shall be able to win more than four prizes of this series.

The racing associations in the neighborhood of cavalry and artillery garrisons will be encouraged to cause a race of this series to appear on their programmes, and warned to deduct 100 francs, as a premium to the breeder, from the sum they appropriate to purchase the object of art destined for the winner. If in consequence of an understanding with the minister of agriculture, the latter could include in his budget the premiums to breeders, it would, of course, become useless to employ this means.

The day when this provision has been adopted and made operative it is not to be doubted that the military races, now in atrophy, will take new vigor; they will at least be open to all the young and active officers, to the great advantage of their instruction in horsemanship. On the other hand, the breeders, who, for an animal that has won his four series, will receive 400 francs, will see this sum added to the purchase price of the remount department; for a horse worth from 1,000 to 1,200 francs this will be an appreciable and appreciated supplement. So they will try to produce colts capable of bringing them such a windfall. Would not that be a very well understood encouragement?

An analogous measure could be adopted for the non-commissioned officers' races, reducing the premium to fifty francs.

Conclusion.

Although we have reached the end of this study, we have been unable to view on all sides the question of the cavalry horse.

In conjunction with the encouragements that we propose, the state will be able to assist to the extent allowed by the resources of the budget through all the means that competent men may suggest; modifications in the manner of conferring premiums on the colts, augmentation of the number of horses bought, on condition of returning some of them into circulation after their military training, still broader reforms, transfer of mares to the breeders, etc., etc. Each of these questions deserves to be the object of an attentive examination.

But the measures we have indicated present this advantage, that they can be applied immediately and at little expense.

At a period when the most decided good will is often paralyzed by the question of the budget—and also by the difficulty, from the parliamentary point of view, of reconciling general interests with local interests—perhaps an experiment of this kind would be well worth trying.—*Revue De Cavalerie. Translated from the French by Lieutenant Benjamin Alvord, Twentieth Infantry.*

A CRUISING VISIT TO SOME GERMAN BATTLEFIELDS.

When I drew this picture on the wall, to which I must plead guilty, I was all alone in the room except my excellent friend Major ABDY, and I thought it was a very fine picture; but since coming back to it with so many eyes upon it I am a little afraid of it—it looks explosive—but it will have to do duty this evening to enable me to explain the scientific lecture I am about to embark upon. I simply wish to illustrate by this sketch what a necessary article is a canoe in exploring the countries of Europe for purposes of history. My canoe "Caribee," which I have here tried to picture, is fifteen feet long; it has a sleeping well seven feet long where one can sleep very comfortably by throwing down a coat or a blanket and wrapping up one's boots for a pillow; and there is a little tent which can be spread between the masts. I carry a spirit lamp and a few articles of stores which do not take up any more room than what goes into a soldier's knapsack. The front compartment is watertight, and the other one also, to within three and one-half feet of the stem and stern, and a little kindling wood is carried in the front compartment in case of having to camp of a wet evening. In the after locker I keep the bedding and all things of that sort in case of a capsize. The little sails here are purely auxiliary. The little fan centerboard of brass takes up no room when it is folded up and it drops perhaps quicker below the keel. The whole boat only weighs eighty pounds, so that it is easily carried on one man's back for short distances, the contents constituting a second load. This little boat has carried me and my maps in a great many countries of the old and new world, and always in the most successful way. A great advantage of that boat springs from the fact that in nearly every country of Europe there are a large number of officials, principally policemen, who make it a business to enquire what the stranger is doing, and it is an enormous convenience to have a little boat that slips along and leaves no trail. A little craft of that kind puzzles them in the beginning, and by the time they have solved the puzzle the boat has gone somewhere else and it is no more their business to enquire what it is. It is an exceedingly valuable boat in that respect. One does not camp until twilight comes on and then one always selects a little open spot above the village, not below it, and no one is notified, and the next morning you cook your coffee between your knees as you float away in the dawn of another day.

This peculiar trip that I am speaking of now was started from the head waters of the Elbe, which is really not the Elbe, but the Moldau. The Elbe runs through the heart of Germany from the top of Bohemia to Hamburg. I shipped the boat by rail from Flushing up to the head waters at Budweis. It is astonishing how little it costs to send a boat of that size half way across Europe. I think it was a matter of 10s. or 12s. The German railways have a very convenient and kind way of charging, only by weight and not by cubic contents as the railways do here, which makes an enormous difference. I found it at Budweis in good condition and I started down towards Prague.

Bohemia is to-day a battlefield of races; it is more insufferable than the most insufferable part of the Transvaal. If you speak to the Germans you are insulted by the Czechs. I have never met anybody who could talk Czech. I do not know what the effect of speaking Czech among the Germans would be, but I found after my first day's experience it was safer to begin with Dutch or English, or anything like that, and to work up very slowly and carefully to the German.

Prague was a place of great interest to me, because it was there that SCHARNHORST died. SCHARNHORST is, I suppose, now universally recognized as the author of the universal service in the army. He was the man who contributed, perhaps more than any other single man, to make Prussia capable of rising against NAPOLEON, uniting all her forces, civil and military, against an enemy who seemed at that time unconquerable. He was a simple, modest, scholarly man—one would have said a most unsoldierly-looking man. He was not a Prussian, and it may be interesting to recall that not a single one of the great men who made Prussia a military power was a Prussian; they were, every one of them, from non-Prussian countries. SCHARNHORST was a Hanoverian; GNEISENAU was an Austrian subject; BLUCHER was a Mecklenburger and saw his first service in the Swedish army; the great Prime Minister STEIN was from Nassau; and HARDENBERG, the Prime Minister who succeeded him, was a Hanoverian. But BLUCHER, and GNEISENAU, and SCHARNHORST, the three greatest generals of that time, were not one of them Prussians.

In Prague I went to see where SCHARNHORST had died, and I assumed that every boy in the streets would be as familiar with SCHARNHORST, who had saved Austria as well as Germany from NAPOLEON, as a boy here would be with WELLINGTON and NELSON, but I could find no one of the average class of men who had ever heard of SCHARNHORST, and it was only when I was, by my host, introduced to a professor at the Prague University, that my efforts were successful. He told me where SCHARNHORST had died in Prague, and I went to the house and climbed up stairs and rang the bell. A very stout lady came out, and I asked her to excuse my apparent presumption in calling upon her, but could she tell me if SCHARNHORST had died here. She told me rather surprisingly that there was no such lodger in the house, and that I had made a mistake. So I went down stairs, and my professor friend was waiting for me down stairs—he was actually afraid to come up; he was a German and the house was Czech. He told me he was quite sure it was the place and that I had rung at the right door. So that is as far as I got in trying to pay my respects to the memory of that great man in Prague.

That recalls to me a trip that I made in another direction. Perhaps I ought to say, first, that the scenery from the headwaters of the Moldau down to Prague is magnificently wild. The peasants there are equally wild, but not magnificent. The principal life is connected with taking rafts down the river. There are many rapids and a few weirs. Sometimes you can shoot them in the canoe. I

shot some, but I shot one too many. I smashed the rear part of my boat and I had to make a raft trip of it for two days, which was very interesting, living with the men and hearing about their life and adventures.

From Prague I paddled down to where there is a little town about three or four miles from the battlefield of Kulm. That battle, as you will all remember, was the sequel to the famous battles round about Dresden, where NAPOLEON smashed the allies completely in the summer of 1813, and where NAPOLEON followed his victory up as far as the little town of Pirna, which is a short way above Dresden. And there he had one of those violent attacks upon his digestive apparatus, the result of his most extraordinary gluttony, and had to turn back, leaving VANDAMME to follow over the mountains. Well, VANDAMME had engaged the Austrian and Russian army near Kulm, and apparently was doing very well, though the allies held their own fairly well. He was expecting momentarily reinforcements which had been promised by NAPOLEON, when suddenly over the brow of the mountains appeared blue coats, and there was a great hurrah and cheering amongst the Frenchmen, and they attacked with redoubled energy; but instead of Frenchmen they turned out to be Prussians under KLEIST. This Prussian general received his later title from NOLLENDORF, and a splendid monument near the palace in Berlin, by reason of having stumbled upon this place near to Kulm without having the vaguest idea that he was going to meet there anything but disaster. He was riding along with one or two of his adjutants, and with tears in his voice, he begged them to tell a fair story of his disaster, saying to them: "I know this will be a disgraceful day, but do speak the truth and say I did my duty as a soldier;" and he supposed of course that he was about to be smashed entirely. Instead of that it was his presence which demoralized the French and made him the hero of the battle of Kulm, a reward which he had not deserved. He was most surprised. That illustrates the many surprises there are in war, as in love.

Kulm is the first place that the canoe reached on coming down the Elbe, and it is one of the most historical places in connection with the war of the Prussians in the year 1813 against NAPOLEON. It is a very easy run from the river where you can get a trap for the excursion. There is a castle at Kulm where VANDAMME had his headquarters. I wished very much to see this castle; it was a notable place and I heard that there were some very interesting historical collections there, and I thought that by sending in my card, fortified by a note saying that I was a member of the Royal Geographical Society and of the Historical Society, the owner would let me come in. But no, he sent out word that there was nothing historical about the place, so I must off. Evidently I was there taken for a German also. At any rate, my two samples of Austrian courtesy were not encouraging.

One can see standing near that castle at Kulm the whole of that battlefield of 1813, exactly as it is described in any fairly detailed history. You can see where the Prussians came winding down

over the hills and you can appreciate perfectly how the French made their mistake. They were with their front turned to the south, fighting the Russians and the Austrians, when suddenly this army of KLEIST came down upon their rear and demoralized them. The whole situation is perfectly clear while standing at that point, and it is a most interesting battlefield to study. The Prussians, who were the victors, were so sure they were defeated, that they ran for all they were worth back away from the French; and the French were running in the same direction for the same reason. They got so inextricably confused that when night came and they had run themselves out of breath, they decided to pass the night as friends and to abide by the decision on the morrow; that whichever proved to be the conqueror should take the other in tow.

Then when we came down to the familiar battlefield of Dresden we find that the town has so grown since 1813 that of course much of it is now lost; but standing where NAPOLEON stood up, one gets a tolerable idea of the place.

From Dresden there is a charming little trip out to Bautzen, about thirty miles east of the Saxon capital, through very pleasing scenery. There the whole population still speaks Wendish, and it is the headwaters of the Spree, that runs from there through the great spongy country that furnishes all the water for those lakes about Berlin. That whole country is a paradise for a canoeist, and it is hard to think about battles and war when you have such opportunities of enjoyment there.

At Bautzen, again, one gets the country unspoilt and almost exactly as it was when NAPOLEON brought his artillery up against the position of BLÜCHER. The little heights which the Russians and Prussians occupied stand exactly there as interesting to-day as at the battle of Bautzen. The little river Spree is exactly as it was then, dividing the two forces, and one follows the road by which the Prussians and Russians retreated after that day, leaving 2,000 on the field. My visit to the battlefield was almost in its anniversary in May of 1893, after eighty years' interval, and I ate my lunch on the same spot that NAPOLEON had used to spread his carpet and dinner service before the day's engagement.

Bautzen is one of that chain of battles, as you will recollect, which commenced near Leipzig at Gross Gorschen (it is sometimes called Lützen) on May 2, 1813. There the new army of Prussia fought its first battle against NAPOLEON. Each claimed the victory; but from Lützen they retired in good order to Bautzen where they fought on the 20th and 21st of May. The allies, with only 24,000, checking NAPOLEON with 75,000. They kept fighting these drawn battles and retired in order, and it must have been in reference to these battles that some witty French soldier remarked: "A few more such victories and we are lost." It was at that battle of Lützen that SCHARNHORST was wounded in the leg, and it was from that wound that he died in Prague a month or two afterwards.

When I was working in the German General Staff archives at

Berlin I was shown one of the last letters ever written by SCHARNHORST, and I asked permission to have it photographed, thinking that possibly I could use it in the historical work I was engaged upon at the time. It was done for me and, as far as I know, this is the only *fac-simile* of that letter. It was my intention to present it to your institution if you thought it worth while to take charge of it. [Cheers.]

I have perhaps an exaggerated feeling about SCHARNHORST on account of the amount of work that he had cut out for him in merely keeping in his position. The King disliked him as he disliked every man who was energetic. FREDERICK WILLIAM III. was surrounded at that time by the old style of courtiers who advised always to do nothing, to leave things as they were; and SCHARNHORST was a quiet, patient reformer, who yielded to them at the moment, but always kept this purpose in view and finally produced the reform which to the King seemed pestiferous revolution. FREDERICK WILLIAM opposed universal service in the German army, because he said it would arm the people against their sovereign. He said his crown would be worth nothing if the people had arms, and he wanted only a small select army of guards which might protect him against the radicals at home.

Lützen first gave the "Iron Cross" its significance. It may be interesting just to note here the evolution of the "Iron Cross," and I think you will see the connection at once. There is the cross of the old Religious Order of the German Knights. They were a sort of pious, freebooting lot who got a license from the Pope to colonize and evangelize wherever they could without interfering with other people, mostly up along the Baltic. They built castles and kept the people in order. They were just as pious as the Boers, and I think treated the natives in about the same rough and ready way. This ancient German order is very popular in Germany, and when it came to adopting some popular medal it was readily suggested that there should be a revival of that order. GNEISENAU wished an insignia exclusively for the new levies of volunteers, the militia, the rural soldiers, so as to stimulate the pride of citizens; but it had no reference to the army in general; and as the country was wretchedly poor the mere manufacture of medals was a very serious item. The cross was to consist simply of two pieces of black and white ribbon sown upon the coat. This was in the year 1811, so the design of the "Iron Cross" preceded by two years the date commonly assigned to it. The King opposed the original design because it appeared to him that there was something democratic about it; there was something which he thought was undermining, or subversive of authority; and so when the war did break out he created the "Iron Cross" in its present shape, as a military medal for regulars as well as volunteers.

Iron at that time was in Germany an exceedingly popular symbol, for it indicated the terrible struggles that they had gone through. "Blood and Iron" was then a watchword.

In Germany to-day the credit for conceiving and instituting the

"Iron Cross" is given to FREDERICK WILLIAM III., but I cannot find evidence for this. It seems to me that GNEISENAU deserves this honor.

The German General Staff has produced monumental works in commemoration of the War of 1870, and the battles of FREDERICK THE GREAT. As yet, however, they have not published the history of this War of 1813; perhaps because it was so much of a disgrace to their own army and because the King played so very poor a figure.

In this little sheet that I hold in my hand, less than *Punch* in size, you see the *fac-simile* of the principal newspaper of Germany in 1813. It has four pages and it contains the "Address to *My People*" on the opening of the war against NAPOLEON; and "*To My Army*" there comes the decree establishing the "Iron Cross." It is a curious little thing—it shows, one may say, how the modern newspaper has evolved from it. And this is also significant, because to-day the German Emperor makes his addresses first to the army and last to his people; which would imply that in those days they had more need of the people and so they put the people first.

Here below Dresden is a little place called Torgau, which is now mostly known on account of the "Torgauer March," but near there was born GNEISENAU at a little village called Schildau. It is eight or nine miles from the railway and, I think, as many from the river. I drove over there with the man that carried the post, and he was a very communicative man. So I asked him about GNEISENAU, but he had never heard of him, and this was in the intelligent country of Saxony. I was a little discouraged by this, because I had hoped to learn from him the house where GNEISENAU was born. I knew that it was at an old inn called the "Gold Mug," or something of that kind; and GNEISENAU was born under very romantic circumstances.

It was in the year of 1759, I think, when FREDERICK THE GREAT's army was driving back the Austrians from Torgau. GNEISENAU's father was an artillery lieutenant in the Austrian army and he had run away with the young lady who afterwards became GNEISENAU's mother. During the hurly-burly of that winter's campaign, little GNEISENAU was born in this old inn of Schildau. On the ground floor the walls are at least four feet thick. The house is no longer an inn, but the home of a miller, who has nothing but a cheap lithograph to indicate the interest that attaches to the place. There is not the slightest outside indication that anyone takes an interest in the house, or that anybody makes patriotic pilgrimages to that village of Schildau. One would suppose that the house would be purchased by the nation or, at least, that a plate on the wall would call attention to the great man who here first saw the light.

That night I went to visit the parson of the place, and as he had been newly appointed he was exceedingly energetic and interested. He had never heard about GNEISENAU having been born there, but he produced his church books and looked it up; and then allowed me to take a photograph of the entry in that book according to the

christening. This photograph I have here, and I should like to add this to your other historic treasures [applause]. I feel as though I was purchasing your applause [laughter]. But the historic interest of this is that it gives the complete and obvious reason why GNEISENAU's mother does not appear on the register of her son's baptism. There was, as you will see by this, no officer of importance present at the ceremony. It was evidently a painful ordeal. She hurried off with her all too heavy, if not unhallowed burden, and the child fell from her arms at night (whether intentionally or by accident we shall never know) and would have been run over by the next artillery wagon if some kindly soldier had not picked it up and brought it to the mother again. Whether it was a welcome return I do not know either. Little GNEISENAU's mother soon died of shame, neglect and suffering, and he was farmed out to some peasants in the neighborhood. But the father, whose name was NEIDHART, soon forgot to make payments, and the little boy was set to attending geese in order to earn his bread.

One day a peddler or a tramp came by there begging and the little boy had nothing to give him. But he said he had at home a hymn book of his mother's; so he ran back and got the hymn book and gave it to the tramp, and the tramp took it and tried to raise some money on it. But the person to whom the tramp first brought the book was suspicious; and upon examining it discovered the names of his mother's parents. By that means the child became known, and pretty soon a coach and four drove up and took the little boy away, and he was educated and lived to become BLÜCHER's chief of staff. He discovered, or somebody discovered for him by a process of reasoning which is quite beyond my faculties, that his ancestors had had a castle called Gneisenau somewhere in past ages. On the strength of this shady knowledge he assumed the new name and dignity. When he grew up he entered the Prussian army and found that it was customary under the GREAT FREDERICK that officers should either be noble or, at least, claim nobility—about the origin of which they were not very particular in those days. So he at once changed from NEIDHART to GNEISENAU.

The uninitiated is a little puzzled to discover why he never called himself "of Schildau," but preferred to be entered as "of Torgau," when he went to the University of Erfurt at the age of sixteen. It seems that Schildau has a reputation for uniting all the "sillies" of Germany. Whenever you tell an outrageous story about a fool it is always somebody from Schildau, and the name of "Schildauer" is a synonym for all that is absurd. They still tell the story about a woman of Schildau who had a cow, which she desired to pasture upon the town walls, but strangled the beast in her efforts to pull it up. Another story refers to a house that was supposed to be on fire. The people rushed out with their buckets and pumps, and squirted water over the house and finally discovered that it was no fire at all, but merely the reflection of the moon upon the window panes, and so on *ad infinitum*. All such stories in Germany are attributed to Schildauans. But such trifles as these were enough to

affect history, and so make people for a long time believe that GNEISENAU was born, not in Schildau, but in Torgau. Fortunately this fac-simile *here* is able to give us the true birthplace and birthday of the only citizen of Schildau who was not made to be laughed at.

The battlefield of Leipzig will always be interesting; although it is such an enormous task to get about it that one forgets what one saw first, when the last field is reached. One is shown the spot where PONYATOSKI, the plucky Polo, was drowned, in the river which is little larger than a big ditch. Then one sees the narrow dyke, which is the only means of getting from Leipzig across on to firm land again, where the French armies chased and chased along after they had been beaten, reminding one of those horrible scenes in the Conquest of Mexico. Close to Leipzig are those flat plains of Lützen which seem to have been made especially for battles or maneuvers. Not only was the battle of Gross Görschen fought there, but FREDERICK THE GREAT's big battle of Rossbach and GUSTAVUS ADOLPHUS's big battle of Lützen; and it forces upon one the conclusion that this is essentially the military and political center of Germany. It became early the central city for intelligence—it was the center of the book trade, and every road from every part of Germany seemed to go through Leipzig. It is amazing, as a matter of geography, the number of people who have to go through Leipzig in getting about Europe. The roads from Vienna, Warsaw, Copenhagen, Paris, Hamburg, Rome, all seem to lead through Leipzig. While engaged upon that part of my history, I could not help wondering that Leipzig was not made the capital of the German Empire in 1871. If you will draw a circle around Leipzig you will see that it includes Denmark and the borders of Poland, Vienna, Prague, Munich, the borders of France and Belgium. In fact it is almost the center of a circle which takes in the whole of Germany, and I take it that the German Emperor to-day would have had an easier task in the government of that great Empire if Leipzig had been made the capital. It would have moderated that feeling of dislike between south and north Germans. Berlin is still essentially a Prussian capital, and in cities like Munich and Dresden the people pay grudging homage to Berlin as the capital of their Empire. But that is political.

At Lützen the country is so flat that it is very difficult to discover the historic features of the battlefield without great pains. The villages are so exactly alike as to be confusing, like trees in a forest.

The headquarters of NAPOLEON on May 1, 1813, are occupied to-day by officials of the government. I dined at the *table d'hôte* with various local functionaries who took interest in the object of my visit, but not one of them apparently knew much about that part of the country. I suppose the reason was that they had been appointed from other districts. But there is one point that can be identified very satisfactorily, and that is the only rising ground, if I can speak of rising ground in a plain that appears to be flat—a slight elevation where NAPOLEON massed his artillery towards the

close of the day. Here it was that NAPOLEON is described as having for a moment turned to his aid-de-camp with a look that meant to say: "Do you believe that my star is going down?" He had never yet met troops that could face him as these troops did; it was a complete revelation to him after the experience of Jena in 1806, to come back to within a few miles of that field and to meet practically the same people resisting him and fighting for every inch of the ground and meeting him in hand-to-hand struggles in these little villages and showing an obstinacy and manly courage that he could not explain. That battle, although a drawn one, gave the new popular army of SCHARNHORST enormous courage for the continuation of the war. There was only one man in the whole Prussian army who despaired, and that was the King, but then he was born so.

Then we come down to another place *here* (pointing to a map) which I shall rapidly touch upon because it is now late, and that is Wartemburg. Let us once more take to our canoe at Torgau and sail down the river to where Blücher took his army across the Elbe and threatened NAPOLEON's retreat—not a decisive battle, a desperate fight in a desperate swamp. At Wartemburg I could not help thinking of some of the native villages on the African Coast embedded behind swamps. It is most difficult of access from the Elbe and is protected from the high water of the river by little dykes. The Prussians had to fight up to their waists in the mud, and the hardest work they had to get through there was at a place called the Sauanger, which means "hog wallow," a boggy hole; and they drove the enemy out there with wonderful pluck and dash—this new army of volunteers, which consisted largely of men who had never seen a battle before. It was there that the men who fought against them most obstinately were not the French, but their own fellow Germans, and from that time on, until after Leipzig, the struggle against NAPOLEON took upon itself something of the character of a civil war—Germans against Germans. The hatred of the north of Germany against the south of Germany was so intense that it was with the greatest difficulty that they could be got to give quarter.

Now at Wartemburg I think I shall lay up my canoe for the present; not because the further cruise to Hamburg is devoid of interest, but because your clock is keeping time for you—as well as for me.

In conclusion, permit me to pay a tribute to my canoe again for one advantage which it has over the bicycle or the horse or any other means for assisting the progress of a single man in a strange country; and that is that it has excellent dry storage room for maps and books and other works of reference which are so valuable. You can read and write as you go and never be fatigued. I do not know of any means of locomotion which affords the inquisitive stranger so many important advantages as does the canoe I have sought to tell you about.

By the way, on one occasion I was cruising from Potsdam along

the old line of works prepared in 1813 for flooding the country about Berlin, in anticipation of an attack by the French, when I came to a point where the water stopped and I had to carry my canoe over to a long ditch which my maps told me would connect with a point I was seeking. I found but two or three inches of water under my keel; but as I soon entered a government forest where deer abounded, I ceased to care where I was going, and followed the stream for several hours, most of which I occupied by dragging the craft over sand bars. Suddenly the forest ceased and as I glided under a bridge I saw a Prussian sentry who was fortunately looking away from me. I took no pains to attract his attention, for I found I had come out immediately at the point where the artillery experiments are made—which is an exceedingly serious thing if caught. I was apparently either a poacher or a spy, and the choice of character embarrassed me. Time commenced to drag with me. I disliked the idea of this chap on the bridge discovering me. So I lay under the bridge and watched till at last his helmet disappeared, and then I made the water boil as though the devil were blowing into it, and soon came out into a broad lake where I was once more safe.

This shows what can be seen from a canoe even without making much effort.

I thank you very much for listening to my lecture [cheers]. —
Poultney Bigelow, in Royal Artillery Institution.

REMINISCENCES OF SERVICE AS AN AID-DE-CAMP.

History affords no more brilliant example of patriot and soldier than WILLIAM TECUMSEH SHERMAN. The civilized world is familiar with his grand and heroic achievements. I am proud of the privilege to rejoice that I was for a time a member of his military family; have felt and recognized the noble gentleness of his heart, and the fatherly kindness with which he watched over and directed me in the performance of my military duties. Profiting by his advice, and strengthened by his exemplary life, I was enabled to guard against evil temptations incident to camp life. Positive and firm as adamant, he yet seemed always to request rather than command a staff officer to carry a message or deliver an order to this or that commander. But when he spoke to a wavering line of men, or sought to rally a broken body of troops, his great soul seemed fairly revealed in his stern face and flashing eyes, and his words carried with them the reassuring tones of one "born to command." He seemed ever mindful for the safety of his staff officers, but oblivious to his own, nor could we often induce him to take for himself the precaution he so often enjoined upon us. He was a fearless, not to say reckless rider. He cared but little for dress. He loved his soldiers. But more than all, he loved our country and our flag. I could not well omit the foregoing preface, as I am to relate to you some personal reminiscences of service as an

aid-de-camp. I shall confine myself to some of the amusing incidents, rather than a recital of the sad scenes so familiar to the soldiers of '61 to '65.

I entered the volunteer service in August, 1861. In October was elected first lieutenant Company "G," Fifth Regiment Ohio Cavalry. Having entered the service with a firm resolve to do my part in putting down the rebellion, I at once armed myself with an "Ames saber," regulation size, a "Smith & Wesson" carbine, a brace of pistols, a belt pistol and a "bowie knife" with a seven inch blade. Immediately after the fall of Fort Donelson our regiment was ordered to report to General W. T. SHERMAN at Paducah, Ky., and as a part of his command we began the movement which resulted in the concentration of our forces at "Shiloh." Those of you who were in that part of the army at the time know something of the demands made upon the cavalry, and, without going into details, I will state that "in the middle" was the normal condition of the Fifth. Having received an order one very dark night to move my company out on a certain road to guard against a too sudden attack upon our boats, I appealed to the adjutant to send one of the other companies, as my men had been on duty all day and had just laid down to rest. The adjutant's refusal led to a war of words between us, in which I used some adjectives not found in the "tactics," and interdicted by "army regulations." The adjutant threatened me with arrest and divers other punishments if I didn't comply with the order at once. I obeyed, and with my company spent the night in the saddle, some two miles from the boats, to which we returned at daylight. That afternoon I received an order from the colonel of my regiment to report in person to General SHERMAN at 9 o'clock the next morning. In the morning I learned that the steamer "Continental," on which General SHERMAN had established his headquarters, was upon the opposite side of the river. Reporting the fact to the colonel, I was told that I would have to find some way to cross the river. I finally hired some deck-hands to take me over in a yawl, paying them five dollars for the work. I had some difficulty in finding General SHERMAN, but succeeded at last. He was on the hurricane-deck, just in front of the pilot house, smoking a cigar, and evidently absorbed in thinking of the important events then transpiring, and in which he was taking so prominent a part. I scarcely knew whether it would do for me to approach him, or whether it was not best to wait until he spoke to me. A few moments decided the matter, and I advanced upon him with some trepidation. Saluting him, I said, "General SHERMAN, I am the lieutenant of Company 'G,' Fifth Ohio Cavalry, ordered to report to you." The General eyed me very closely for a moment. I thought he was recalling to mind the language I had applied to the adjutant of my regiment, for I believed the matter had been reported to him. I learned from the General afterwards that he was wondering how I managed to bear up under so many arms, for I had *everything on*. Offering me his hand, he said, "Well, Lieutenant, how would you like to serve me as an aid-de camp?" I replied that I feared I was

not qualified to fill so important a position. He talked very pleasantly to me for a little while, explaining what my duties would be, and finally told me to think the matter over and report to him again in the morning. I started for the steps below decks, and when about half way down, remembering that he had ordered me to report to him again in the morning, and, mindful of the expense attending the execution of such orders, I called to him and said, "General SHERMAN, I had to pay some deck-hands five dollars to row me over here, and now that I am to report to you again in the morning, I'd like to know how I am to be reimbursed." He said, "Well, all right, Lieutenant; I will see about that." I returned to my command, and after consulting with my father—colonel of the Fifth, and with the members of my company, decided to accept the position. The next morning the yawl from the "Continental" came alongside, and I was handed a note from the General stating he had sent the yawl for me. I joined him a few moments later, and was introduced to the other members of his staff. A few hours later the "Continental" crossed to the side of my company boat, and my horses, servant and baggage were transferred to the "Continental." That evening General SHERMAN gave me a five dollar gold piece, and at the time I supposed it was public funds in his possession for incidental expenses connected with his command. I learned afterwards that it was out of the General's private funds.

A few days later General SHERMAN was ordered by General C. F. SMITH to take his own division and the gunboats "Tyler" and "Lexington," and proceed further up the river, and strike the Memphis & Charleston Railroad. We went up stream as far as Tyler's Landing, just within the borders of Mississippi. On our way up the gunboats were fired upon by a Confederate regiment at Pittsburg Landing, but a few shots from the "Lexington" soon dispersed them. Our designs on the railroad were foiled by the condition of the roads and high waters. Embarking again we came down to Pittsburg Landing and debarked, taking up a position about two and a half miles from the landing. Our headquarter tents were pitched a little to the rear and left of the old log meeting house, "Shiloh—a sacred spot, the name immortal." Having witnessed the grand spectacle of more than seventy steamers carrying our 30,000 troops now concentrating on this plateau, I thought we had men enough under arms to clean out the Confederacy and half of Europe. And my opinion was strengthened for a brief period by an incident that occurred a few days before the battle. General SHERMAN had ordered a review of some of the regiments and batteries of his division. In order to show up our full fighting strength, I buckled on all my equipments and rode to my place in the line of aids, to witness the review. In a little while the general turned to me and said: "Ride over to Colonel BUCKLAND's headquarters, give him my compliments, and tell him to send the Seventieth and Seventy-second Ohio regiments to this field, and," added the General, "as you pass our headquarters you had better leave your carbine and knife in your tent." On reaching my tent

I threw off the gun and knife reluctantly, but accepted the order to do so as further proof that we not only had more than enough men, but that we were too heavily armed—a delusion that was instantly dispelled on a Sunday morning. On several occasions I asked the General why he did not march us out to fight the Rebels, and just as often the General would reply: "Never mind, young man, you will have all the fighting you want before the war is over; it will come fast enough for you after awhile."

On Sunday morning, April 6, 1862, just thirty years ago to-day, the heavy picket firing began. We mounted our horses and rode along our lines till we came to the Fifty-third Ohio Infantry, and while the General was conversing with the Colonel of this regiment a volley from the rapidly advancing Rebels killed the General's orderly and one or two of the Fifty-third men. The battle was soon on in all its grand but awful fury. I am unable to give you a word painting of the awful scene. The precipitate flight of some of our troops at the first fire of the enemy; the bold, brave stand of others; the impetuous charge and countercharge; the roar of cannon, the shriek of shells, the rattle of musketry, the shrieks of wounded and dying men, filled my very soul with awe, if it were not absolute fear. I confess I felt, on more than one occasion during that early morning, that I did not want to see a battle fought as much as I had supposed; and I was very indignant at the very unceremonious manner in which the Rebels had begun the fight. But General SHERMAN's conduct soon instilled into my soul a feeling that it was grand to be there with him. During a critical moment of Sunday's battle the General's horse was shot from under him. I dismounted and gave him my horse. As he was mounting he said: "Well, my boy, didn't I promise you all the fighting you could do?" I told him I would relieve him from further obligations under that agreement. I captured another horse very soon, and riding over to where I had left the General, he was dismounted. My horse had been killed. We caught a battery horse, and the General mounted him, and in less than twenty minutes that horse was struck by a solid shot and instantly killed. The General was soon mounted on a horse that belonged to some officer who had evidently been killed or wounded. My name does not appear in the General's official report of this battle, wherein he mentions several staff officers. I never knew this for years after the war, and should not then have felt at all slighted had not my attention been called to it by an unkind criticism. I mentioned the matter in a letter to the General, stating that a line from him would be a good thing for me to leave behind with my friends that they might use it to refute all such attacks after I am mustered out. I received from him the following letter:

No. 75 WEST SEVENTY-FIRST STREET,
NEW YORK, Feb. 9, 1889.

John T. Taylor, Esq., 115 N. Second Street, Leavenworth City:

DEAR TAYLOR:—Your letter of February 6th is received. I have devolved on a clerk the labor of answering my private correspondence, but like many others you ask a letter from me personally, and you are entitled to it. In the

latter part of March and early part of April General GRANT's army occupied the plateau behind Pittsburg Landing on the Tennessee, and my division held the key point near Shiloh Meeting House, overlooking the bridge across Owl Creek, by which the main Corinth road approached Pittsburg Landing. On that plateau was fought the critical battle of the west, "Shiloh." At the very crisis of the battle of Shiloh my horse was shot dead under me, and you promptly dismounted and gave me your own horse, trusting to chance for a remount. You were then very young, not yet twenty, active, intelligent and most patriotic. I then esteemed you highly, and now that twenty-seven years have passed, my feelings towards you have never changed. I wish you and yours all the prosperity and happiness possible on this earth.

Affectionately,

W. T. SHERMAN,
General.

While stationed at Memphis, Tennessee, in 1862, a company of cavalry appeared on the river bank, opposite the city, bearing a "flag of truce." General SHERMAN directed me to take an orderly, cross the river in a skiff, and ascertain what was wanted. On meeting the commanding officer of the Confederates I learned that his mission was to present to General SHERMAN some papers from the commanding officer at Little Rock, asking that the wife of a major in the C. S. A., then stationed at Little Rock, might be permitted to leave Memphis, join this company and proceed to Little Rock. I delivered the papers to the General. After he had read them he told me to cross the river again, and say to the officer that unless he withdrew his command immediately he would open the batteries of Fort Pickering upon them. I delivered the order, and the "johnnies" were particular in the order of their going, but they went. I wondered why they did not take myself and orderly along. Returning to headquarters, the General gave me a letter addressed to the lady, the major's wife, and a letter from her husband, in which she was informed that he had sent the company to escort her to Little Rock. I delivered the letters to the lady. She became greatly excited, and began making preparations for leaving at once. I told her, however, that I had been instructed by General SHERMAN to say to her, that as she had chosen to remain within our lines all this time, and had kept up a secret correspondence with the enemy, as the letter proved, he would not permit her to pass beyond our lines at this time. She became furious, and gave me more than my share of abuse. The next day, to my surprise, the General told me to call on the lady and say to her that she would be taken across the river and allowed to go if she desired to do so. She replied by saying, "And you tell the General that I have changed my mind, and I will not go." I so reported to the General. He directed me to call on the provost marshal for a sergeant, four men and a hack; go to the lady's house, see that she and her baggage were placed in the hack, and the load deposited on the opposite side of the river. I will close this narrative by saying that the General's orders were carried out and that myself and command escaped with our lives, but our uniforms and the faces of one or two of the men bore evidence of the desperate struggle. On returning to headquarters, I called on the General and formally requested him in case he ever had any

more of that kind of work to be done, that he send Captain McCoy or Captain JOHN CONDIT SMITH, as that kind of work required heavy weights to be entirely successful.

While at Memphis we were joined by the Thirteenth Regiment of regulars, General SHERMAN's own regiment. The evening of their arrival a great many of the officers called at our headquarters to pay their respects to the General. In discussing Memphis and its surroundings, several officers expressed a great desire to see a cotton field. It was arranged that we were to meet at our headquarters in the morning, and I was to see that they were provided with horses and escort to a large plantation about three and a half miles out, and about two miles beyond our pickets. At the appointed time, our guests mounted on horses belonging to the General and staff, the jolly party moved out. Reaching our outpost, I held a brief conversation with the officer in command of the station, telling him of our designs on the cotton field, and, requesting him to be on the alert and render us assistance in case of an emergency, we rode on and in due time reached the field. Throwing down a section of the fence, we rode to the middle of the field, where some darkeys were at work. The officers of the Thirteenth dismounted and began to examine the cotton plants, and all had asked and received permission from the darkeys to pull up and carry away a plant full of bloom. While this was going on I was questioning the oldest of the darkeys to ascertain if any "johnnies" had been seen loitering around lately. He said a whole regiment of "dem fellers (he meant a company) had been yer nearly all night, but just at sun up dey done gone back over de hill." Looking in the direction indicated by the darkey, I saw a cloud of dust rising above the road on the hill a mile away. Calling the darkey's attention to it, he said, "Yes, sah, somethin' a comin', sartin," and in a moment the head of a column of Confederate cavalry came into view. I gave the alarm to my companions, while the old darkey shouted, "All you niggers run for your lives, cos if dem fellers kotch you here talking to dem sojers they will kill the last one of you," and away they ran for the woods. In a moment all my companions were in their saddles, and all but one had with him a large cotton plant. We started for the gap in the fence, and down the road like mad. The moment the "johnnies" saw us they put spurs to their horses, and the race for scalps on their part, and for "home and native land" on ours, began. A few shots were fired by the "johnnies," but they went wide of their mark. For a mile and a half the race was a spirited one, the horses of pursued and pursuers doing their best. I paid but little attention to the order in which the enemy were making their charge, but I did notice that my party were all doing service with the spurs, and that they were rapidly divesting themselves of the cotton plants, and occasionally a hat or cap would fall to the ground. When within a quarter of a mile from our pickets, I looked back and saw that our pursuers were out of sight, and had probably given up the chase; and what for a time seemed a very serious matter now became a very amusing

race. I cried out, "Less than a quarter of a mile to our pickets; if we can reach them we are safe, but they are right on our heels." In an incredibly short time we reached the station under such speed that it was difficult to come to a halt, and, indeed, I think two of the Thirteenth only succeeded in doing so at our headquarters' stables, nearly a mile further on. The scarcity of small change seemed to trouble the citizens of Memphis very much, and they appointed a committee to wait on General SHERMAN and ask his permission to issue city scrip, to relieve the pressure. The committee came and made their wants known to him. He listened attentively, then told them that he would think the matter over and give his answer through the columns of the city papers. The next morning the *Appeal* and *Avalanche* published a letter from the General, addressed to the citizens of Memphis, reciting the request made to him by their committee, and giving them in return a stinging rebuke for their treason, and for having declared cotton to be king. He closed his letter in these words: "I cannot authorize you to issue city scrip, but to relieve the pressure complained of I suggest that, inasmuch as you have declared cotton to be king, you tie up cotton in fire, ten, fifteen, twenty-five and fifty cent packages, and pass that around for change. If cotton is good enough to be king, it ought to be good enough for change."

In the latter part of November, 1862, General SHERMAN left Memphis with 16,000 men to join General GRANT at Oxford, Mississippi. On reaching Coldwater River, about half way between Memphis and Oxford, we found the bridge destroyed, and, as the waters were very high and the current very swift, it was necessary to build a bridge before we could cross. Lieutenant Colonel MALMBURG, of the Fifty-fifth Illinois was given charge of the construction. There was quite a village on our side of the stream (its name I do not remember), composed principally of log houses, and most of them deserted. Colonel MALMBURG went to work with his men, using the logs of the houses for cribbing and the stone chimneys for anchorage, and in an incredibly short time he had two piers, composed of logs and stone, anchored in the stream midway between banks. Using more logs and the available lumber from the houses, he had by daylight a splendid military bridge, and our troops rapidly crossing. Just as the General was preparing to leave the house in which we had spent the night, two or three old gentlemen, citizens of the place, asked the General to sign a statement setting forth the value of the property taken by him for the construction of the bridge, in order, as they said, that they could recover from the United States, after a ratification of a treaty of peace between the Confederate States and the aforesaid United States. The General asked them who destroyed the bridge that spanned the stream just before we reached it. They admitted that Confederate soldiers had. "Well," said the General, "my men have built a very good bridge, have they not?" "Oh, yes," said the gentlemen, "that is a powerful good bridge to be built so quickly, and in the night time at that." "Well, then, I will tell you what to do," said the General;

"just as soon as the last man of my command has crossed that bridge you can have it; and if you will place a man in charge of it and require him to collect one dollar toll from everybody that crosses it, you will get pay for your property a great deal sooner than you will if you wait until I sign that paper," and bidding the gentlemen good morning, mounted his horse and we were away.

On the 5th of December our army arrived at College Hill, Miss. Leaving the army there, the General and staff passed on to Oxford, where we met General GRANT. The next day we returned to College Hill, and the next morning began the return march to Memphis, to prepare for the Vicksburg campaign. As we crossed our bridge at Coldwater, I remarked to the General that it was fortunate for him that the old gentlemen had not followed his advice about collecting toll, and a very unfortunate thing for them, because they lose \$16,000 which you would have been obliged to pay." "That is a fact," said the General, "but then I did not expect to return so soon." When we left Memphis for Vicksburg, General SHERMAN issued very stringent orders against civilians accompanying the expedition in any capacity. On the 26th of December the disembarkation of our troops began at a point some fifteen miles up the Yazoo River. On the morning of the 27th began the movement which resulted in a failure after six days hard fighting at "Chickasaw Bayou." I believed then, I believe now that had General G. W. MORGAN obeyed orders and taken his men into action on the 27th, the enemy's line of works would have been carried, and the capture of Vicksburg accomplished soon after. Be that as it may, the important event to which I call your attention is the following. On the 29th of December I was informed by Captain DAN CONWAY, of the steamer "Forest Queen," that the reporter for a New York paper was on board the steamer "Prairie Rose," in the capacity of assistant steward. I reported the matter to the General. He told me to investigate, and if true to arrest the man. I soon found the man and recognized him. He had been unusually severe in his attacks upon General SHERMAN ever since "Shiloh." Ordering Mr. Reporter to follow me, I marched him over to the "Forest Queen," our headquarters boat, had him placed in the hold of the boat, and charged the officer of the guard to keep him there until I ordered otherwise. I returned to our field headquarters, but before I could report my action to the General he sent me with an order to General A. J. SMITH, and, being kept constantly on the go until we gave up the struggle and returned to our boats, on the 2d of January, I had forgotten all about Mr. Reporter. After we had successfully embarked all our troops and started down the stream, I reported to the General that I had the reporter down in the hold of the boat. When the General found that I had made the arrest on the 29th he thought it was about time the fellow was given some fresh air, and ordered that he be brought up. When the reporter appeared, the General explained to him that though he was liable to be treated as a spy, and was entitled to little consideration at our hands, yet he did not know until now that I had confined him so closely, and that he would

not be sent back there, but would be kept under guard until he could be sent back to Memphis.

On the 4th of January, 1863, General JOHN A. McCLELLAND superseded General SHERMAN, and our title of the "Army of the Tennessee" ceased to exist, and the "Army of the Mississippi" was created, divided into two army corps; one, the Thirteenth, to be commanded by General G. W. MORGAN, the other, the Fifteenth, to be commanded by General W. T. SHERMAN. "With a modesty which became a man of his high spirit and unyielding patriotism, General SHERMAN accepted the situation." Before the arrival of General McCLELLAND, General SHERMAN and Commodore PORTER had agreed upon a plan for the reduction of Fort Hindman, or as it was called, "Arkansas Post," about forty-five miles above the mouth of the Arkansas. General McCLELLAND, when informed of the plan, concluded to go and take with him his whole force. At 5 o'clock in the afternoon, January 9th, our boats reached NOTTIN's farm, about four miles below Fort Hindman. During the night the artillery and wagons were taken ashore, the troops disembarking in the morning and set in motion for an investment of the fort. At 3 o'clock in the afternoon we found that we had mistaken the "lay of the land," and that a swamp and bayou would prevent our approach to the fort from that direction. We marched back to the river and then moved up the river bank to within half a mile of the fort, then bore off to the right until an investment of the fort and line of works was accomplished. The roads were in terrible condition and movements difficult, but by 9 o'clock P. M. our lines were formed as General SHERMAN desired them. The night was very dark, the enemy very vigilant. Orders were imperative that no lights or fires would be allowed for any purpose. Lieutenant-Colonel MALMBURG, of the Fifty-fifth Illinois, an inveterate smoker, while sitting on his horse talking to Lieutenant-Colonel YOST, of the Fifty-fourth Ohio, thoughtlessly filled his pipe and struck a match to light it. Instantly the "johnnies" turned a cannon on the light and a solid shot carried away Colonel YOST's left arm. General SHERMAN established his headquarters for the night at the foot of a big cypress tree, and about 10 o'clock he and the staff, except myself, spread their blankets on the wet ground and laid down for a night's rest. None of us had had a morsel of food since we left the boat early in the morning. I was hungry and decided not only to satisfy my hunger, but to contribute to the comfort of the General and staff. Mounting my horse I groped my way through the darkness back to the boat. Routing out the driver of our mess-wagon, I ordered him to hitch up and follow me. About 1 o'clock in the morning, when within a short distance of our headquarters tree, I stopped the wagon and rode on to invite the General and staff to dine with me. As I approached, the General called out to know who I was and what that wagon was doing there. I expected my answer would elicit his thanks and commendation. I told him I had brought our mess-wagon, and, if he would join me, we would have something to eat. He said, "Well, sir, you ought not to have done so; no one else has had anything

to eat since we have, and we can stand it if the troops can. Captain, send that wagon back to the boat." I rode back to the wagon and told the driver to return to the boat if he could. I followed a short distance and then ordered the driver to stop. Dismounting, I climbed into the wagon, opened one of our mess chests, struck a match, found a piece of candle, which I lighted, and pouring some of the melted tallow on the corner of the chest, planted my candle in it. Then seizing a loaf of bread I cut off a very moderate sized slice, considering the collapsed state of my "inards," and was in the act of spreading some butter, when a cannon shot from the fort came crashing through the trees, striking the ground near the mules; they started to run. The first lunge of the wagon brought down the lid of the chest and snuffed out my light, and I was tossed about among the chests in a very indiscriminate manner. I finally reached the rear of the wagon and fell through between the cover and the bed to the ground, but I held on to the bread. I returned to the headquarters tree just as the General and staff were settling down again after discussing the shot that had just been fired, and had gone past directly over their heads. I crawled into bed beside my dear companion and tent mate, Captain McCoy, and dividing my bread with him, we enjoyed eating it while I related to him in a whisper the trials and tribulation that slice of bread had cost me.

The battle was fought and won the next day, January 11, 1863. At one time during the battle we discovered that we had attracted the attention of the Confederate artillery, and the General told us to separate a little and dismount. I was near a good sized tree, and while the General was telling us to dismount, a solid shot struck the tree about four feet from the ground, and believing they would not strike that tree again, instead of dismounting I rode behind it, resting my forearm against it, I leaned my head on my arm. The General told me I had better get down. I told him I believed I was safer where I was, as the balls were skimming the ground very closely. Presently a solid shot struck the tree almost directly in a line with my head and glanced off, but I think before it had left the tree I was on the ground and spread out as flat as a flounder.

On the 13th, "the works at Fort Hindman having been dismantled and blown up," we reëmbarked and proceeded down the Arkansas to the Mississippi. Arriving at the mouth of the Arkansas our boat tied up. It was a dark, dismal, rainy day. Late in the afternoon I went on deck and found the General standing near the bell with a paper in his hand, and in reply to my question he said he was checking off the boats of our corps as they passed out of the Arkansas into the Mississippi. I took the paper and urged him to go below. He did so, after telling me to report to him the moment the last boat had passed out. I had stood there about two hours when all the boats save one had been checked off. Getting impatient at the non-arrival of this boat, I decided to report to the General. I was not very familiar with Indian names, and if I had ever heard the name pronounced, and I presume I had, I was all at sea when I came to announce it to the General. Going to the cabin, where sat

the General and all the rest of the staff, I handed him the paper, stating as I did so that all the boats were out save one. "What one?" asked the General. I replied, "The *Si-ox City*." "*The what?*" asked the General. I said "The *Si-ox City*, sir." "Oh, no, Captain," said the General, "we have no such boat as that in our fleet; that must be one of MORGAN's boats." Stepping up to him and taking the paper out of his hands, I hunted up the *Sioux City*, and pointing to the name I said, "Well, sir, if that isn't the *Si-ox City*, I'd like to know what you call it." You can imagine how they all laughed, and so did I when the pronunciation was explained to me. For a long time thereafter, when around our table or camp-fire, I was addressed by the General and staff as *Captain Si-ox*.

PROFESSIONAL NOTES.

AN INTERESTING LETTER.

Soon after the publication of "Napoleon Bonaparte's First Campaign," somewhat more than two years ago, the author, Lieutenant H. H. SARGENT, Second U. S. Cavalry, received quite a number of letters from distinguished people in different parts of the world relating to his work. Among the number was one received from Hon. E. F. WARE, of Topeka, Kansas. Mr. WARE is a prominent lawyer of Topeka, and is also the author of "Some of the Rhymes of Ironquill." The letter given below was sent to the editor by Lieutenant SARGENT, and is published by Mr. WARE's permission. On account of the wit, humor, and common sense displayed therein it will, it is hoped, be found interesting to our readers, especially to those who have read Lieutenant SARGENT's first book.

TOPEKA, KANSAS, September 23, 1895.

Herbert H. Sargent, Esq., Lieutenant Second Cavalry, U. S. A., Fort Bowie, Ariz.

DEAR SIR:—The writer was formerly an aid-de-camp in the volunteer service with a major-general. He had not much rank, but he had considerable observation, and, one time after the war was over, when a large war map about twenty feet square was unrolled in the parlor of the Fort Leavenworth headquarters, on the floor, and General SHERMAN and General G. M. DODGE got down on their hands and knees and crawled over it, and when one would say to the other, if such or such a man had done this, or that, or something else, "how"—to use the language of General SHERMAN—"they would have busted as wide open," the writer made up his mind that military renown and the fame of war depends largely upon what the other man *doesn't* do, and that ORPHEUS C. KERR's constant disquisition on "strategy" had as much sense in it as it had hilarity.

It is seldom that a person writes as good a book as you have written upon BONAPARTE's first campaign, and it is not frequent that an author who is so enamored of his subject can still perceive

and discuss the personal equation. Why will you not write a book on military strategy, so as to show how little generals have to do with victories, but how much circumstances have to do with defeats?

I have never believed that so vain, pompous, and flamboyant a person as was NAPOLEON, had the deep, super-human sagacity that some people attribute to him. If a high tide should wash from Chippewa River a thousand logs, one of them would possibly drift to New Orleans, and the others would be stranded on the intermediate sandbars. If that one log should have intelligence, it would tell all other logs to keep in the middle of the stream. NAPOLEON was kept in the middle of the stream for a very long period. You could write a history of NAPOLEON, his life and career, that would be marvelously interesting, if you brought into it and pictured his conspicuous luck. And you could philosophize upon the good fortune which permits one man to do what another man can not.

During the war, I saw so many unaccountable things happen; saw so many unlooked-for and surprising things take place, which the generals afterwards appropriated to themselves as intelligence and strategy, that I have but little faith in any of it. Given good, common sense, health, and luck, and any one may win; but the greatest of all these is luck.

When NAPOLEON started out he had with him the soldiers of a new regime,—men who saw the crust over them broken, and determined to crawl up through it. As NAPOLEON said, "Republican phalanxes alone are capable of actions so extraordinary." As you say on page 198, "It was the marching as well as the fighting of the soldiers that won for him so many victories against such overwhelming odds." And as you say, "In these forced marches the exertion of his soldiers was almost beyond their endurance." They marched, and fought, and marched. As at Rivoli, marching and fighting for twenty-four hours, marching again all night and the whole of the next day, and on the morning of the third, ready for battle.

This was before the American theory of fighting for three days had been invented, which was first tried at Pea Ridge and afterwards patented at Gettysburg. NAPOLEON, to start with, had soldiers that, when they were sent to take a position, took it, and when detailed as a containing force, succeeded in containing; so that, when 20,000 of them met 25,000 of the enemy, they were numerically the superior. NAPOLEON had men behind him. He was like a cow-catcher—he did not pull the train—he was pushed on to victory. NAPOLEON had good reason to say, "The French troops have acquired a great superiority over the German troops." In addition to having the troops, NAPOLEON had the physique to attend to the details. He was not obliged to sleep; he was not born tired. When he got older and grew fat, he got whipped.

The rules of strategy which you put down on pages 173 and 174 are so simple and elementary that nobody would have to learn them.

All eight of those rules are born in a man, like the power to swim. Genius in war consists of knowing when the other fellow violates the rules. NAPOLEON seemed to prefer to let the other men violate the rules, which they did on all occasions. No person, no general, ever met a series of opponents who so much violated all the rules and all the principles. He had remarkable success in having men against him who experimented and who did not do the right thing; and you set it out so admirably in your book. When NAPOLEON reached Trent, he was not aware of WURMSER's departure down the Brenta. At this place BONAPARTE should have been whipped; but good luck had it that WURMSER had sent a division directed to Verona, so that it could not be on hand. You speak of WURMSER as brave, fearless and stubborn, and say that he continued to blunder on, neither able to see his own past errors nor to comprehend the strategy of NAPOLEON. NAPOLEON committed errors such that, if the opposing soldiers had been as good fighters as the French, he would have been unsung in history. But it was error after error on the part of his opponents that gave him the victory.

You say, concerning ALVINZI, what you say of WURMSER, that he committed error upon error; and you say of him, that in the execution of his plans, he continued to multiply his mistakes. And of the Austrian commander, you account for his errors by his great age, and that all of the commanders, from first to last, not only committed errors, but continued to repeat them again and again (page 195). It is no wonder NAPOLEON supposed that he had a star and a good genius, and very properly you say, "It was the marching as well as the fighting of the soldiers that won for him so many victories against such overwhelming odds."

You also refer to the political feature of the Austrian army, and the restrictions with which it was hampered by politicians at home who knew all about how things should be done; while NAPOLEON, being given *carte blanche*, could promise his soldiers everything and give them a great deal.

The object I have in writing you so long a letter, is to express my admiration for your book and of the view which you take of things. I have no criticism to make, except that I think you put too much stress on the supposed strategy. All helter-skelter hits are successful if they succeed, and if they succeed they are strategic. I have seen so many colonels get a star because their men fought through places where the colonels did not want to go; and have seen generals brevetted because their men did things which surprised the generals, that I think a life of NAPOLEON could be written that would be absolutely truthful and contain all the glamor of a romance, and still contain a percentage less of panegyric. You have the capacity to write a history of NAPOLEON and of NAPOLEON's campaigns that would do him exact justice, and yet be exceedingly readable. It would be a story of vast good fortune, of vast luck; a story of a brave general who walked through an open door; a story of the spectacular admiration of princes and kings, as they stood around and saw this man win and become an emperor just as

easy as if everything had been lubricated for the occasion. Please write a life of NAPOLEON, showing what good luck can do for a man. Entitle it, "Napoleon and His Luck."

Yours very truly,

E. F. WARE.

THE MYER VS. THE MORSE CODE FOR SIGNALING.

Several criticisms upon the change from the American Morse to the modified Myer code have recently appeared, in which, it is believed, the premises are mistaken. Admitting that it is objectionable and discouraging to the services to frequently change codes, it does not necessarily follow that for these reasons an unsatisfactory code should be indefinitely retained.

As is well known, in 1886 the Myer signal code, jointly used by the army and navy, was replaced, at the instance of the navy, by the European Morse code. This was in turn replaced in 1889 by the American Morse. The reasons for the latter change were, from an army standpoint, perhaps sufficient, but it soon became apparent that the code was an impracticable one for the navy, by reason of the limitations of the Ardois and other naval signaling apparatus, and an anomalous condition resulted; the army using one code and the navy another.

As this entailed upon both services the knowledge and use of two different codes, as well as the liability to confusion and error in times of active cooperation, a joint board of the army and navy, consisting of Brigadier-General A. W. GREELY, chief signal officer of the army, Lieutenant-Commander SEATON SCHROEDER, U. S. navy, and First Lieutenant GEORGE L. ANDERSON, Fourth U. S. Artillery, was appointed in 1896, to consider and recommend such alterations in signal codes and their uses as the public interests might demand.

The board unanimously recommended a return to the old Myer code, with slight modifications, the change taking effect October 1, 1896. Although this change results in the use of a satisfactory common code by both the army and navy, the army is left with two codes, the American Morse being still retained for telegraphic use.

The purpose of this paper is to show that, notwithstanding the objections to having two codes in the army, and disregarding the advantages of a common code for both the army and navy, the return to the Myer code, is from an army standpoint, an advantageous one.

The reasons which led to the adoption of the American Morse code in the army are well known. The three principal methods of military signaling are by motions with flags or torches, by flashes with heliograph or flash lantern, and by the electric telegraph. The Continental Morse code, which was suited to the first two methods, was impracticable for the third, by reason of the existing universal use of the American Morse code by the vast army of operators in

the United States. The American Morse could be used more or less satisfactorily by all three methods, and it therefore became the standard code.

This code was devised before the principles of signaling were at all understood, and has no better excuse for its existence than that the inventor of the telegraph happened to so arrange it; but it is now so universally used that it is equally impossible to remedy its defects, or to substitute any other for it.

In a signal code, simplicity is the first consideration. The American Morse code has four elements, viz: the dot, the dash, the long dash, and the space; while the Myer code has only three, the 1, the 2, and the 3. The many theoretical and practical defects in the Morse code were gotten around the best way possible in flag and heliograph signaling, but the code was never even tolerably satisfactory for either method. The existence of the space letters c, o, r, y, z, and &, necessitated a "front" in the middle of these letters, as well as at the end of words. The fact that it was a different kind of a "front" limited the range of the signaling, and required undue concentration of attention on the part of the receiver.

But it was to heliograph signaling that the Morse code was least adapted. The short flash, the long flash, and the interval in space letters, between letters, and between words, make time the essence of the signaling. A time element is dangerous in any system, and doubly so for such precarious work as long range heliographing. It makes the Morse code for use with the heliograph, search light, flash lantern, or fog whistle, the slowest code invented.

The advantage of the Myer code is its extreme simplicity, being a code of three elements, constructed upon sound and simple principles. The time element is eliminated. It is essentially a visual signal code, and is the most nearly perfect one in existence. There are no space letters. In flag work every motion is a positive one, either to right, left or front.

In signaling with heliograph, flash light or fog whistle, the advantage in speed is not only with the Myer code, but sounds and flashes of equal value in groups of one, two, or three, seem to lend themselves more readily to the ear and eye, than sounds and flashes of varying lengths. The concentration of attention on the part of both the sender and receiver is less than with the Morse code, and the arbitrary signals denoting the end of words, sentences and messages, are an enormous advantage as regards both reliability and speed.

In short, the Myer code is not only one of the best known and most thoroughly tried, and satisfactory, military signal codes in the world, but it is adapted to all kinds of military and naval signaling, visual and phonetic.

That a different code is to be used on military and commercial telegraph lines, is, in the opinion of the writer, no disadvantage, as it is believed that in the organization of our signal corps in the

next war, the duties of visual and electric signaling should be entirely separate.

In no art can the amateur compete with the professional, and experience has proved that the average signalist cannot become and remain an expert telegraph operator. There would seem moreover to be no advantage in the entire body of signalists being telegraph operators, as the absence of smoke from the battlefield will hereafter enable visual signaling to play a more important part, and a large force of visual signalists will be required, whose duties will be all that they can attend to.

The ends of the service will be best attained by having in the signal corps, separate telegraph sections, composed of professional operators and linemen, whose duties will be entirely the erection and operation of the field and permanent telegraph lines; the visual signalist using the Myer code, the telegrapher the Morse code, and each being master of his art.

HOWARD A. GIDDINGS,
Major, Brigade Signal Officer, C. N. G.

LIST OF ACTIONS, ETC., WITH INDIANS AND OTHER MARAUDERS, PARTICIPATED IN BY THE TENTH U. S. CAVALRY, CHRONOLOGICALLY ARRANGED—1867 TO 1897.

1867.

August 2d, Troop F engaged a large band of hostiles on the Saline River, Kansas.

On August 1st the Indians attacked a camp of citizens, a railroad construction party on the Union Pacific Railroad, eleven miles from Fort Hays, Kansas, and killed seven men. As soon as the report reached post, the troop proceeded to the scene, took the trail of the marauders, and followed it until 10 o'clock P. M., when, owing to darkness, and having left without rations, returned to railroad camp. At 2 o'clock A. M., no rations having arrived, the march was resumed for the Saline River, and on August 2d, when near that stream, was attacked by about 150 Indians. After a severe engagement of two hours the command discovered a large herd of buffalo, as they thought, coming over a hill, which proved another large band of Indians, who promptly joined in the attack, when a retreat was ordered. After six hours of hard fighting the troop was able to strike bottom land, fifteen miles distant, where relief was obtained. The Indians numbered between 350 and 400, were well equipped with firearms and were led by two white men. A large number of the enemy were killed and wounded. In one of their dashes at the troop, in an attempt to stampede the animals, seven of the red devils failed to return with the party.

Two officers, two guides and * thirty-four men were engaged.

* Troop F lost thirteen men from cholera during the months of July and August. E. L. B.

Sergeant CHRISTIE was killed and Captain ARMES and six horses were wounded.

The conduct of the men is spoken of in the highest terms. Report dated August 5, 1867, Fort Hays, Kansas.

August 21st and 22d, on Prairie Dog Creek, Kansas, Troop F and detachment Eighteenth Kansas Volunteer Cavalry had a very severe engagement with a band of about 1,000 Indians.

This command left Fort Hays, Kansas, August 12th, to scout southeast of post. On the 21st, while halted for breakfast near the above named stream, one of the videttes was attacked. An officer and thirty men were sent to scout the ravines. This detachment had gone but a short distance when it was completely surrounded by the enemy, and in the engagement which ensued lost twenty-five horses and fourteen men killed and wounded.

The main column was deployed and advancing as rapidly as possible, when suddenly a large force of several hundred Indians swooped down upon it from every direction. The command was immediately rallied, wheeled by fours, and at the gallop marched into a ravine and dismounted. Men were placed behind the banks and surrounding the horses, opened fire, the fire of the enemy passing over the backs of the animals. The noted brave, SATANTA, who commanded, made several futile attempts, accompanied with every hellish device imaginable, to capture the horses. Each charge was so stubbornly and effectually met, that about twenty saddles were emptied each time. Darkness, however, produced, at least, a breathing spell. The command then moved out in quest of the wagons, and failing in this up to 12 o'clock p. m., halted to rest.

On the 22d, at sunrise, hostilities were renewed by four or five hundred, who surrounded the wagon train, which, owing to the darkness of the night previous, had not been found. Upon rescuing the wagons, it was learned that the detachment sent out the day before to scout, whose fate is already described, was within two miles, and could not move. An officer and twenty-five men, sent to its relief, soon returned with fifteen wounded men perched on five horses, which was all that were left out of thirty.

At 11 o'clock a. m. the savages, in overwhelming numbers, renewed the attack, with the evident intention of wiping out the troops, using arrows, rifles and revolvers. The troops held their ground until sundown, at which time about 100 redskins were in sight, the main body having crossed a stream near by; these were charged and chased about three miles, whereupon the main body, to the number of about 200, returned and began recrossing the stream between the party sent in pursuit and camp. The pursuers were obliged to retire without capturing the Indians which they were after, but having, however, shot seven of them and two ponies.

After dark the troops withdrew for the post, where they arrived on the evening of the 24th, having covered 544 miles during the scout. The troops lost three men killed and twenty-eight wounded; thirty-seven horses killed and three wounded. About 150 Indians were killed.

In this combat the men were mentioned as behaving with remarkable coolness and bravery. Report dated Fort Hays, Kansas, September 1, 1867.

September 19th, near Saline River, forty-five miles west of Fort Hays, a detachment of Troop G had an engagement with a large band of Cheyennes. After a very hard struggle the Indians were driven to the winds, with a large number killed and wounded, leaving behind a great amount of war material. One horse belonging to the troop was wounded. Private RANDALL, Troop G, in company with two citizens, was wounded, and the two citizens killed by the same band just a few minutes before.

September 19th, Colonel McGRATH's camp on the Union Pacific Railroad, west of Fort Hays, Kansas, was attacked by hostiles, who were driven off in confusion by the same detachment of Troop G mentioned above.

1868.

August 11th, Troops B, C, F, G, H, I and K marched to the relief of settlers, and assisted in constructing block-houses for their protection on the Saline and Solomon Rivers and Walnut Creek, Kansas. During the month the Indians had raided the settlements on the Saline and devastated those on the Solomon River, Kansas, where, though kindly received and fed by the people, they plundered and burned houses, stole many head of stock, murdered fifteen persons, wounded two and outraged five women; two of the unfortunate women were also shot and badly wounded. A small band crossed to the Republican River and killed two persons there, but the main body returned to the Saline with two captives named BELL. Here they again attacked the settlers, with the evident intention of clearing out the entire valley. Two women who had been captured were rescued by Captain BENTEN's troop of the Seventh Cavalry.

Upon the approach of the troops the Indians made good their retreat after a parting volley from the Tenth. The rest was the usual amount of hard marching incident to such expeditions.

September 15th, on Big Sandy Creek, Colorado, Troop I had a lively engagement with about 100 Indians, led by a brother of the noted scout, GEORGE BENT. Seven soldiers were wounded. Eleven Indians killed and fourteen wounded; the chief was said to be among the missing. The troop was complimented in orders for their gallantry in this affair.

September 25th, Troop H arrived to the relief of Major FORSYTH's command, which was beleaguered on an island in the Arickaree Fork of the Republican River, Kansas. On September 17th, Major FORSYTH was attacked by about 700 Indians, and after a very gallant fight repulsed the savages, inflicting a loss on them of thirty-five killed and many wounded, the command existing on horse flesh only, for a period of eight days. Lieutenant BRECHER, Surgeon MOORE and four scouts were killed, Major FORSYTH twice wounded, and fifteen scouts wounded.

September 26th, Troop I arrived with Colonel BANKHEAD's column for the relief of Major FORSYTH's command. Twenty-six hours after, Troop H.

October 2d, Troop G rescued a train attacked and corralled by Indians, twenty miles from Fort Dodge, Kansas, on the Larned road, and conducted it to post. Three citizens killed, three wounded and over fifty mules run off.

October 18th, on Beaver Creek, Kansas, Troops H and I had a spirited engagement with a large body of Indians, in which three soldiers were wounded and ten Indians killed. Troops mentioned in orders for their gallantry, etc.

November 19th, near Fort Dodge, Kansas, a detachment of Troop A had a fight in which two Indians were killed. Some of the same band attempted to stampede the beef herd, but were driven off, with loss, by the troops from the post.

1869.

January 24th, on San Francisco Creek, Indian Territory, Private OLIVER JENNINGS, Troop K, died of wounds inflicted by an Indian the night previous.

JENNINGS was afoot, having turned his own horse over to his "bunky," who had walked a distance in consequence of his mount playing out. He mistook an Indian trail for that of the troops, which led him to the camp of the hostiles. Upon arrival, JENNINGS went straight to the fire and rendered the usual salutation, "Hello boys," as he thought, to his comrades. The response was the arrow which pierced him through the abdomen. The Redskins fled. JENNINGS retraced his steps as rapidly as possible for a short distance, when he became so weak that he fell, but continued by crawling until reaching the herd of the command, about two miles, where he was found lying in the weeds, by the herders early next morning, mortally wounded.

January 29th, on Mulberry Creek, Kansas, a detachment of Troops B, F, G and K had a fight in which two soldiers were wounded and six Indians killed.

1870.

May 31st, on the Canadian River, near Camp Supply, Indian Territory, Troops H and I relieved a train that had been held since the 28th, on which date it was attacked, all the mules stampeded and one man killed by Indians.

June 2d, near Camp Supply, Indian Territory a detachment of Troops I and K had a running fight of about fifteen miles with a band of hostiles; their loss not known. Troops had two horses killed.

June 2d, en route to the railroad from Camp Supply, Indian Territory, Captain AGANS, being separated from his escort, was attacked and chased by the Redskins, but escaped.

June 8th, on Snake Creek, Indian Territory, a supply train

guarded by Troop F, was attacked by Indians, who were repulsed after a severe fight, in which three of the braves were known to have been killed with their ponies. Two soldiers wounded.

June 9th, on Snake Creek, Indian Territory, Troop I had a fight with Indians.

June 10th, near Camp Supply, Indian Territory, Troop H was attacked by Indians who had corralled a supply train. The savages were repulsed and the train escorted to post.

June 11th, at Camp Supply, Indian Territory, the Indians attempted to stampede the horses at the cavalry camp. They were pursued by Troops A, F, H, I and K, were attacked, six Indians killed and ten wounded. Two soldiers wounded and two cavalry horses killed.

June —, near Clear Creek, Texas, Lieutenant HARMON, with a detachment of Troop M, and two citizens, had a running fight of eighteen miles with a band of robbers who had stampeded the stock belonging to a government train near Fort Supply, Indian Territory. One of the robbers was killed, ten captured, and 137 head of government mules, four horses and two wagons, were recovered.

June 17th, on Mulberry Creek, Indian Territory, Troop A buried three wood choppers, killed the day before by Indians and left horribly mutilated.

1871.

May 12th, Indians attacked a train on Red River, killing seven persons, wounding one and running off forty-one mules. Going to Fort Sill, Indian Territory, they publicly avowed the deed in the presence of General SHERMAN and the post commander, General GRIERSON, whereupon the leaders, SATANTA, SATANK and BIG TREE, were arrested and placed in confinement. Their followers resisted, one Indian killed and Private HAMPTON, Troop D, was wounded. Chief BIG TREE on being pointed out as one of the active spirits in the Red River affair, made a desperate effort to escape, but was captured in a running fight by the Adjutant, Lieutenant WOODWARD, assisted by a small detachment of Troop E.

September 19th, at Foster Springs, Texas, a detachment of Troop B was attacked by a large band of Indians. One soldier and one horse were killed. Two Indians killed and three wounded.

1872.

July 12th, on Deep River, Indian Territory, Troops A and L were attacked by a war party of Indians; results not reported.

July 15th, on Schofield Creek, Indian Territory, Troops A and L charged and destroyed an Indian village; casualties not reported.

July 22d, on Otter Creek, Indian Territory, Troops A and L were again attacked by Indians. Results not reported.

1873.

April 30th, near Fort Sill, Indian Territory, Lieutenant HARMON with detachment of Troops G, K and M, attacked a band of

Mexican horse thieves and captured thirty-six horses and mules, stolen from vicinity of Fort Supply, Indian Territory. One of the bandits was wounded and also one horse belonging to the troops.

April —, on China Tree Creek, Indian Territory, a detachment of Troop K attacked a war party of Indians and wounded one.

August 31st, near Pease River, Texas, Troops E and I were attacked by a war party of Indians; one Indian wounded.

September 30th, at Mesquite Flats, Texas, Troops E and I attacked a band of hostiles, recapturing nine stolen horses.

December 5th, on Elm Creek, Texas, Lieutenant TURNER with a detachment of Troop D, overtook a band of twenty cattle thieves, killed four and captured sixteen of them, and recovered about one thousand head of cattle.

1874.

February 2d, on Home Creek, Texas, a detachment of Troop A, was attacked by a war party of Indians, and one horse belonging to the troops was wounded.

February 5th, on Double Mountain Fork of the Brazos River, Texas, after nine days' march, part of which was performed in severe and distressing weather for men and horses, Troops D and G encountered a band of hostile Indians, attacked and practically destroyed it. Eleven Indians were killed, sixty-five head of stock captured and the camp destroyed. The troops were complimented in orders for their gallantry.

April —, on Lancaster River, Texas, the camp of Troop A was attacked by hostiles and Private WILLIAM H. HURTON wounded.

May 2d, between Red River and Big Wichita, Texas, a detachment of Troop K attacked a war party of Indians, who were forced to abandon all their stolen property to prevent capture.

August 22d and 23d, at Wichita Agency, Indian Territory. Troops C, E, H, and L, had a severe fight with about four hundred hostiles, Comanches and Kiowas, who had taken refuge with the friendly Indians located at the Agency. The hostiles attempted to burn out the Agency and the camps of the friendly Indians, in which the troops were posted, but were defeated in their designs. Four enlisted men were wounded and four horses. The loss of the Indians is estimated at sixteen killed and wounded.

October 24th, on Elk Creek, Indian Territory, Troops B and M surprised a Comanche Indian Camp and charged it. The hostiles displayed a white flag and surrendered themselves as prisoners; sixty-nine warriors, besides two hundred and fifty women and children, together with about fifteen hundred to two thousand horses were captured.

October 24th, upon Pond Creek, Indian Territory, Troops H and L struck a fresh trail of 200 ponies and Kiowa Indians, pursued it rapidly over 100 miles and drove the hostiles in, compelling them to surrender to the number of forty-five Kiowas and fifty head of ponies at Fort Sill, Indian Territory.

October 29th, about thirty miles west of Fort Sill, Indian Territory. Private ALFRED PINKSTON, Troop M, killed a Kiowa Indian chief in personal combat.

November 8th, near McClellan Creek, Texas, Troops B, C, F and H, were detached to pursue the band attacked by Lieutenant BALDWIN, Fifth Infantry, the same day. This command chased the Indians for a distance of ninety-six miles, having several skirmishes with the rear guard of Indians and capturing a number of ponies and mules, the latter packed, which the Indians had abandoned in the flight.

December 7th, Troop D, and a detachment of Troop M attacked a band of Southern Cheyennes on Kingfisher Creek, Texas, and captured thirteen warriors and the same number of squaws.

December 28th, Troop D and a detachment of Troop M, followed a band of Cheyennes for eighty miles to the North Fork of the Canadian River, and captured the entire band, consisting of fifty-two Indians with seventy ponies.

1875.

April 6th, at Cheyenne Agency, Indian Territory, Troops D and M had a severe engagement with Indians in which eleven Indians were found dead and twelve soldiers were wounded, one of them mortally. At the close of the campaign of 1874-5 against the allied tribes, orders were received to select from among them the principal ringleaders who had incited or led bands of hostiles in the recent outrages, to be sent to the seacoast and there be kept in confinement, for a time at least. BLACK HORSE, one of the Cheyennes thus to be disposed of, broke from the guard while being shackled and ran directly towards the camp of his people. He was pursued, fired upon by the guard and killed, when a general engagement took place, lasting several hours.

May 5th, at Battle Point, Texas, a detachment of Troops A, F, G, I and K, attacked a band of Indians, wounded one and captured his pony.

July —, Troops A and C surprised and captured two Indian villages, of seventy-two lodges, while detached from Colonel SHAFER's column on the Staked Plains in Texas.

September 13th, near the Fresh Fork of the Brazos River, Texas, some Indians attacked the camp of Troop G, and attempted to stampede the herd, but were promptly discovered and driven off.

November 5th, Troops G and L attacked a band of Indians near the Pecos River, Texas, killed one Indian and captured five, together with twenty head of stock.

July 7th to December 9th, Troops A, C, F, G, I and L, were engaged, without cessation, scouting the Staked Plains in Texas after Indians and other marauders. This duty was arduous, marches toilsome, over arid and sandy plains. Water was scarce and often salt. On one occasion the troops were fifty-eight hours without the precious fluid.

1876.

April 10th to August 29th, Troops B, E and K formed part of the expedition operating in Texas, through the country bordering Coahuila, Mexico. The country scouted over was one presenting peculiar difficulties for the operations of troops—part of it practically unknown, with no good guides obtainable, broken and rough and characterized in general by great scarcity of water and grass.

July 30th, Troop B participated in the attack upon a band of hostile Lipan and Kickapoos, near Saragossa, Mexico. Ten Indians were killed, four were captured, together with about one hundred head of stock. The village, which consisted of about twenty-five lodges, with all supplies, was destroyed.

August 12th, Troops B, E and K surprised an Indian village and destroyed ten lodges well supplied with provisions, blankets, etc., and captured sixty head of horses and mules, in the Santa Rosa Mountains, Mexico.

1877.

January 10th, Troops B, D and F pursued a band of Indian cattle thieves to the Santa Rosa Mountains, Mexico, and struck their camp, which had been abandoned by the hostiles in great haste, leaving behind a large amount of provisions, camp equipage, etc., all of which was destroyed by the troops.

May 4th, Troop G, had a sharp fight with a band of Comanche Indians, near Lake Quemado, Texas, killing four and capturing six, together with sixty-nine head of stock. Twelve large and a number of smaller tepees with their contents, viz: powder, lead, shells, loading implements, dried meats, blankets, and supplies of all kinds were burnt. One soldier was killed in the attack. This command also destroyed three more lodges and their supplies in Cañon Resaca on the 6th. During the spring of 1877 this troop alone garrisoned the post of Fort Griffin, in northwestern Texas. Indians from the Indian Territory, leaving the reservation and establishing a base on the Staked Plains, made marauding expeditions, south and east against the settlers, then advanced far beyond the chain of military posts. Troops had previously been almost entirely withdrawn from that part of the State for use on the Mexican border, where trouble was supposed to be imminent. The settlers, knowing this, had collected to the number of about forty, and had assumed the offensive for the purpose of breaking up the Indian camp on the Plains, but had been met near the edge of the Plains by the Indians and compelled to retire, returning to the settlements with startling reports of the strength and audacity of the Indians. The troop, being obliged to leave sufficient men to guard the public property at the post and to perform indispensable duties, started on an expedition against Indians. Having again to reduce this already small force by a guard for the wagon train left near the edge of the Plains, they, with scarcely more than a score of men, penetrated that wild and little known region, in search of an enemy whose strength was estimated at twice their own. After several days of tireless search,

the Indian village was found, but unfortunately two miles distant, with no hope of a nearer approach without discovery. They charged at full speed over that distance into the midst of the camp, with the result already stated. Some of the hostiles escaped with their arms, but most of them barely with their lives. This blow put a stop to all annoyance from that quarter.

June —, Troop H pursued a war party of Indians to the Guadalupe Mountains, Texas, and forced them to abandon a considerable number of their stock.

August 5th, Troop B attacked a band of forty-four filibusterers from Mexico, on the Prendicia River, Texas, and captured the whole party with all their stock and arms.

September 29th, a detachment of Troop C pursued a small band of hostiles to their camp near Saragossa, Mexico, where they were attacked. Four Indians were captured, also twelve horses and four mules. The camp with all its equipage was destroyed.

November 29th, Troop C after a very long march succeeded in surprising ALSATA's band of hostiles near the Carmen Mountains, Mexico. A charge by the troops dispersed the Indians in every direction, with loss of their camp equipage, seventeen horses, six mules and some arms. One soldier was wounded. Five Indians were known to have died afterwards from wounds and exposure.

1878.

April 15th, a detachment of Troop K pursued to the Carriso Mountains, Texas, a band of Mescalero Apaches who had stolen twelve mules from a train near Fort Davis.

April 15th, a detachment of Troop B pursued a band of Indians who had killed a mail rider near Escondido Station, Texas; the trail was followed six days and the mail found, but the marauders could not be overtaken.

1879.

July 27th, a detachment of Troop H had a fight with Indians at the Salt Lakes near Carriso Mountains, Texas; three Indians were wounded, two of them mortally, and ten ponies were captured. Two enlisted men were wounded.

1880.

The Mescalero Agency, at the Fort Stanton Reservation, New Mexico, had largely served as a base of supplies and recruits for the raiding parties of VICTORIA, and it was determined to disarm and dismount the Indians there. The Department of Texas being required to furnish her quota of the force, the colonel, staff, non-commissioned staff, detachment of the band, Troops D, E, F, K, and L, composed the expedition.

On March 31st, while passing Pecos Falls, Texas, learning of the stealing of stock from citizens in that vicinity the night previous, a detachment of Troops F and L was sent in pursuit. On April 2d they overtook the Indians, one of whom was killed and eight head of stolen stock recovered.

April 9th, Troop K, while detached from the column attacked a camp of Indians at Snakeband Spring, killed the chief of the band, captured five, and between twenty and thirty head of stock. They destroyed the camp and recovered a Mexican boy, named COYETANA GARCIA, who had been taken captive by the Indians.

On April 16th, the forces having duly arrived at the Mescalero Agency, the attempt was made to disarm and dismount the Indians, when a desperate effort was made by the savages to escape. Ten warriors were killed, some forty more escaping. About two hundred and fifty Indians, men, women and children, were taken into the Agency. From twenty to thirty guns, carbines and pistols were captured from the braves and turned over to the agent.

April 20th, a detachment of Troop L pursued a band of hostiles to Sacramento Mountains, New Mexico, and attacked them; one Indian was killed and others supposed wounded. Five horses were captured. Indian killed was identified as the one who captured the boy recovered by Troop K.

July 30th, General GRIERSON, with a small party, was attacked by VICTORIA's Indians between Quitman Cañon and Eagle Springs. A detachment of Troop G came up, engaged the hostiles, and held them in check until the arrival of Troops C, G and A, when in a very severe engagement lasting four hours, seven Indians were killed and a large number wounded, and the braves driven across the Rio Grande. Private DAVIS, Troop C, and ten horses were killed. Lieutenant COLLADAY, Private PRESCOTT, Troop G, and five animals were wounded.

August 3d, near the Alamo, Texas, a detachment of Troops C, G and H had a running fight for fifteen miles with Indians, in which a number of them were killed and wounded, together with a few ponies. Private TUCKER, Troop C, killed, and Private LONDON, Troop G, wounded.

April 3d, Troop K pursued a band of hostiles to the top of the Sierra Diablo and captured VICTORIA's supply camp, which consisted of about twenty-five head of beef cattle, a substitute for bread made of Maguay and other plants, berries, etc., and a large amount of beef on pack animals. The braves were pursued toward the Guadalupe Mountains.

August 4th, a detachment of Troops F and L, while following a trail into a cañon north of Bowen Springs, Guadalupe Mountains, was suddenly attacked by the Indians. The soldiers held their position for two hours. Private WM. TAYLOR, Troop F, and several horses were shot; loss of Indians unknown.

August 6th, Troop F pursued a band of Indians toward the Sacramento Mountains. In the several skirmishes two Indians were killed and a few ponies shot and captured.

August 6th, at Rattlesnake Springs, Texas, Troops A, B, C, G and H again struck VICTORIA's braves, who after a sharp skirmish fled with the utmost haste toward the Rio Grande, hotly pursued by the troops and again driven into Mexico. Four of the hostiles were

known to have been killed in the attack and many wounded. Private HARDY, Troop H, missing in action.

October 29th, a party of from thirty-five to fifty Indians, supposed to be a remnant of VICTORIA's band, attacked a picket party of twelve men from Troops B, I and K, and killed Privates BURNS and MILLES, Troop B, Corporal BACKUS, Privates GRIFFIN and STANLEY, Troop K, at Ojo Caliente, Texas.

1886.

January 3d, Sergeant EVANS and Private LAWSON, Troop C, were killed in Gayleyville Cañon, Arizona, by an Indian scout.

May 3d, Troop K attacked GERONIMO's band of Apaches in the Pineto Mountains, Mexico. After a hot fight they succeeded in driving them from their position, with a loss of two killed and one wounded. About thirty head of stock were abandoned by the hostiles in the flight. Corporal SCOTT was severely wounded and Private FOLLIS killed.

May 31st, Troop A struck NATCHEZ's band of Apaches, on the Rio Bonito, near Fort Apache, Arizona, captured all their stock and saddles, and pursued them south. One Indian was wounded.

October 18th, Troop H had a running fight with Chief MANGUS and his band in the Black River Mountains, Arizona, and after a chase of fifteen miles captured the entire party, thirteen in number, with all their stock and supplies.

1887.

March 10th, Lieutenant SEWARD MOTT died of wounds received in the line of duty, inflicted the day previous by a Tonto Indian.

May 27th, five enlisted scouts at San Carlos, Arizona, absented themselves, proceeded to the San Pedro Valley and killed an Indian there belonging to another band. A number of other Indians accompanied the scouts and were concerned in the affair. On the evening of June 1st the party returned and the scouts were disarmed by the agent and ordered in confinement. A commotion arose among a number of the band who were standing near by and who fired several shots, one of which seriously wounded the chief of scouts. During the excitement that followed this disturbance the five scouts effected their escape, and with their friends disappeared. The party (seventeen in number) were at once pursued by a detachment of Troop B, then in camp near the scene. This detachment was soon joined by another of Troop L from Fort Grant, Arizona, and on June 11th the camp of the renegades was surprised and all their horses, equipments, etc., captured near the crest of the Rincon Mountains, from which point the hostiles made their way back to San Carlos afoot, hotly pursued by the troops, where they all surrendered by the 23d. Two citizens were killed by the savages during their flight.

1889.

May 11th, near Cedar Springs, Arizona, a detachment of Troops C and G, guarding the paymaster, was attacked by highwaymen. The robbers succeeded in getting away with the funds, but not until nearly every man of the detachment was disabled. Nine enlisted men were wounded, two of them twice. Of this affair Major WHAM says: "I was a soldier in GRANT's old regiment during the entire war; it was justly proud of its record of sixteen battles, and of the reflected glory of its old colonel 'the great commander,' but I never witnessed better courage nor better fighting than shown by these colored soldiers on May 11, 1889, as the bullet marks on the robbers' position to-day abundantly attest." Report dated 29th August, 1889.

1890.

March 2d, a party of five drunken Indians killed a freighter by the name of HERBERT, ten miles west of Fort Thomas, Arizona. Immediately upon receipt of the news scouts from San Carlos and a detachment of Troop K from Fort Thomas, were ordered in pursuit; upon arrival of the forces under Lieutenants WATSON and CLARKE at the scene, they were united and the trail found and persistently followed for several days and nights. On the 7th they overtook the marauders on Salt River, where a hard fight ensued, in which two Indians were killed and three captured, one of whom was badly wounded. A detachment of Troop I was in at the attack and did good service.

The following extract is taken from the Department Commander's annual report, 1890: "This is one of the most brilliant affairs of its kind that has occurred in recent years, and has had a very quieting effect upon, and will no doubt prove a lasting lesson to the Indians at the San Carlos Agency."

1891.

January 13th a Chiricahua renegade killed a man at SMITH's ranch, near Fort Bowie, and was pursued by Lieutenant CLARKE's detachment over the Chiricahua Mountains, and on the fourth day overtaken in his camp. This bold marauder, however, escaped with his squaw in the rocks and eluded the pursuers. The camp, which was well supplied, was burned.

1896.

Troops C, D and I, and a detachment of Troops G and K were engaged in rounding up Canadian Cree Indians for deportation, during the months of June, July and August.

In addition to the incidents cited in the foregoing chronological statement, the regiment has participated in numerous affairs, attacks, etc., in the performance of police duties on Indian reservations, enforcing civil laws, guarding mails or escorting supply trains through the Great West, to give the details of which space forbids. Suffice it to say that the history of the regiment shows that it has never hesitated to face danger when called upon for any duty.

SOME RIDES OF NOTE.

August, 1877, Adjutant R. G. SMITHER, with the non-commissioned staff and band, marched from Fort Concho to Bull Creek, Texas, to the relief of Troop A, which was reported on the Staked Plains in a suffering condition, both men and horses dying from exhaustion caused by want of water—about 160 miles within sixty-one hours. Actual time of marching not known.

August 5, 1880, General GRIERSON with Troops A, B, C, G and H, left camp ten miles south of Van Horn Wells at 3 A. M. and reached Rattlesnake Springs, Texas, sixty-five miles distant across the mountains, at 11:45 P. M., same date, several hours in advance of the Indians who had preceded them some hours.

Summer of 1886, Captain LERO with Troop K, marched twenty miles in two hours, in pursuit of hostiles. Details not obtainable. General Field Orders No. 12, Department of Arizona, 1886.

September, 1886, Lieutenant C. P. JOHNSON, with detachment L, and company of Indian Scouts, in pursuit of JOSE and party who had escaped after the surrender of GERONIMO, marched from San Luis Pass, Mexico, to San Dones, northwest of Ascencion, Mexico, seventy-four miles within eleven hours. Gait: Jog trot. Halts: Ordinary. In January, 1887, this same officer on a similar mission with detachment Troop L, fifteen men and twenty-two packs, marched from Ascencion, Chihuahua, Mexico, across the mountains to the Baviapo River, Sonora, Mexico, within twelve hours, a distance of seventy-four miles. Gait: Walk and trot. Halts: Ordinary.

June, 1887, Lieutenant C. P. JOHNSON, Lieutenant J. B. HUGHES, with fifty odd men of Troops B and L, in pursuit of KIDD and party, marched eighty-eight miles in twenty-two hours, part of which was over a rugged country and the thermometer at San Carlos registering 114½°. Gait: Trot and gallop. Halts: Two, one of two and one four hours. Actual time of marching, sixteen hours. Part of this command under Lieutenant JOHNSON marched from Pantano, Arizona, to Sanford's Ranch, thence to Torre's Ranch, and thence back to Pantano, forty-six miles in seven and one half hours. Gait: Walk, trot, gallop and full gallop.

October 15, 1888, Captain S. T. NORVELL, with Troop M, left Fort Bayard, N. M., in pursuit of a raiding party from Fort Stanton, picked up the trail at Santa Rita, followed it southeast to Brockman's Mill on the Miembres, thence to Fort Cummings Road; touched the Rio Grande at Santa Barbara, continued down to Colorado, and on through San Andreas Mountains to White Water, one hundred and sixty-five miles, where the raiders were captured, within seventy-two hours. Gait: Walk. Actual time of marching not known.

March 6, 1890, Sergeant ALEX. CHEATHAM and two privates of Troop I, in charge of six pack mules with supplies for Lieutenants WATSON and CLARKE, left San Carlos at 11 o'clock P. M., and marched to a point northwest from there on Salt River, Arizona, by

a little before sunrise, a distance of about forty-five miles, and from that time, sunrise to sunset that day, a distance of about the same, making about ninety miles from 11 o'clock at night to sunset the 7th. The last half of the night ride was over a rough mountain trail, and the whole of the next day was over an extremely rough country, the roughest part of Arizona in fact, up and down, very steep and rocky mountain ridges where the horses had to be led nearly all day. Sergeant CHEATHAM arrived at Lieutenant WATSON's camp just as he was pulling out, so had no rest at all after his night ride, not even dismounting, and none of course during the day, as it is a matter of history that the marauders of whom the command was in pursuit were overtaken on that day and killed or captured.

April, 1894, Lieutenant-Colonel PERRY, with Adjutant SMITH, N. C. S., Troops B, E, G and K, left Fort Custer about 9:00 P. M., for Custer Station, Montana, to intercept if possible a part of COXER's ("Commonwealers") contingent, which had stolen a Northern Pacific Railroad train at Butte City, Montana, and were en route to Washington, D. C. The command forded the Big Horn River, which at that season of the year was full from melting snow from the numerous mountain streams, and is treacherous at all times; was doubly so then owing to intense darkness. The crossing was, however, accomplished without serious mishap, and the command reached Custer Station, thirty-five miles away, shortly after 1 o'clock A. M.

June 15, 1896, Lieutenant L. HARDEMAN left camp of Troop C, one mile west of Havre, Montana, with Corporal W. JOHNSON, Trumpeter SULZER and five privates of the troop and one civilian interpreter, at 4:30 P. M., for Chinook and vicinity, to intercept a large body of Cree Indians reported making their way toward the Dakota line. The detachment marched five miles north of Fort Belknap Agency and returned to camp at 10:15 P. M., 16th instant, having covered a distance of over one hundred and ten miles within thirty hours. Gait: Walk and trot. Halts: One of four and one-half hours, after the first thirty miles. Actual time of marching, about twenty-five hours.

A ride made by Lieutenant ROCKENBACH, Sergeant ANCRUM and fifteen men of Troop C, during the roundup of Cree Indians, is well worthy of mention.

On June 16, 1896, information was received at the camp of Troop C, Tenth U. S. Cavalry, near Havre, Montana, that a number of Cree Indians who had been rounded up during the day had escaped. The Lieutenant was ordered to intercept them. As he had ridden about fifty miles that day he concluded not to start till next morning, and spent the evening in Havre getting what information he could as to their probable route. Rumors as to the course taken by the Crees were about as numerous as the dogs hovering about the average Indian village. As the most authentic news pointed to the northwest, it was decided to take that direction. At 5:30 A. M., 17th, the detachment, fully armed and equipped, with three days' rations in

saddle pockets, accompanied by an interpreter, left camp, marching up Milk River about seven miles, thence in a northwesterly direction; about 11 o'clock A. M. turned due north, and at 1 P. M. north-east; thence to a point where Black Coulee crosses the road to Maple Creek; thence to the lake where Black Coulee ends, on the east bank of which the command bivouacked at 7 P. M. The march was resumed at 4 o'clock A. M. in extended order, at 100 yards intervals. At 7 A. M., having marched about fifteen miles, the left skirmisher signalled that the trail had been struck. The command quickly assembled, orders given to adjust equipments, etc., and to follow at the trot, when Lieutenant ROCKENBACH and the interpreter started on the trail at a lope (about ten miles per hour); so eager, however, was the detachment to be in at the death, that some persuasion had to be used to prevent it from keeping up at the gallop. The West Fork was soon crossed, the Middle Fork came in view, and about 10 o'clock A. M. the interpreter exclaimed, "Cattle!" which proved to be the stock of the Indians of whom the detachment was in quest. The game was discovered in a horseshoe bend of the creek. The detachment having come in sight, was signalled to keep away from the creek, and every precaution taken to hold the prey, which consisted of twenty-five Indians, forty-three head of stock, thirteen wagons and carts, and dogs galore. The Indians refused to return, claiming that they were across the international boundary line, but the Lieutenant found, by intersection on peaks of the Bear Paws, that they were on the Middle (sometimes called the North) Fork, about one mile south of the line. He was also familiar with the country, from the fact that he had been over the same map-making the summer before, and told the Crees that they would have to return, and pointed to the carbines in hands of the detachment surrounding them on the crest of the hillock above, as an evidence of the fact. One of them, an old man, refused to go, striking himself on the head and drawing his hand across his throat (signifying Assinniboine), and uttered, "No go." This the Lieutenant understood to mean, "You can break my head and cut my throat, but no go," and told him that he be d—d if he would not do both, if necessary. The spirit, or object of the journey, having been virtually accomplished, it was decided to rest until next morning, when the fact was developed that many of the men had found their saddle pockets too large for three days' rations and had provided for them promptly on bivouacking the first night. The fact was also apparent that the stock of provisions belonging to the Indians was being rapidly depleted, from unmistakable evidence along the trail. It was also noticed that there were a few dogs less in sight than had accompanied them in their flight a day or so previous. This circumstance, and the nearness of the Canadian line, prompted the Lieutenant in taking up the return march, which he did at 1 o'clock P. M., rejoining the troop at 9 A. M. next day, having been absent fifty-one and one-half hours all told, marching 152 miles in thirty-two hours, without a sore back or lame horse.

Although it has been conceded by all well informed people that

the days of campaigning with the noble red man have ceased, and which is practically true, however it would be unjust to all concerned should this sketch close without reference to the long and tedious marches, and the hardships incident thereto, incurred in the execution of executive orders in the deportation of Canadian Cree Indians by Troops I and D, commanded by Captain S. L. Woodward and Lieutenant J. J. Pershing. These commands operated on different lines to the one end and marched 1,689 miles. The reports of the operations of these troops were, unfortunately for the regimental headquarters, handed to the officer under whose immediate orders they were acting.

Many of the arduous rides made by detachments in response to appeals for protection from the early pioneers who had sought homes in the great unknown West, were not recorded; and while many of the old-timers tell of them in fervent and descriptive speech, we are, for the lack of data, forced to omit any further mention of them, than to say that an hour's talk with any one of the participants is indeed a rare treat, with opportunities for obtaining it being daily lessened by the Great Destroyer, the scythe of Time.

A member of the Association wishes information on the following subjects: "Leather, its Care and Preservation; effect of Different Agencies Upon it; its Manufacture." "Black and Tan Leather." "Saddles; especially Cavalry Saddles."

Information on the last two subjects is easily obtainable from Major CARTER's "Horses, Saddles and Bridles," DWYER's "Seats and Saddles," and No. 11, Vol. III; No. 26, Vol. VII, and No. 32, Vol. IX of THE JOURNAL. An exhaustive article on the first subject is much desired.

Editor U. S. Cavalry Journal.

DEAR SIR:—Will you be kind enough to correct in the next issue of THE JOURNAL an error which crept into my article in the September number, "Some Notes on English Cavalry," regarding the feed allowance of hay. It should read two and a half pounds for morning and noon stables, and seven pounds for the evening.

Very truly yours,

H. EDWARDS FICKEN.

STEEPLE CHASING IN SWEDEN.

A sketch of the course with the nature of the obstacles is appended herewith. All courses are over turf. While the obstacles are varied in their nature, there is not one that the ordinary cavalry horse can not take, provided he has had average training. If a country as small and relatively as poor in cavalry as Sweden is can successfully maintain such excellent cavalry sport as I have on two

occasions—1895 and 1897—seen at Stockholm, it would certainly seem that our own could. There are few, if any, better ways of fostering a cavalry spirit, and at the same time a desire on the part of officers to have good mounts, than by encouraging steeple chasing.

In distinction to flat racing it by no means disposes horses to bolting, for the simple reason that the rider must always have his mount well in hand, prepared to turn here or there, to jump a ditch or a hurdle, etc. As to danger there is but a small element if both horse and rider be properly trained. This was shown by the events at Fort Riley in the spring of this year, as well as the events at Stockholm and St. Petersburg which I have frequently witnessed.

I have taken the steeple chasing in Sweden, especially because in quantity of cavalry it more nearly resembles our own. Officers of all European armies ride steeple chases.

Distances.—In my opinion it is a mistake, for cavalry reasons, to make the courses too short. To say that a cavalry horse can not be trained to carry his rider at a good stiff pace a couple of miles is to admit a great weakness on the part of a branch of the service that may in actual service be required to do more than twice that distance in moving from one flank of a position to another. The pace must naturally be slower than were the course much shorter, but inasmuch as pace is only relative and all the horses are on the same footing, it makes no difference of importance.

The following gives the distances and obstacles in the several races:

FIRST DAY.

First Race—(2500 Metres)—Obstacles: 11, 12, 13, 8, 9, 10, 11, 12, 13.

Second Race—(4500 Metres)—Obstacles: 8, 9, 7, 11, 16, 13, 5, 6, 7, 11, 14, 2, 1, 4, 5, 6, 7, 11, 12, 13.

Third Race—(4000 Metres)—Obstacles: 11, 14, 15, 1, 4, 5, 6, 7, 11, 14, 2, 1, 4, 5, 6, 7, 11, 12, 13.

Fourth Race—(5000 Metres)—Obstacles: 8, 1, 2, 3, 7, 9, 4, 5, 6, 7, 11, 14, 15, 1, 4, 5, 6, 7, 11, 16, 13.

SECOND DAY.

First Race—(3200 Metres)—Obstacles: 13, 5, 6, 7, 11, 14, 15, 1, 4, 5, 6, 7, 11, 16, 3.

Second Race—(3000 Metres)—Obstacles: 1, 6, 7, 11, 14, 15, 1, 4, 5, 6, 7, 11, 16, 3.

Third Race—(4500 Metres)—Obstacles: 8, 9, 7, 11, 16, 13, 5, 6, 7, 11, 14, 2, 1, 4, 5, 6, 7, 11, 12, 13.

Fourth Race—(3500 Metres)—Obstacles: 13, 8, 1, 6, 7, 11, 14, 15, 1, 4, 5, 6, 7, 11, 16, 13.

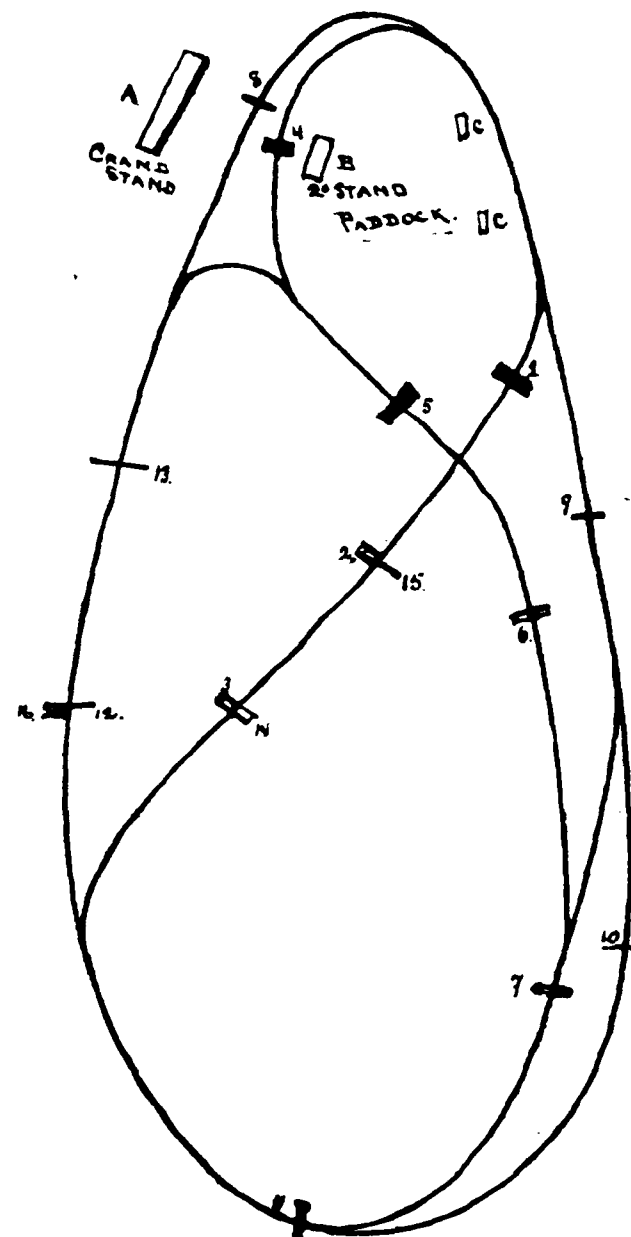
In this connection it would seem that all lieutenants at large posts should receive instruction in equitation. Especially does this seem desirable at the cavalry and light artillery school, where all officers are mounted. For pure cavalry work it is reasonable to think that Riley should take and hold a good lead over all other places.

Since my return to Europe I am more than ever convinced that our cavalry surpasses in mobility any I have seen, and on the whole its equipment is lighter and in many respects more practical than any other.

The quality of the riding, however, of our mounted officers is very uneven as is also the manner of riding. The latter has, I think, been noticed by many. While considerable latitude should be allowed, there should be limits. In a word, it does not seem that the average of horsemanship among our officers is as high as it should be.

In Sweden all cavalry lieutenants are required to pass through the Officers' Cavalry School at Strömsholm before being promoted to captain. This course lasts a year, and during that time officers are not only given careful instruction in all kinds of riding, but they are required to train young horses for the cavalry service from the beginning—including longe, gaiting, jumping, etc. In this training the officer gets more real practical knowledge of horses and horsemanship than he can learn in any other way. This work should, however, be done under the supervision of a specially qualified officer. The new horses continually coming to the regiments would furnish sufficient material to work on.

OFFICERS' STEEPLE CHASE COURSE, NEAR STOCKHOLM, SWEDEN.



- | | | |
|---|-------------------------------------|-----------------------|
| 1. Stone wall. | 5. "Irish bank" (banquet). | 14. Hedge with ditch. |
| 2. Earth bank. | 6. Fence, ditch and hedge. | 15. Hedge with fence. |
| 3. "English hurdle" (fence, ditch and hedge). | 7. Earth bank with hedge and ditch. | 16. Open ditch. |
| 4. Hurdle with water jump. | 8, 9, 10, 11, 12, 13. Hedges. | C.C. Stables. |

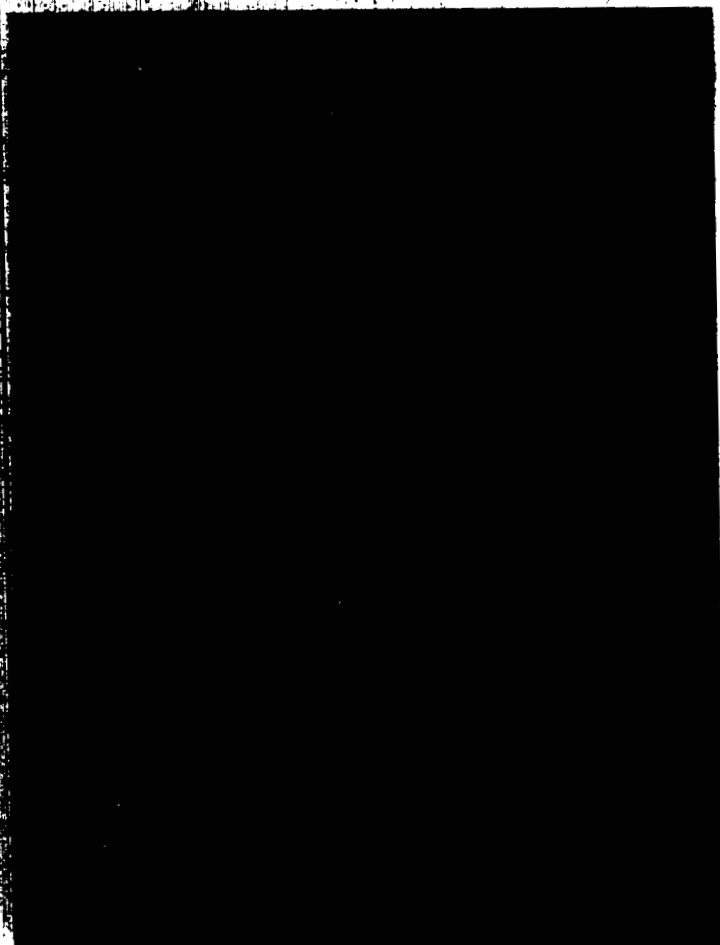
IMPROVED ALUMINUM-MOUNTED SABER (BERLIN).

WEIGHTS.

U. S. Trooper's:
3 lbs. 6 ozs.

German Trooper's:
(Aluminum)
2 lbs.

U. S. Officer's:
(Fancy, Light)
2 lbs. 11 ozs.



Norm.—The ring of the German saber is stationary to prevent rattling. The length and weight of blades varies between limits, to suit the user.

Differs from German Regulation in having—

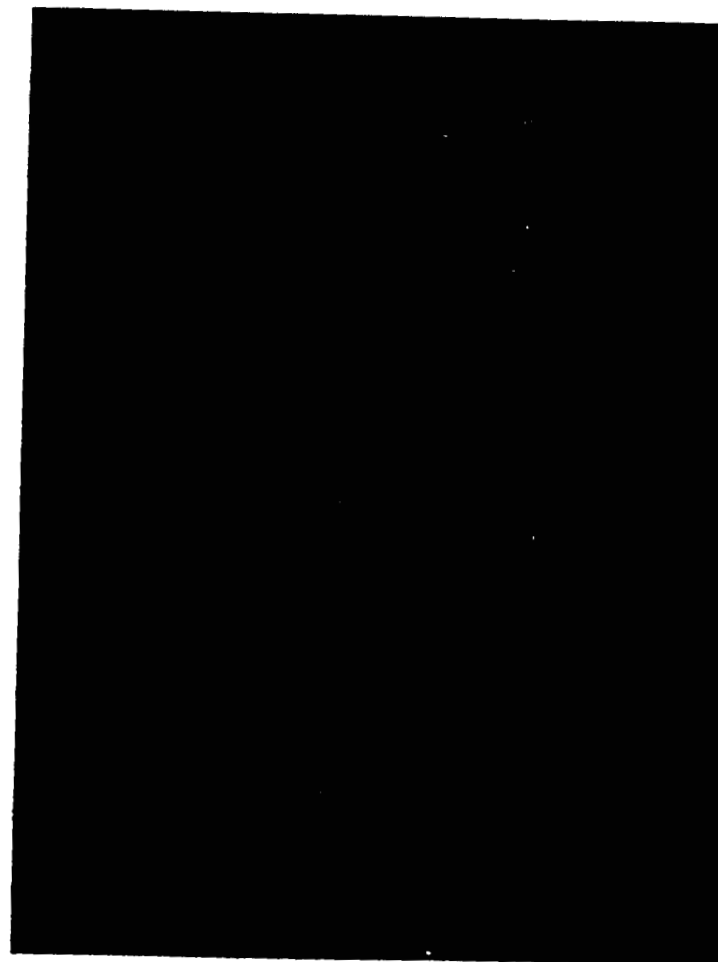
1st. Seamless drawn scabbard of aluminum (alloy) weighing 8½ ounces. U. S. trooper's weighs 1 lb. 3¼ ozs.; U. S. officer's (fancy) weighs 15½ ozs.

- 2d. Guard of Aluminum.
- 3d. Grip of improved form of vulcanized rubber.
- 4th. Clutch to hold saber in scabbard.

A

B

C



Projection
for grip
of finger.
see

Push
Button.
see

Clutch.
see

- A. Chain saber sling (French), only worn on foot.
- B. Attachment for saddle, used altogether mounted (French and German).
- C. Method of attaching bridoon to the same buckle that carries the curb-bit (German).

FREDERICK S. FOLTZ,
Lieutenant, First Cavalry.

FAIR LEATHER EQUIPMENTS FOR CAVALRY.

At a meeting of the Post Lyceum, held at Fort Robinson, Nebraska, on November 1, 1897, the following subject was proposed for discussion, the officers having previously been notified, viz: "Is it advisable to have fair leather equipments for the cavalry service?" The result of this discussion was so unanimously in favor of the fair leather equipments, that the secretary of the lyceum was requested by the officers present to forward a brief synopsis of the discussion to the Adjutant-General U. S. Army, for his information, and respectfully requesting that the subject be referred to the commanding officers of the different cavalry regiments, with a view of testing the sense of the officers upon it, looking ultimately to a change in this respect, if the Adjutant-General should deem it advisable.

Of the seventeen officers present, fourteen were strongly in favor of fair leather equipments; two argued in favor of fair leather, but were of the opinion that it had not been as yet sufficiently tested; one was in favor of black leather.

The subject was discussed mainly from three standpoints; 1st. The known defects of the black leather equipments; 2d, The wearing qualities of the fair leather; 3d, The appearance of the fair leather.

Briefly, on the first point, the following was observed: That whatever polish or dressing is used on the black leather, it will rub off the saddle, especially in the rain or when the men are perspiring freely, and thus ruin the clothing; that the polishes used by the men to shine the leather appear to cause it to rot, thus materially diminishing its durability; that with the dressings used, dust accumulates rapidly on the saddle and sticks to it.

On the second point, the fact was cited that many European armies have adopted the fair leather equipment, and they appear to give satisfaction; that cowboys throughout the West use fair leather saddles which wear well and at the same time are subjected to the hardest usage, and often without using any dressing at all upon them; that packers in the army use fair leather saddles which receive very hard usage; members of the lyceum mentioned instances of where they themselves used fair leather saddles with excellent results, also fair leather bridles; individual cases known to them were also cited tending to the same opinion; cases were cited of the wearing ability of tan leather shoes. An experimental saddle issued to Troop "A," Ninth Cavalry, some four years ago was shown to the officers present. It had a fair leather seat, stirrups, straps and boots. This saddle had been in continual use since received. The leather was in excellent condition and strong. In this connection, however, it was the opinion of all present that all of the leather should be fair, instead of part fair and part black; also that the bridles should be fair leather.

On the third point some objection was raised on the ground that after fair leather equipments had been used some little time they

would turn darker, thus causing the equipments to present a varied appearance when new saddles should be issued a few at a time. It was thought that appearance was secondary to serviceable wear and tear; but that this could probably be remedied by oil being rubbed into the leather of new saddles, thus causing them at once to take on a darker color.

It was further suggested that in all probability the leather could be kept in excellent condition and clean by simply using castile soap as a cleansing material.

W. S. WOOD,

First Lieutenant and Adjutant, Ninth Cavalry.

It seems not inappropriate, under existing circumstances, for the Association to reiterate its policy as set forth in the JOURNAL for March, 1896, viz:

"It has always been the endeavor to avoid any friction with, or antagonism of other branches of the service, but the Council stands ready at all times to set forth, in a proper light, the true interests and wishes of the cavalry arm without fear or favor."

BOOK NOTICES AND EXCHANGES.

THE CAMPAIGN OF MARENGO. Lieutenant H. H. Sargent, U. S. A.
A. C. McClurg & Co., Chicago.

Those who have been fortunate enough to read "Napoleon Bonaparte's First Campaign," by the same author, will naturally expect his later work to be one of great merit; and in this they will not be disappointed.

For the benefit of those who may not have all the details of fact fresh in their memories, the general military situation is carefully described. The discouragement of the French "Army of Italy," due to bad management, inadequate supplies of almost every kind, and numerous reverses in the field; the elation of the Austrian troops in the same theater for the exactly opposite reasons, their greatly superior numbers, and the assistance they might expect from an English fleet, and from a land force then in Minorca. All these, and many other particulars, having an important bearing upon the operations of the approaching campaign, are pointed out.

The general strategic situation, as viewed from the standpoint of either party, is given a very full discussion; the principal possibilities of action open to each party are noted, as well as the main opportunities for both that would probably result in case certain lines of action were adopted. The relations of the several possible theatres to each other; and the probable effect of operations in each upon the general result are set forth in the clearest manner. Finally, the plans that were actually adopted by each party are explained and discussed at length.

The operations of Massena in Italy, and those of Moreau in south Germany, may be regarded as Bonaparte's first movements; and as such, in their larger features, and also in many of their details, they were part of his great plan; and, in these, a certain measure of success was absolutely necessary to enable him to begin the execution of that part of the general plan of which he had decided to assume personal direction. These operations are accurately described and fully explained, and the bearing of each upon the general subject made plain.

Notwithstanding some errors, Moreau's operations in Germany had finally succeeded sufficiently to warrant Bonaparte in beginning his own movement into Italy; and the operations of Thurreau, Suchet, and especially the skillful and heroic defense of Genoa by Massena had drawn so much of Melas's strength toward Genoa and the Var and had so occupied his attention that Bonaparte's great object of establishing his army on Melas's communications was accomplished without serious fighting.

The means are indicated by which the First Consul, though numerically inferior by 40,000 men upon the entire hostile front, yet contrived to have a numerical superiority in south Germany long enough to secure the defeat of the enemy there. Some of these troops, together with the "Army of Reserve," were then transferred across the Alps, completely surprising Melas, who, like the Aulic Council, had wholly discredited the very existence of this force; and who, even when it was only a few miles distant, was not yet convinced. The skillful maneuvers by which Melas was kept in doubt as to Bonaparte's real object and by which he was induced to keep his forces scattered until too late to attack Bonaparte at certain critical moments, are also described and explained.

The ruses and pretences by which the enemies of France were led to believe that the "Army of Reserve," so ostentatiously announced, was a myth, until it was actually in the midst of the theater of its intended operations, constitute an instance of "deceiving the enemy" possibly more remarkable than anything of its kind in the whole range of military history.

The almost incredible foresight which enabled Bonaparte, in Paris, months in advance, to predict almost the precise movements that his enemy would make and to select the very spot where the decisive battle would be fought, and which almost savors of the supernatural, really indicate only the transcendent genius for war of this greatest strategist of all time.

Throughout these operations, we see that Bonaparte constantly kept open as many possibilities of action as possible; and we observe his fondness for "interior lines," or such an arrangement of his troops that he could concentrate sooner than his enemy. The foregoing points and many others that might not, perhaps, occur, even to a student of history, are brought out clearly in the copious "comments" that terminate each chapter.

Like all military men the author has an intense admiration for Bonaparte's generalship. But he does not allow it to blind him to the fact that he had vast personal interests at stake in this campaign; nor to the fact that some things were done which we, in full possession of all the facts, recognize as errors. Upon this point he says:

"It will be borne in mind that it is easy for any one, having a fair knowledge of the science of war, to point out, after the event, the mistakes that were made. During active operations confusion and doubt are constant factors that cannot be ignored by a commander. Neither Bonaparte nor his officers knew, or could know, the facts as we know them to-day. Thus the

military student is able, after months of study, to point out the errors made by a great master of war. He approaches the subject from a different point of view from that of the commanding general. He writes in the light; Napoleon marched in the darkness. He has the details of the campaign at his finger's end; Napoleon had to form his conclusions from the doubtful information at hand. Thus it is that mediocrity can criticise what genius alone can conceive and execute.

"Again, it must be remembered that the really great soldier is not he who never makes a mistake, but he who, in the aggregate, makes the fewest mistakes. In war the conditions are such that a commander cannot, by any possibility, always know the truth. He must often decide momentous questions on the spur of the moment, basing his decisions on unreliable information, obtained mostly from reports and rumors. 'Speak to me of a general who has made no mistakes in war,' says Turrene, 'and you speak of one who has seldom made war.' 'In the profession of war,' says Napoleon, 'the game is always to the one who makes the fewest mistakes.'

"In whatever way strategy is employed," says Colonel Maurice, 'surprise and concealment are essential to success. On this account it will continually happen, in selecting a line of operations or a scheme of campaign, that the most important point of all is to carry out just what an enemy does not expect. Very often successful campaigns, the method which has been subsequently much criticised, have owed their success to the facts that, from a nice calculation of time and distance, the successful general has seen that he could carry through an operation dangerous in itself, but sure not to be the one expected by his opponent."

For the second time the author has produced a most excellent treatise upon a subject of world-wide interest. So careful are his statements of fact, and so accurate his reasoning and his application of military principles, that his work might be used as a text book; and yet he has so far avoided technical terms, excepting those in common use, and has employed such an entertaining style that the work will be read with interest and pleasure by many whose acquaintance with military matters is of a merely casual character. Upon the whole, this work, considered as a strategical study, is, perhaps, the most comprehensive and the most generally satisfactory that has ever appeared in the English language upon this subject.

W. A. S.

LIFE OF NAPOLEON. Baron Jomini. Translated from the French by Major General H. W. Halleck. Two volumes, with an Atlas. Hudson-Kimberly Publishing Co., Kansas City, Mo.

The importance of Jomini's "Life of Napoleon" to the military student can scarcely be overestimated, and few have gone very far in the pursuit of military knowledge without referring to this treatise. The reference might not have been intentional on the part of the student, in fact he may have given some other author credit for the information he has gained of Napoleon and his operations; but it is nevertheless true that most writers have drawn largely from Jomini, and in this way most students are more or less familiar with his writings.

A work of such a standard nature needs only to be described in regard to the manner in which the publisher presents it. As the work is but a reprint, without change or comment, the faithfulness

of the copy, the typographical work and the atlas are of paramount importance.

In looking over the two volumes of text, it is seen that nothing has been omitted. The typographical work is excellent, the print being large and the lines well spaced. At the head of each page is the title of the chapter making reference an easy matter. Each separate subject in a chapter has its title in capitals, a convenience that all students must certainly appreciate.

The reproduction of the plates is exact and great effort seems to have been made in the "tooling out" process to not remove a single point or line shown on the originals. The plates are clear, easily read, printed on heavy map paper, and where color has been used to represent troops, care has been taken to put the representation in its proper place.

The cost, depending upon the binding of course, appears to be very moderate and well within the reach of all those desiring the work.

I would not say that every army officer should have the work in his library, for I might as consistently admonish a Christian to procure a Bible; but I hope that I will be pardoned for saying that this is a rare opportunity, and that those who take advantage of it will be wise.

DRAWINGS BY FREDERICK REMINGTON. R. H. Russell, New York.

This book is a collection of a large number of Remington's best drawings, and contains the following:

1. Forsythe's Fight on the Republican River, 1868—The Charge of Roman Nose.
2. Coronado's March—Colorado.
3. The Missionary and the Medicine Man.
4. Hunting a Beaver Stream, 1840.
5. The Hungry Winter.
6. Fight Over a Water Hole.
7. When His Heart is Bad.
8. A Citadel of the Plains.
9. On the Northwest Coast.
10. The Sheep Herder's Breakfast.
11. The Gold Bug.
12. An Overland Stage—Indians Coming in With the Stage.
13. The Well in the Desert.
14. The Borderland of the Other Tribe.
15. Her Calf.
16. A Government Pack Train.
17. The Charge.
18. The Pony War Dance.
19. The Coming Storm.
20. His Death Song.
21. Protecting a Wagon Train.
22. The Water in Arizona.
23. Government Scouts—Moonlight.
24. A Crow Scout.
25. A Mountain Lion Hunting.
26. Coyotes.
27. Hostiles Watching the Column.
28. Satisfying the Demands of Justice—The Head.
29. Sketch-Book Notes.
30. The Punchers.
31. Riding Herd in the Rain.
32. Mexican Vaqueros Breaking a "Bronc."
33. A Sun Fisher.
34. A Running Buck.
35. Riding the Range—Winter.
36. Snow Indian, or the Northwest Type.
37. Nez Percé Indian.
38. A Cheyenne Warrior.
39. A Greaser.
40. A Captain of Infantry in Field Rig.
41. A "Wind Jammer."
42. Cavalry Column Out of Forage.
43. Half-Breed Horse Thieves of the Northwest.
44. A Misdeal.
45. Over the Foot-Hills.
46. Taking the Robe.
47. Cowboy Leading Calf.
48. Cow Pony Pathos.
49. The Cavalry

Cook with Water. 50. A Modern Cavalry Camp. 51. Fox Terriers Fighting a Badger. 52. High Finance at the Cross-Roads. 53. Sketch-Book Notes. 54. The Indian Soldier. 55. The Squaw Pony. 56. U. S. Dragoon, 1847. 57. A Scout, 1868. 58. U. S. Cavalry Officer on Campaign. 59. A Reservation Indian. 60. Solitude. 61. The Twilight of the Indian.

Owen Wister, in his notes concerning the drawings, says:

"I have stood before many paintings of the West. Paintings of mountains, paintings of buffalo, paintings of Indians—the whole mystic and heroic pageant of our American soil; the only greatly romantic thing our generation has known, the last greatly romantic thing our continent holds; indeed the poetic episode most deeply native that we possess. Long before my eyes looked upon its beautiful domain I studied the paintings; but when Remington came with only a pencil I forgot the rest! And now, I have seen for myself, and know how he has caught alive not only the roped calf, or the troop cook sucking his comfortable corn-cob, the day-by-day facts of the wilderness, but the eternal night also, the pity and the awe of that epic life. He has made them visible by his art, and set them down as a national treasure. Look at the Pony War Dance. That wild fury of religion, that splendor of savagery dashes down to us from the Stone Age. If you will open the Old Testament where Joshua delayed the course of the sun, or they blew down a city wall with a trumpet, you will come upon the same spirit. Look at the Medicine Men and the lightning. Again man's untamed original soul communes with a god of vengeance and terror. Is it not like Elijah and the fire-stroke from heaven upon the altar? Then turn to the sheep-herder's breakfast. Unless you have known that solitude, no words of mine can tell you how Remington has been a poet here. With some lines and smears on paper he has expressed that lotus mystery of the wilderness. He has taken a ragged vagrant with a frying pan and connected him with the eternal. The dog, the pack saddle, the ass, the dim sheep in the plain, those tender outlines of bluffs and ridges—it is the Homer of the Old Testament again; time and the present would have no part here."

To those in the army who have served in the West the drawings will recall with vividness many things they have seen. The realistic "Charge of Roman Nose," "The Government Pack Train," "The Charge," "The Cheyenne Warrior," "The Pony War Dance," will recall scenes familiar to many of our cavalymen. The faithfulness of execution in regard to details has made Remington famous in the army, for there is no class of men so quick to see an oversight of this kind. The soldier's life consists in attending to details, and this nicety he looks for in all classes of work.

Aside from the realism and exactness the poetry is not lost on him. These pictures will excite no end of admiration at the masses and clubs. Although Remington is personally acquainted with few in the army, the army is well acquainted with him through his drawings, and will appreciate and take great pleasure in looking over this collection.

EXTRACTS FROM AN INFANTRY CAPTAIN'S JOURNAL. By Major von Arnim. Translated by Major C. J. East. Published by Hudson, Kimberly & Co., Kansas City, Mo.

Among the causes that have placed the valuable military writings of von Arnim beyond our reach for twenty-five years have

been poor translations, incomplete and unsatisfactory maps, few leads and small print. The last mentioned was the most powerful reason of them all, for it is perfectly evident that anything that is worthy of being printed at all is also worthy of fair type and space. Perhaps also military men, outside of Germany, have required all this time to prepare themselves for new ideas on the subject of military training. In the present edition the most serious objection to former English reprints of this work does not appear, and our present tendencies in military education make it a fit time to offer a practical method for effectively training a company in skirmishing and outpost duty, in a limited time and under unfavorable circumstances.

Von Arnim follows the method of the brilliant Verdy du Verne in teaching principles by their application, which has completely revolutionized all former ideas on the training of troops. The book has gone through many editions in Germany and may be regarded as one of the military classics of the day. Such difficulties as may be found in the text, the maps, etc., will call for extra time and study, which will do no harm. E. S.

LIFE OF GENERAL U. S. GRANT. Colonel Church. G. P. Putnam's Sons, New York.

Writing a biography of General Grant in the year 1897 is a formidable undertaking. Everybody who ever wrote anything about anyone has written about Grant. Colonel Church, however, has attacked his subject with vigor and success. The Putnam made a very judicious choice of their author, who has brought a most unusual equipment to bear on his work. A soldier of the war that made Grant famous, a veteran editor of a leading military newspaper, a forcible, intelligent and discriminating writer, and an intimate acquaintance of the subject of the biography, ought to write a good life of his hero, and the Colonel fulfills anticipations. Of course, very much appears in this book that has already appeared elsewhere; equally, of course, much is omitted from this one volume that will be found in larger lives of Grant, but Colonel Church's large acquaintance among General Grant's contemporaries, both in the army and civil life, has given him a great opportunity for collecting anecdotes, impressions and reminiscences of General Grant of which he has made skillful use.

Colonel Church is frequently philosophical in the treatment of his subject. In an early page of his book he deduces with inexorable logic the probability of young Grant's brain having been reached by the good old-fashioned back-stairs process in vogue among the flogging school masters of the '30's.

It is interesting to note that a famous sailor saved the great soldier from drowning when the great soldier was gotten up to kill in a Marseilles blouse with red stripes. This was not the least of the services Rear Admiral Ammen rendered his country.

Of course, Grant's wonderful horsemanship comes in for ex-

tedded mention. This quiet boy was a perfect dare-devil on a horse, as the anecdotes demonstrate. At West Point Grant was recognized as the embodiment of frankness, persistence and determination. He was not much on ethics, and was nearly a tail ender in "artillery drill." It will not be safe to make too radical deductions from either of these facts.

Professor Mahan's very appreciative estimate of Cadet Grant is quoted; also Professor Davies' reported remark, "I tell you that the smartest man in the class is little Grant."

Grant, like everybody in the old army, or rather unlike everybody in the old army, occasionally took a drink of liquor, and one drink was all he ever had time to take at once. He was extremely temperate except when he took this one drink, which usually floored him. His commanding officer "got down on him" and Grant, separated from his family by the exigencies of the service, disheartened and disgusted, resigned, but not under pressure. This was after the Mexican War, and after most honorable, intelligent and gallant service.

General Grant's vigor, firmness and humor in dealing with his volunteer regiment at the opening of the war are engagingly narrated. His several campaigns are rapidly, but clearly sketched. Grant was drinking Mississippi River water while the wire pullers were shrieking about Grant's drunkenness, and a bibulous officer, visiting Grant's headquarters, could not get even a smell of something to drink during the Vicksburg campaign. But Grant was rapidly getting to the point where none could molest him or make him afraid. Poor, jealous, seditious, finical, old General Halleck wrote him a very handsome letter when Vicksburg fell, despite Grant's frequent infraction of the "rules of war." Colonel Church does not, in terms, criticize General Grant's sledge hammer assaulting tactics of the Wilderness campaign, but quotes an extract from General Francis A. Walker's "History of the Second Army Corps" with apparent approval, and this extract is, in effect, a criticism of such tactics—but this is old straw. The author, however, makes the obvious point that Grant lost fewer men in ending the war in Virginia than had been lost in accomplishing nothing by his predecessors in command. Of course, the simple, straightforward soldier could not, and did not make a model President. The author knows this and says it.

Grant's utter inaptitude for business, his trustfulness, amounting to gullibility, his business failure, the sad darkening of his later years, his glorious struggle with the only foe that ever beat him are all portrayed by a sympathetic, loyal friend.

Colonel Church keeps always before the reader a picture of the man Grant—an utterly simple-hearted, modest, steadfast character, free from anything approaching egotism or ostentation, a man of objects, not objections, with only one ambition, and that to serve his country.

The book is gotten up in the well known style of the Putnams; is well bound, and printed on good paper, with plenty of clear maps unobscured by unnecessary detail.

J. A. C.

THE MORE DESTRUCTIVE GRASSHOPPERS OF KANSAS. Department of Entomology, Kansas University. J. S. Parks, Topeka, Kan.

The losses caused by native grasshoppers in certain parts of the State, especially in localities where alfalfa is produced on a large scale, furnish the special reason for this publication.

The subject is treated under: Observations Made in the Field; Life History and Habits of the Insects; Remedies, Natural and Artificial. Under "Artificial Remedies" comes a good discussion of alfalfa and the grasshopper. Then follows descriptions of the more destructive forms, with five plates of twelve figures, fully explaining the text.

The subject is presented in a simple, popular manner, easily understood by the average reader. It is becoming more and more evident that intelligent farming is the only successful way of securing full returns from the soil. The Department of Entomology has done the farmers a great favor by placing this publication before them in such a manner, since we understand the pamphlet may be had by sending address and a one-cent stamp to pay postage.

HAND BOOK OF THE ANNEXATION OF HAWAII. Lorrain A. Thurston. A. B. Morse & Co., St. Joseph, Michigan.

This pamphlet is designed to digest and concentrate for the information of the busy man the principal arguments for and against annexation; the replies to objections thereto; and to furnish a brief description of the people, laws, finances, educational system, resources and civilization of the country proposed to be annexed, and such documentary evidence as is necessary to the full understanding of the issues involved.

Fully indexed and illustrated.

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION. September, October, November, 1897.

1. Military Essay for the Gold Medal Competition. 2. Rapid Cable Laying for War Purposes. 3. The Defects of Our Military Financial System. 4. Fire Discipline. 5. The Formation of an Adequate Reserve of Trained Seamen. 6. On the Instruction of Our Soldiers to Shoot Under Active Conditions of Service. 7. Army Chaplains as Military Historians and Diarists. 8. The Training of Men With the Colors in Relation to their Subsequent Employment in Civil Life. 9. Between the Chiese and Adige. 10. Unification of Time at Sea.

REVUE DE CAVALERIE. September, October, 1897.

1. The Cavalry at the Battle of Eylau. 2. The Cavalry in the Austrian Manœuvres of 1896. 3. Cavalry Fighting on Foot. 4. Study on the Advance Cavalry of Armies—War of 1866 in Austria. 5. Tandem Mounted. 6. The Cavalry in the Manœuvres of 1897. 7. The Controlling Idea of the Employment of Cavalry—The Prin-

ciple of Freedom. 8. Looking Amongst the Remounts. 9. From Bantzen to Plaswitz, May, 1813. 10. The Trotter in the Army. 11. The Lancers of the Guard and Its Third Dragoons at Gravelotte. 12. The Tandem Mounted.

JOURNAL OF THE UNITED STATES ARTILLERY. September, October, 1897.

1. The Probability of Hit when the Probability of Error in Aim is Known. 2. A Reply to the Report of a Board on Seacoast Mortar Fire. 3. The Theoretical and Practical Training of the Light Artillery Gunner. 4. Indirect Fire. 5. History of the Seacoast Fortifications of the United States.

PROCEEDINGS OF THE UNITED STATES NAVAL INSTITUTE. No. 3, 1897.

1. Torpedoes in Exercise and Battle. 2. Washington's Forgotten Maxim. 3. The Consolidated Mess of the Crew of the U. S. S. Indiana. 4. The Sailor in the Revolution. 5. The Development of Smokeless Powder. 6. The Naval Policy of America. 7. Notes on the Yacht Defender.

PROCEEDINGS OF THE ROYAL ARTILLERY INSTITUTION. October, November, 1897.

1. With the Turks; The Battle of Domokos. 2. With the Greeks: The Artillery at Domokos. 3. The Nile Cataracts. 4. An Episode in the Siege of Sevastopol. 5. Mountings for Coast Artillery. 6. Laying With a Clinometer. 7. Fighting Books.

JOURNAL OF THE MILITARY SERVICE INSTITUTION. September, 1897.

1. Readiness for War. 2. Federal Duty and Policy. 3. The Enforcement of Civil Law. 4. Relation of the Soldier to Politics. 5. Things We are Forgetting. 6. Notes on Light Artillery Material. 7. Training of Company Cooks.

THE MAINE BUGLE. October, 1897.

1. History of Co. "F," Twenty-sixth Maine Regiment. 2. Four Brothers in Blue. 3. Reunion of Veteran Associations. 4. Cavalry Societies of Armies of the United States. 6. Echoes.

THE INDIAN FENCING REVIEW. July, 1897.

1. Indian Fencing Association. 2. L'Arme Blanche. 3. Infantry Sword Exercise of 1895. 4. Bayonet Fencing. 5. A Soldier's First Impressions in Battle. 6. Cuts and Points.

THE IOWA HISTORICAL RECORD. October, 1897.

1. A Memory of Jeannette Robertson Higley. 2. Address. 3. Hard Times. 4. A Soldier Saint. 5. An Old Cemetery.

REVUE DU CERCLE MILITAIRE.

MILITAER WOCHENBLATT.

THE BREEDERS' GAZETTE.

THE RIDER AND DRIVER.

THE MILITARY GAZETTE.

OUR DUMB ANIMALS.

PRIZE ESSAY.

I.

At a special meeting of the Executive Council of the Cavalry Association, held March 8th, to consider the subject of a prize essay, the following resolution was adopted:

Resolved, That the Cavalry Association undertake the production of a history of the American cavalry, which shall be brought out in the form of a series of historical essays, to be published in the JOURNAL.

At a meeting of the Council held December, 1897, it was —

Resolved, That the Cavalry Association does hereby offer a prize of \$100.00 in cash each for the second and third essays of the series.

The prizes will be awarded under the following conditions:

1. The competition to be open to all persons.
2. The essays must not exceed 30,000 words.
3. Three typewritten copies of the essay will be sent in a sealed envelope to the Secretary on or before July 15, 1898, if the second essay; or January 15, 1899, in case of the third essay.
4. The essay will be signed *only* with the *nom de plume* adopted by the author. A sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address, must accompany the essay. This envelope will be opened in the presence of the Council after the decision of the Board of Award has been made.
5. The successful essay shall become the unconditional property of the Cavalry Association, and will be published in the CAVALRY JOURNAL.
6. The second essay shall receive honorable mention, and, if desired by the Council, shall, upon payment of \$25.00 to the writer, become the unconditional property of the Cavalry Association.
7. The prize shall be awarded upon the recommendation of a Board, consisting of three suitable persons chosen by the Executive Council, who shall be requested to designate the essay deemed worthy of the prize and also the essay deemed worthy of honorable mention.

PRIZE ESSAY.

533

Should members of the Board determine that no essay is worthy of the prize, they may designate one deemed worthy of honorable mention. Should the Board deem proper, it may recommend neither prize nor honorable mention.

The recommendations of individual members of the Board will be considered by the Council as strictly confidential.

In determining the essay worthy of the prize, the Board will consider, *first*, historical accuracy; *second*, professional excellence; *third*, literary merit.

II.

The subject selected by the Council for the second essay of the series is as follows: "The History of the American Cavalry Previous to the Civil War."*

The subject selected for the third essay of the series is as follows: "The History of the Cavalry of the Army of Northern Virginia (Confederate) During the Civil War."†

III.

The names of the Boards of Award will be announced in the issues of the JOURNAL next preceding the dates upon which the essays are due.

For further information address the undersigned.

E. L. PHILLIPS,
Second Lieutenant Sixth Cavalry,
Secretary.
Fort Leavenworth, Kansas.

*NOTE.—The subject is intended to include organization, armament, equipment, etc., as well as the operations of the cavalry. It will go back to the beginning of the Revolution.

†NOTE.—The subject is intended to include organization, armament, equipment and supply, as well as the operations of the cavalry. It is intended that this essay will be a counterpart to Essay I, and will be a corresponding history of the Confederate Cavalry in the East, which was opposed to the Federal cavalry, whose history is included in the essay.

BOARD OF AWARD.

The Prize Essays due January 15, 1898, will be submitted to a Board of Award composed of:

General J. H. WILSON, of Wilmington, Del.

General FITZHUGH LEE, of Havana, Cuba.

MOSES COIT TYLER, Professor of American History in Cornell University.

THE UNITED STATES CAVALRY.

FIRST CAVALRY—COLONEL ABRAHAM K. ARNOLD.

Adjutant, W. S. SCOTT. Quartermaster, G. H. MACDONALD.

HEADQUARTERS, FORT RILEY, KANSAS.

Troops—*F* and *K*, Fort Riley, Kan.; *A* and *I*, Fort Huachuca, Ariz.; *E* and *H*, Fort Sill, O. T.; *B* and *D*, Fort Reno, O. T.; *C* and *G*, Fort Sheridan, Ill.

SECOND CAVALRY—COLONEL GEORGE G. HUNTT.

Adjutant, R. E. L. MICHELE. Quartermaster, H. H. SARGENT.

HEADQUARTERS, FORT WINGATE, N. M.

Troops—*E* and *K*, Fort Wingate, N. M.; *A*, *C*, *D*, *F*, *G* and *H*, Fort Riley, Kan.; *B* and *J*, Fort Logan, Colo.

THIRD CAVALRY—COLONEL S. B. M. YOUNG.

Adjutant, T. R. RIVERS. Quartermaster, J. W. HEARD.

HEADQUARTERS, FORT ETHAN ALLEN, VT.

Troops—*A*, *B*, *D*, *H*, *I* and *K*, Jefferson Barracks, Mo.; *C*, *E*, *F* and *G*, Fort Ethan Allen, Vt.

FOURTH CAVALRY—COLONEL CHARLES E. COMPTON.

Adjutant, C. STEWART. Quartermaster, G. H. CAMERON.

HEADQUARTERS, FORT WALLA WALLA, WASH.

Troops—*A* and *G*, Fort Walla Walla, Wash.; *E*, Vancouver Barracks, Wash.; *F*, Boise Barracks, Idaho; *B*, *C*, *I* and *K*, Presidio of San Francisco, Cal.; *D* and *H*, Fort Yellowstone, Wyo.

FIFTH CAVALRY—COLONEL L. H. CARPENTER.

Adjutant, J. M. JEWKINS. Quartermaster, J. T. HAINES.

HEADQUARTERS, FORT SAN HOUSTON, TEXAS.

Troops—*D*, *E*, *F* and *K*, Fort San Houston, Tex.; *B*, Fort McIntosh, Tex.; *C* and *I*, Fort Clark, Tex.; *G*, Fort Brown, Tex.; *H*, Fort Bliss, Tex.; *A*, Fort Bliss, Tex.

SIXTH CAVALRY—COLONEL SAMUEL S. SUMNER.

Adjutant, R. L. HOWER. Quartermaster, G. H. SANDS.

HEADQUARTERS, FORT MYER, VA.

Troops—*A*, *E*, *G* and *H*, Fort Myer, Va.; *B*, *C*, *F* and *K*, Fort Leavenworth, Kan.; *D* and *J*, Fort Robinson, Neb.

SEVENTH CAVALRY—COLONEL EDWIN V. SUMNER.

Adjutant, W. A. HOLBROOK. Quartermaster, W. H. HART.

HEADQUARTERS, FORT GRANT, ARIZONA.

Troops—*B*, *C*, *E* and *F*, Fort Grant, Ariz.; *I* and *K*, Fort Huachuca, Ariz.; *A* and *D*, Fort Bayard, N. M.; *G* and *H*, Fort Apache, Ariz.

EIGHTH CAVALRY—COLONEL J. M. BACON.

Adjutant, M. F. STEHL. Quartermaster, C. C. WALCUTT.

HEADQUARTERS, FORT MEADE, S. D.

Troops—*A*, *B*, *D*, *E*, *F*, *G*, *H*, *I* and *K*, Fort Meade, S. D.; *C*, Fort Yates, N. D.

NINTH CAVALRY—COLONEL DAVID PERRY.

Adjutant, W. S. WOOD. Quartermaster, J. H. GARDNER.

HEADQUARTERS, FORT ROBINSON, NEB.

Troops—*A*, *C*, *E*, *G*, *H* and *K*, Fort Robinson, Neb.; *B* and *F*, Fort Du Chesse, Utah; *D* and *J*, Fort Washakie, Wyo.

TENTH CAVALRY—COLONEL GUY V. HENRY.

Adjutant, M. H. BARNUM. Quartermaster, L. HARDENMAN.

HEADQUARTERS, FORT AMIENSBOROUGH, MONT.

Troops—*C*, *D*, *F*, *G*, *H*, *I* and *K*, Fort Amienborough, Mont.; *A* and *E*, Fort Keogh, Mont.; *B*, Camp Merritt, Mont.

The Adjutants of Regiments will please notify the Editor of changes in the Regimental Staff, and in stations of Troops.

CAVALRY OF THE NATIONAL GUARD.

NOTE.—The following have no mounted troops: Alaska, Arizona, Connecticut, Delaware, District of Columbia, Florida, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Missouri, Nevada, North Carolina, South Dakota, West Virginia, Vermont, Wyoming.

ALABAMA.

FIRST CAVALRY SQUADRON—MAJOR JAMES T. BECK.

Adjutant, Captain A. G. Forbes. Quartermaster, Captain J. F. Burns.

HEADQUARTERS, CAMDEN.

Troop "A," Montgomery, Captain W. F. Joseph; Troop "B," Camden, Captain W. P. Burford; Troop "C," Selma, Captain V. P. Atkins; Troop "D," Birmingham, Captain J. B. Mooman.

ARKANSAS.

Troop "A," Panola, Major M. C. House; Troop "B," Jacksonville. (Commanding Officer unknown).

CALIFORNIA.

Troop "A," San Francisco, Captain Chas. A. Jenks; Troop "B," Sacramento, Captain John Cooke; Troop "C," Salinas, Captain Michael J. Burke; Troop "D," Los Angeles. (Commanding Officer unknown.)

COLORADO.

FIRST SQUADRON OF CAVALRY—MAJOR JOHN CHASE.

Adjutant, First Lieutenant A. H. Williams. Quartermaster, (None.)

HEADQUARTERS, DENVER.

Troop "A," Leadville, Captain Frank M. Goddard; Troop "B," Denver, First Lieutenant Wm. G. Wheeler.

GEORGIA.

FIRST REGIMENT OF CAVALRY—COLONEL WILLIAM W. GORDON.

Adjutant, Captain Wm. G. Harrison. Quartermaster, Captain Albert S. Eichberg.

HEADQUARTERS, SAVANNAH.

FIRST SQUADRON, FIRST REGIMENT—MAJOR PETER W. MELDRIM.

HEADQUARTERS, SAVANNAH.

Troop "B," McIntosh, Captain Willard P. Waite; Troop "K," Johnston Station, Captain Joseph W. Hughes; Troop "G," Darien, Captain Benjamin T. Sinclair; Troop "I," Jessup, Captain Harry W. Whaley.

SECOND SQUADRON, FIRST REGIMENT—MAJOR JAMES J. BREWER.

HEADQUARTERS, OLIVER.

Troop "A," Savannah, Captain Bairne Gordon; Troop "C," Springfield, Captain Daniel G. Morgan; Troop "D," Sylva, Captain Jesse T. Wade; Troop "H," Waynesboro, Captain William H. Davis.

FIRST BATTALION OF CAVALRY (INDEPENDENT)—MAJOR JOHN M. BARNARD.

Adjutant, First Lieutenant John D. Twigg. Quartermaster, First Lieutenant Robert Dobson.

HEADQUARTERS, LA GRANGE.

Troop "A," Augusta, Captain Albert J. Twigg; Troop "B," Atlanta, Captain J. Stapler Doster; Troop "C," LaGrange, Captain Thomas J. Thornton; Troop "D," Hamilton, First Lieutenant John M. Bruce.

ILLINOIS.

CAVALRY SQUADRON—MAJOR EDWARD C. YOUNG.

Adjutant, Captain Pierrepont Isham. Quartermaster, First Lieutenant Milton J. Foreman
HEADQUARTERS, CHICAGO.

Troop "A," Chicago, Captain Paul B. Lino; Troop "B," Bloomington, Captain Will P. Butler; Troop "C," Chicago, Captain Metcalfe L. C. Funkhouser; Troop "D," Springfield, Captain John S. Hurt.

MASSACHUSETTS.

FIRST BATTALION OF CAVALRY—MAJOR HORACE G. KEMP.

Adjutant, First Lieut. Walter C. Wardwell. Quartermaster, First Lieut. Sullivan B. Newion.
HEADQUARTERS, BOSTON.

Troop "A," Boston, Captain D. A. Young; Troop "D," Boston, Captain William A. Perkins; Troop "F," (Independent), North Chelmsford, Captain Ellisha H. Shaw.

MISSISSIPPI.

FIRST SQUADRON OF CAVALRY—MAJOR J. H. COOKE.

Adjutant, First Lieutenant R. B. Hardy. Quartermaster, First Lieutenant D. W. Outlaw.
HEADQUARTERS, ARKEMA.

Troop "A," Crawford, Captain J. J. Prowell; Troop "B," Sessumsville, Captain A. F. Young.

MONTANA.

Troop "A," Billings, Captain J. C. Bond; Troop "B," Bozeman, Captain J. F. Keown.

NEBRASKA.

Troop "A," Milford, Captain Jacob H. Culver.

NEW HAMPSHIRE.

Troop "A," Peterborough, Captain Charles B. Davis.

NEW JERSEY.

First Troop, Newark, Captain Frederick Frelinghuysen; Second Troop, Red Bank, Captain John V. Allstrom.

NEW MEXICO.

FIRST BATTALION OF CAVALRY—MAJOR T. P. GARLE.

Adjutant, First Lieutenant W. R. Griffin. Quartermaster, First Lieutenant E. B. Linnen.
HEADQUARTERS, SANTA FE.

NOTE.—The battalion is now undergoing reorganization. It is to contain four troops.

NEW YORK.

SQUADRON "A"—MAJOR CHARLES F. ROE.

Adjutant, First Lieut. John Isaac Holly. Quartermaster, First Lieut. Louis V. O'Donohue.
HEADQUARTERS, NEW YORK CITY.

First Troop, New York City, Captain Oliver B. Bridgman; Second Troop, New York City, Captain Howard G. Badgley; Third Troop, New York City, Captain Latham G. Reed; Troop "C," (Independent), Brooklyn, Captain Bertram T. Clayton.

OHIO.

Troop "A," Cleveland, Captain Russell E. Burdick.

OREGON.

Troop "B," Grasham, Captain Charles Cleveland.

NOTE.—Another troop, to be called Troop "A," will soon be organized, and a squadron organization will be completed.

PENNSYLVANIA.

Philadelphia City Troop, Philadelphia, Captain John C. Groome; Governor's Troop, Harrisburg, Captain Frederick M. Ott; Sheridan Troop, Tyone, Captain C. S. W. Jones.

RHODE ISLAND.

FIRST SQUADRON OF CAVALRY—MAJOR ALEXANDER STRAUSS.

Adjutant, First Lieutenant Thomas Child. Quartermaster, First Lieutenant Miles H. Ray.
HEADQUARTERS, PAWTUCKET.

Troop "A," Pawtucket, Captain Edward T. Jones; Troop "B," Providence, Captain Wm. A. Maynard.

SOUTH CAROLINA.

FIRST BRIGADE OF CAVALRY—BRIGADIER-GENERAL JOSEPH L. STOPPERSHIN.

Adjutant-General, Major T. G. Disbar. Brigade Quartermaster, Major R. H. Sweeney.
HEADQUARTERS, SUMMERVILLE.

FIRST REGIMENT OF CAVALRY—COLONEL W. J. CAUSEY.

Adjutant, Captain A. R. Speaks. Quartermaster, Captain T. E. Ulmer.
HEADQUARTERS, HAMPTON.

Troop "A," Brunson's, Captain R. A. Brunson; Troop "B," Varnville, Captain W. M. Steinmeyer; Troop "C," Brunson's, Captain G. M. Bowers; Troop "D," Stafford's, Captain R. M. Daley; Troop "E," Stafford's, Captain K. S. Long; Troop "F," Peoples, Captain H. E. Peoples; Troop "G," Gilliamville, Captain J. E. Robinson; Troop "H," O'Katie, Captain W. N. Barnes; Troop "I," White Hall, Captain S. A. Marvin.

SECOND REGIMENT OF CAVALRY—COLONEL G. P. ALLEN.

Adjutant, Captain R. C. Roberts. Quartermaster, Captain W. A. Collett.
HEADQUARTERS, ALLENDALE.

Troop "A," Barnwell, Captain J. A. Hays; Troop "B," Dunbarton, Captain P. M. Carter; Troop "C," Allendale, Captain A. W. Owens; Troop "D," Edgely, Captain L. B. Brunson; Troop "E," Edgely, Captain J. R. Blocker; Troop "F," Orangeburg, Captain J. A. Riley; Troop "G," Cedar Grove, Captain R. T. Newman; Troop "H," Hamburg, Captain J. P. De-laughter.

THIRD REGIMENT OF CAVALRY—COLONEL J. R. SPARKMAN.

Adjutant, Captain H. L. Smith. Quartermaster, Captain W. C. White.
HEADQUARTERS, GEORGETOWN.

Troop "A," Bonneau's, Captain J. A. Harvey; Troop "B," St. Stephens, Captain E. T. Guerry; Troop "C," Georgetown, Captain H. T. McDonald; Troop "D," Jedburg, Captain C. H. Wilson; Troop "E," Conway, Captain L. D. Long; Troop "F," Lake City, Captain J. J. Morris; Troop "G," Georgetown, Captain J. H. Detyens.

SECOND BATTALION OF CAVALRY—LIEUT. COLONEL D. W. BRANFLORE.

Adjutant, (Unknown). Quartermaster, (Unknown).
HEADQUARTERS, PANOLA.

Troop "A," Eutawville, Captain Jeff D. Wiggins; Troop "B," Panola, Captain R. C. Richardson; Troop "C," Silver, Captain J. H. Dingle; Troop "D," Holly Hill, Captain R. F. Way, Jr.

NORTH DAKOTA.

Troop "A," Dunseith, Captain George W. Tooke.

UTAH.

Troop "A," Salt Lake City, Captain Joseph E. Caine.

TENNESSEE.

Cavalry Troop, Nashville, Captain George F. Hagar.

TEXAS.

FIRST CAVALRY REGIMENT—COLONEL J. R. WATERS.

Adjutant, First Lieut. James M. Burroughs. Quartermaster, First Lieut. Frederick Rhodes.
HEADQUARTERS, HOUSTON.

Troop "A," Austin, Captain L. H. Younger; Troop "B," Houston, Captain C. Towles; Troop "E," Dallas, Captain F. V. Blythe; Troop "F," Denison, Captain E. A. Hammond; Troop "H," Gainesville, Captain John A. Hulen.

VIRGINIA.

Troop "A," Richmond, Captain E. J. Baker; Troop "B," Surry, Captain Geo. A. Savedge.

WASHINGTON.

Troop "A," North Yakima, Captain Marshall S. Scudder; Troop "B," Tacoma, Captain Everett G. Griggs.

WISCONSIN.

Troop "A," Milwaukee, Captain William J. Grant.