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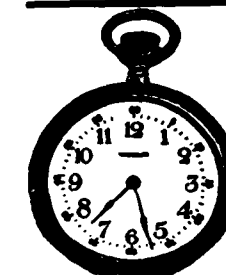
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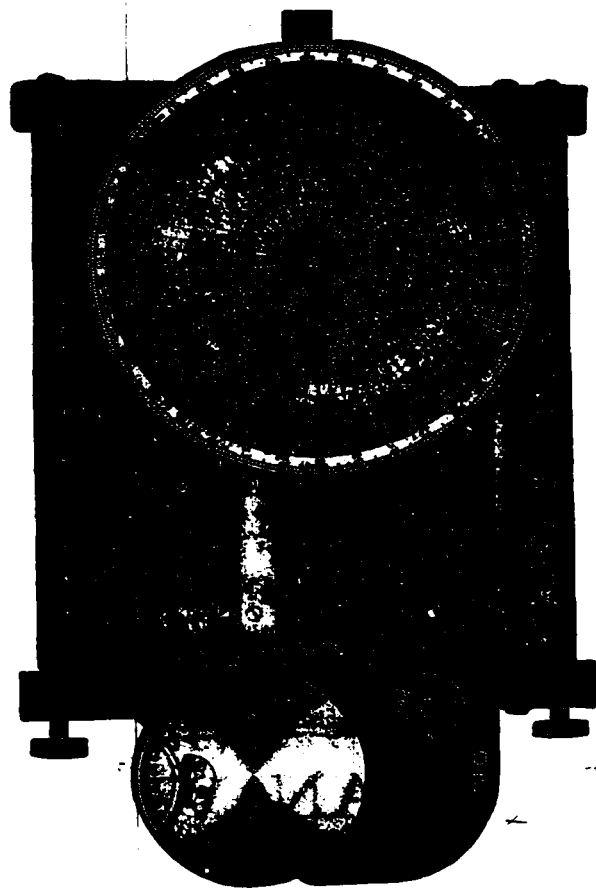
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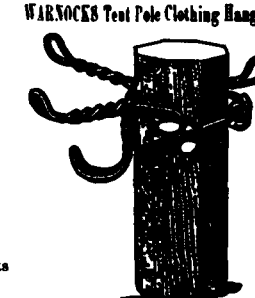


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CONTENTS FOR JANUARY, 1912.

	PAGE
CAVALRY NOTES—Major H. T. ALLEN.....	685
PONY PACKS IN THE PHILIPPINES—Major C. O. SMITH.....	616
FORAGE—Veterinarian G. E. GRIFFIN.....	623
CAVALRY ORGANIZATION—Major J. T. DICKMAN.....	650
EXPERIMENTAL DRILL IN DOUBLE RANK—Colonel T. W. JONES.....	657
DAILY DIARY OF EQUITATION WORK AT THE MOUNTED SERVICE SCHOOL.....	663
REPRINTS AND TRANSLATIONS:	
THE CONDUCT OF OPERATIONS WITH GREEN TROOPS.....	677
NIGHT EXERCISES IN THE CAVALRY.....	686
THE EVOLUTION OF THE IDEAS CONCERNING THE ROLE AND EMPLOYMENT OF CAVALRY—Colonel AUBIER.....	689
CAVALRY TACTICS—Colonel BALCK.....	743
MILITARY NOTES:	
NOTES ON CASTRAMETATION—Colonel JAMES PARKER.....	766
REMOUNTS IN FRENCH ARMY.....	770
THE INTERNATIONAL HORSE SHOW AT OLYMPIA—Major F. S. FOLTZ.....	771
THE CHARGING UNIT.....	772
THE DOUBLE RANK FORMATION.....	773
PROFESSIONAL NOTES—Lieutenant Colonel W. C. BROWN.....	776
A PROPOSED SABER—Major N. F. MCCLURE.....	777
ELIMINATION OF REVOLVERS.....	777
BOOK REVIEWS.....	780
EDITOR'S TABLE.....	785

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CAVALRY NOTES.

BY MAJOR HENRY T. ALLEN, GENERAL STAFF U. S. ARMY.

IMPORTANCE OF LARGER CAVALRY POSTS.

SINCE the Civil War officers of cavalry have rarely had an opportunity of seeing a division, or even a brigade of cavalry in operation in our country. In fact, until recently whole regiments assembled have been comparatively rare and we have largely become habituated to thinking of a regiment as a very large aggregation of mounted men. It is certainly time to seriously consider the question of combining organizations so as to maintain at suitable posts brigades of cavalry that may at times be combined with other brigades to make divisions.

The proper handling of cavalry brigades and divisions would naturally reveal defects in a system wherein a regiment constitutes the largest aggregation. It would show the importance of greater compactness in the smaller units and the corresponding necessity of a greater readiness to strike in all units.

REGIMENTS OF FEWER BUT LARGER UNITS.

The first requisite to efficiency of cavalry is a proper command for the captain—a force that will be sufficient to deliver a real blow after all the usual details are deducted; the second requisite is a compact combination of these units possessing a maximum of sabers that can be expeditiously handled as a regiment by one man. By the latter it must be understood that the one man (the colonel) must be able to handle his entire command, not in two or three lines (brigade formation), nor as three semi-independent commands (squadrons), but as a solid unit possessing the greatest mobility. This does not imply that he will not require field officer assistance in the execution of various movements, in command of parts of the regiment when detached, as well as administrative supervision of certain parts of the regiment in garrison.

It has been demonstrated and conceded that the limit of sabers thus handled is between 650 and 950, and that the corresponding limit for captains is between 125 and 160. A major would therefore have, say, 300 or more sabers. In the skillful manipulation of the units thus composed double rank formations are a necessity. This means not only shortened fronts and shortened depths, but a permanent readiness to utilize what is universally conceded to be the best charging formation—lines in double rank.

As long as our troop units consist of only sixty troopers there can be no question of double rank without a combination of at least two of them into one.

The readiness with which our drill lends itself to double rank formations and the striking similarity of our formations to those of practically all other nations are indeed remarkable. The distinguishing differences between our formations and those of other countries are largely due to the necessity of making the best possible showing with our extremely small troop units. With them we must have single rank, and we must at battle exercises, as a rule, employ a road column (fours) instead of a proper maneuvering column (platoons). It is, therefore, easy to see that with a regi-

ment of twelve small units in single rank and the whole divided into three semi-independent commands the advantages as to compactness and the readiness to deliver a quick blow with the whole must be lost. If we were to consider our cavalry solely in relation to its use in Indian warfare, there would be less reason to advocate greater cohesion, greater striking power, and greater facilities for dismounted fighting in compact formations, the whole being kept well in the hands of the regimental commander.

STRIKING SIMILARITY OF CAVALRY FORMATIONS EVERYWHERE.

The formations of the leading cavalries of the world are practically identical with each other and interesting to state, are in principle the same as those of our squadron except that we use only single rank and columns of fours more than they do.

These formations are the route columns (generally twos and fours), platoon and troop columns, mass, line of platoon columns, and double column of platoons. The regiments vary from four to six troops, inclusive, and each troop (captain's command) is divided into four platoons having ordinarily a front of three to five sets of fours. Each of these regiments is handled like our squadron, and it therefore makes no difference in principle in maneuvering them whether the regiments consist of two, three, four, five, or six troops. This drill simplicity is of great importance in fitting cavalry commands (both officers and men) for their greatest utility on the field of battle.

If we compare a cavalry regiment of six troops each of three platoons of four sets of fours (or four platoons of three sets of fours, say ninety-six men in ranks in each troop), all in double rank, with a regiment possessing the same number of sabers (700), all formed in single rank and divided into three semi-independent commands, possibly in two lines, it is evident that in general one command will need only about half the maneuvering area required by the other.

There has been some talk of a model regiment, organized as at present, with 100 men per troop. If eighty per

cent of these men could be turned out and put into single ranks it would make a command so unwieldy that only extraordinary men could properly handle it as a regiment. Neither voice nor trumpet could reach its extreme limits even when not deployed as skirmishers, and it would ordinarily be necessary to delegate part of the command as a second line after the manner of brigade command.

If our cavalry were always to operate on the field of battle in single regiments, or less, and we were to completely ignore formations of brigades, divisions, and corps, there might be some cause for continually resorting to two lines in our regimental drill. Even in as small a command as a brigade of two regiments there would be at least one regiment not put in two lines. Beyond the great tactical advantages of compactness and mobility there are yet weightier ones that require careful consideration—economy as to finances and economy as to detachment away from purely military duty. The proportion of detached troopers from small units is far greater than from large ones, and the housing and stabling of twelve-unit regiments is relatively much greater than the housing and stabling of six-unit regiments having the same number of troopers.

No idea of uniformity nor of competition with infantry should be considered. Cavalry should be rated on its own lines as to organization and equipment, and should in general be reckoned as a useful, vigorous auxiliary of infantry whether in independent organizations or as divisional cavalry. A regiment of fewer units is far more fit for divisional assignment than is the present organization, and in cases of detachment involves the regiment in fewer fractions.

In these days when economy is the watchword, and when officers with troops are handling but a fraction of the men commensurate with their grades, it is advisable to approach the subject of cavalry organization in a businesslike way and to carefully inquire whether we are properly preparing for war.

VALUE OF CIVIL WAR EXPERIENCES.

The cavalry experiences of our Rebellion should be instructive to us as they have been to other countries; likewise the experience of other countries in long warfare should be instructive to us as they have been to each other. They largely learned fighting on foot from us, and are apparently going further in that direction than we proposed. This is shown by the lengthy consideration devoted to that subject in their drill regulations and by the fact that three of them have bayonets on their carbines and a fourth has provided its carbines for the use of bayonets, if after further trials it be considered advisable to adopt them. They have not seen fit to adopt our small units in single ranks. Doubtless after due trials all of us may find some wisdom in the almost universal large troops in double rank.

The following data should cause us to suspect something wrong in the small units of our Civil War:

"In 1863 there were in the Army of the Potomac thirty-six regiments (cavalry), whose effective strength varied during the months from May to October between 10,000 and 14,000 men. This body of cavalry required in—

	<i>Remounts.</i>
May.....	5,763
June.....	5,327
July.....	4,716
August.....	5,499
September.....	5,829
October.....	7,339

"This is equivalent to a loss of two and one-half horses per man, or a rate of five horses per annum."

These facts indicate that the quintessence of cavalry lore and good practice is not always found in the system pursued during the Rebellion.

The report of the Secretary of War, in referring to the above, stated:

"If a similar state of affairs existed through all our cavalry, its 223 regiments would require 435,000 horses annually."

If we assume the average total strength of the thirty-six regiments for the six months in question to be 12,000, then the total per regiment is 333. Making the necessary deduc-

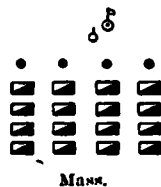
tions for details and noncommissioned officers, there remained troops in single rank with five to six sets of fours. The regiments of Sheridan's command in his Richmond campaign averaged about 250 troopers each.

DRILL REGULATIONS.

The following, taken from the latest drill regulations of other countries, show, as stated above, the great similarity of their organizations and their maneuvering formations to each other, and to those of our troops and squadrons.

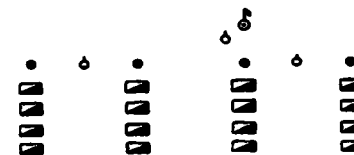
France.—The troop is composed of four platoons and is moved and maneuvered habitually in column of platoons. For attack it is formed in line. In line the four platoons are placed side by side without intervals. The captain, followed by a trumpeter, is half a troop front in advance of the center of his troop and serves as its guide. The second captain is three meters in rear of the center.

The regiment is composed of four troops; two troops form a half regiment. If the regiment is composed of an uneven number of troops, it is, nevertheless, divided into two half regiments. The troop can be reduced to three and even to two platoons. The regiment should be exercised in troops of sixty-four files; it can also be maneuvered in one rank. The colonel is the guide of the regiment. The base troop follows him. A place is assigned to the colonel in the different formations, but he is, nevertheless, privileged to go where he thinks necessary. He can be momentarily replaced as guide by the lieutenant colonel, or can indicate the direction and gait to the captain commanding the base force. The lieutenant colonel is habitually within reach of the colonel.



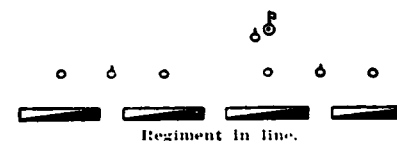
The regiment is formed and maneuvered in column of platoons, in double column, in column of troops, in mass, in

line of platoon columns, and in line. The column of platoons, by reason of its narrow front and the advantages which it possesses of easily crossing varied terrain is the formation



Line of platoon columns.

of march when large distances are to be covered. The facility with which it can profit by slight undulations of the ground make it specially fitted for the formation of approach,



Regiment in line.

but in marching directly toward the enemy this formation is not advisable because of the time required to deploy it.

The double column is intermediary between the column of platoons and the mass. It is a formation of approach favorable for maneuvering, for use in echelons, and for action by half regiments. It can be deployed rapidly to the front or in a single line to either flank.

The column of troops is used only as a transitory formation, which special circumstances require. This formation is useful in reviews and parades.

The mass permits of placing troops in a narrow space, while preserving sufficient independence for facility in marching. It can be employed in the formation of assembly or approach, but on condition that it be not exposed to artillery fire. It is the most vulnerable of all regimental formations and ought to be absolutely prohibited under fire.

The line of platoon columns, the deployment of which to the front is almost instantaneous, is, by reason of its large intervals, fitted for movements over varied terrain in the

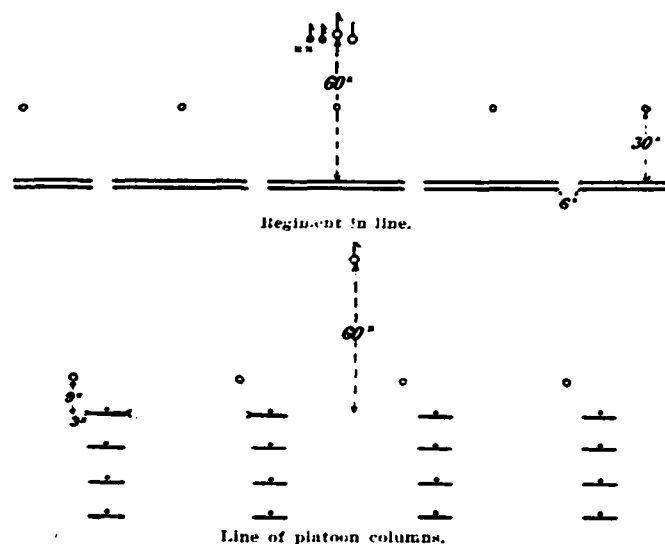
phase which immediately precedes a direct attack. In case of surprise it offers successful troop echelons on its flanks.

The line is the formation for attack. Its wings must be protected. It does not lend itself to maneuvers like formations in column or echelon, but it offers less vulnerability to artillery fire than deep formations.

Germany.—The troop is formed in two ranks, first and second, and in four platoons; the platoon in groups; the groups in files. In columns of fours there is no distance between the sets of fours.

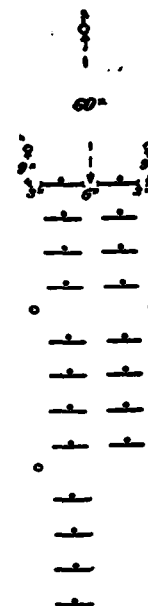
The regiment consists of three to five troops. The drill regulations find application even in formations of two troops. The regimental commander is ordinarily about sixty steps in front of or in the middle of his regiment. The other field officer is about a half horse length to the rear and three steps to the right of the regimental commander. The formations are as shown in the plates:

1. Line.
2. Line of platoon columns (troop columns).



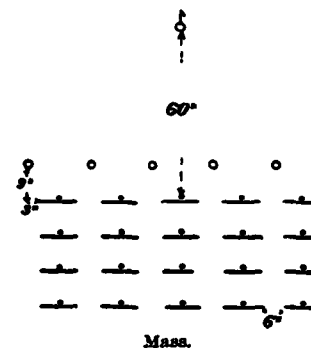
NOTE.—Intervals between columns = 3 platoon fronts + 6 paces.

3. Double column of platoons.
4. Mass (regimental column).
5. Column of platoons (platoon column).

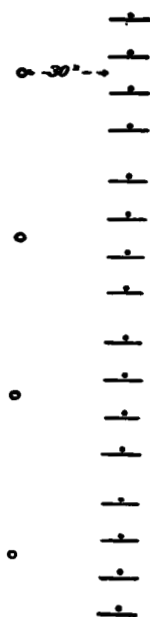


Double column of platoons.

NOTE.—Distance between troops = platoon distance + 6 paces.



Mass.



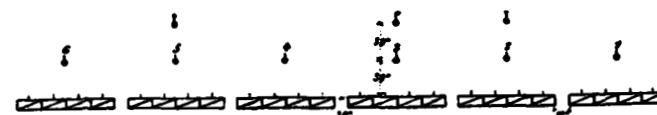
Column of platoons.

NOTE: Distance between troops = platoon distance + 6 paces.

Austria.—The troop is formed and maneuvered in line or column. It is divided into four platoons. In line the ranks are separated by a distance of two steps. When the troop is divided its commander retains command of the stronger part. When the parts are equal he takes command of the part which is to have the more important duty. Provisions are made for fighting on foot by having one holder for each sixteen horses, by dismounting in line and by dismounting in column of fours.

In dismounting the odd numbers of front rank move forward the length of a horse, the even numbers of second rank rein back an equal distance.

The regiment.—The troops in the "division" (half regiment) and the latter in the regiment are tactically independent bodies, both of which have fixed places in the primary formation.



P.E.

Regiments-Commandant

Divisions-Commandant

Escadrons-Commandant

P.E. Pioneer-Reg

Regiment in line.

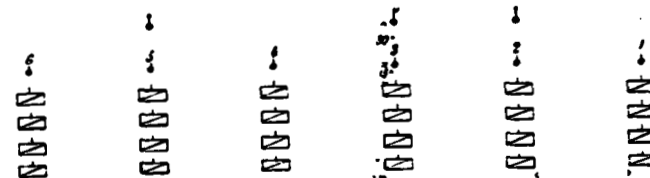
An independent "division" is formed and maneuvered according to the principles of the regiment.

The regiment is formed and maneuvered in line, line of platoon columns (column-line) mass, column of platoons (the column) and double column of platoons (double column).

The interval between troops in line is ten steps. Troops have fixed places at formation, but are not required to maintain them in maneuvers.

The line permits the simultaneous use of the greatest number of sabers in the attack and at the same time diminishes the losses from frontal fire of the enemy.

In line of platoon columns the interval is three platoon fronts plus ten steps. This formation finds rapid deployment to the front and makes easy movements in broad front on difficult terrain.



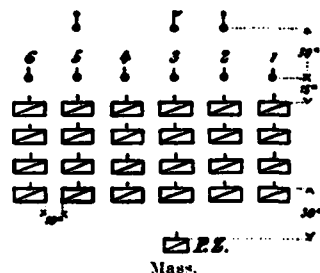
P.E.

Line of platoon columns.

NOTE.—Intervals = 3 platoon fronts + 10 paces.

Mass is simply the line of platoon columns with intervals of ten steps. This formation finds application when the regiment is to be maneuvered in a limited space or beyond the reach of effective fire.

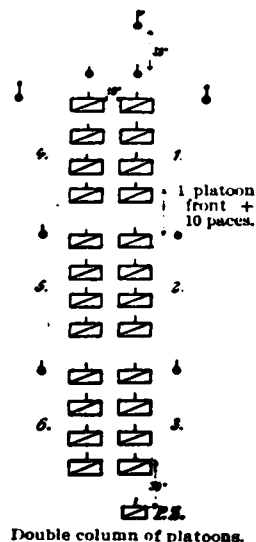
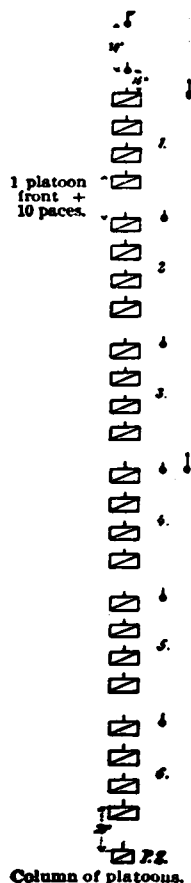
In column of platoons the distance is platoon front plus ten yards. This formation is employed in long movements



because it is easily adapted to difficult terrain and can easily profit by slight cover. It permits formation of line in all directions and is specially favorable for deployment towards the flanks.

In the double column, the columns are separated by intervals of ten steps. The "division" is called the first, the other the second division. The double column is occasionally formed from a "division" and in an analogous way to that from the regiment. In comparison with the column, the double column has the advantage of less length and consequently a quicker deployment to the front.

The regimental commander in general supervises the troop commanders. He should not assume charge of details of the maneuvers, but only the leading and conduct of the troop commanders should be kept in view. He is not tied to any fixed place; yet, when he takes over the leading,

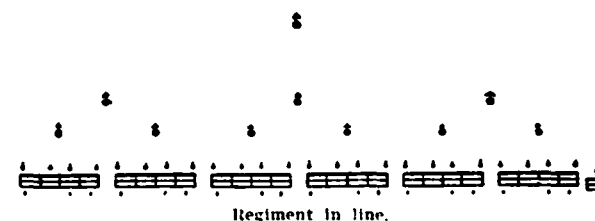


he is thirty steps in front of the commander of the base troop, who maintains that distance.

The commander of an independent "division" conducts himself like a regimental commander. In the regiment he supervises the correct leading of the troops under him without either leading or commanding. Exceptional cases in which "division" commandants command are given in their proper places. When these troops are in line they are in a line with the regimental commander. They communicate, when necessary, the commands of the regimental commander to their troops. The regimental commander gives them special orders or duties, for example: To take charge of the reserve, to ride with him for consultation with reference to maneuvering, etc.

Russia.—The troop is drawn up from right to left and is divided into four platoons—two half troops. The first and second platoons constitute the first half troop and the third and fourth platoons the second half. As in other countries, when faced to the rear the rear rank becomes the front rank.

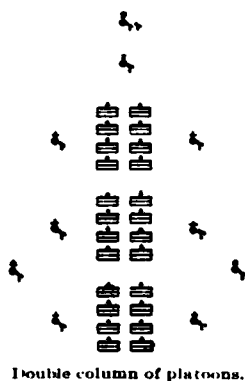
The regiment consists of four or six troops, the latter having permanent numbers assigned them. The plate shows the position of all concerned in line. The intervals between troops is one platoon. For convenience in supervising his command the regimental commander goes where his orders



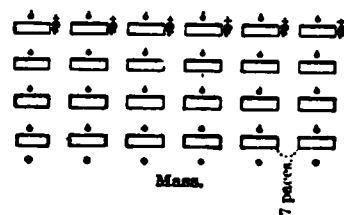
can be heard, and where he can best observe the execution of the movement. Field officers are required to look after the correct execution of formations and movements and the prevention and correction of mistakes. When the regiment is divided, for example, in movements by successive stages

when there is more than one troop involved, or when the part of the regiment larger than one troop is ordered away, field officers take command over these parts in accordance with instructions from the commandant. The commanders of troops may move to those places whence their commands can be best heard. The regiment is divided into the following columns:

1. Route column.
2. Column of platoons (regimental platoon column).
3. Double column of platoons.
4. Mass (reserve column).
5. Column of troops (troop column).
6. Line of platoon columns.

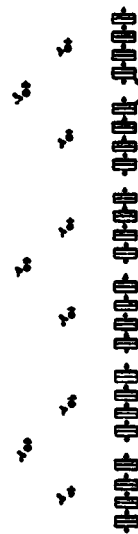


Double column of platoons.

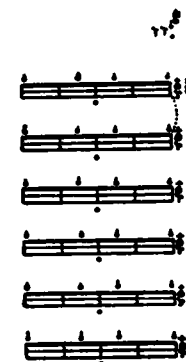


Mass.

Column of platoons.

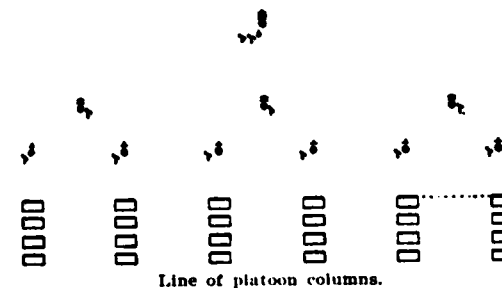


The columns may be formed to the right, to the left, and not in the order of the number of troops. The plates show these formations.



Column of troops.

NOTE.—Distance between troops = 1 platoon front + 7 paces.



Line of platoon columns.

NOTE.—Interval between troops = 4 platoon fronts.

EXPERIMENTS WITH PROVISIONAL REGIMENTS.

The end of the first day's experiments with the Eleventh Cavalry, at Leon Springs, Texas, showed that our captains could, with very little experience, handle troops in double rank with forty-eight double files. The troops were divided into four platoons each of twelve trooper fronts.

The second day's experiments in troop drill was made with troops of 128 men in ranks, divided into four platoons of sixteen-trooper fronts. This drill demonstrated that with

little practice, it would be easily handled and on about half the area required in single rank. As it is not believed that our troops will soon be able to put as many troopers in line as 128, subsequent experiments were made with ninety-six men in double rank. There was a question as to whether with that number three platoons of sixteen-trooper fronts is not better than four platoons of twelve-trooper fronts.

A special advantage of the sixteen-trooper front is the facility with which columns of sections (eights) may be formed. Though not much practiced by other countries, that formation seems to possess a decided value.

In the earlier experiments with the two provisional regiments of the Eleventh Cavalry too much stress was laid upon the separation of the regiments into squadrons, thereby continuing the brigade idea that permeates our regimental organization and its maneuvering.

In the last experiments at Leon Springs (latter part of July) only one provisional regiment was formed, and stress was laid upon the importance of handling it in a compact form as a single regimental entity.

It was formed of six troops in double rank. Each troop had forty-eight files in rank formed by consolidating two troops so that each of the latter had half of its men in front and half in rear rank. In dismounting in double rank two ways were employed: 1. Odd numbers of front rank move forward, even numbers of rear rank reined back. 2. All except even numbers of rear rank moved forward.

The distance between ranks was ordinarily two yards (though one yard was used by some troop commanders), and the intervals and distances of platoons and troops were maintained in accordance with the principles of our squadron drill. The column of fours was practically eliminated as a maneuver formation, it being replaced by the column of platoons. The colonel was assisted by the lieutenant colonel, and the two majors exercised supervision over their respective half regiments throughout the drills, taking command of such detached parts as the colonel directed. But throughout every effort was made to eliminate the idea of the separate semi-independent squadrons with their special distances and

intervals. The result was that the regiment of 650 or more troopers was continually maneuvered over areas less than half those that would be required by the same number of sabers in our present organization, and its elements were always in proper formation for charging. The troopers were dismounted to fight on foot with great frequency, and numerous charges were made in double ranks with fractions of the regiment, all of which were highly satisfactory. It was generally conceded that the lead horses in column of eights (formed by moving the platoons or troops by the flank) were more tractable than the usual column of fours. That is explained by the assistance that the adjacent fours give each other. Still the horses could be led away in columns of fours if woods or other obstacles made it necessary. The regiment was deployed as skirmishers, leaving a troop behind each flank as reserves; it was maneuvered at all gaits in all formations, and was at different times commanded by a colonel, two lieutenant colonels and two majors.

After a few days' experiments there was no longer any question of the great facility with which this regiment could be dismounted to fight on foot and quickly afterwards mounted. Moreover, it was clear that a greater number of men could be put at a given point in shorter time, either mounted or on foot, than with the single rank formation. It was suggested during the experiments that the regiment of six troops was too large for a single command.

It is not believed that all officers will be readily convinced of the numerous advantages to be gained by any new organization, nor was it possible to develop all the little details that the change entailed; still, it is believed that further trials will continually win advocates for it, and that a board in connection with a good regiment could, within a comparatively short time, draw up new regulations or change our old squadron regulations so as to meet all requirements. The experiments were wholly confirmatory of some of the recommendations made in the past by higher authorities. Possibly the favorable results achieved in such a short time in the double rank formations, which were new to all, were

due to the remarkably well trained regiment with which we were experimenting.

It is believed that no advantage can be claimed for our present cavalry organization that can not be claimed for one wherein the regimental units are fewer, larger and more nearly equal in peace numbers to war numbers; for one wherein there is always a command suitable for striking and which can be compactly handled to that end.

Finally, and in brief it may be stated that our present cavalry regiment is faulty in principle and unnecessarily expensive in administration, both as to men and money; that our cavalry system or policy leaves us wholly ignorant of the practical operations of cavalry except in its minor rôles, such as patrols and scouts, advance and rear guards, etc.

It is therefore recommended that further trials be made with a view to fixing upon the details of a regiment of much fewer and much stronger units (one of which will be a reserve or depot one), and that cavalry be assembled at posts or camps in brigades and divisions with the cavalry auxiliary, horse artillery, as early as practicable, in order that experience and instruction in the broader rôles of cavalry service may be attainable by all other officers concerned.

CREATION OF PRESENT CAVALRY ORGANIZATION.

The question naturally arises as to why our present organization was adopted. Perhaps the general orders cited below will explain the query, and they will show that it was not at all a result of war experience as ordinarily believed, but rather a desire to have "the system of Infantry Tactics prepared by Brevet Major General E. Upton, United States Army, adopted as the system for the armies of the United States in the place of all others."

In the Cavalry Tactics (Cooke's), 1861, the first paragraph of the book stated that "the companies will be designated as squadrons." The regiment consisted of one colonel, one lieutenant colonel, two majors and ten squadrons. There was only one battalion included in these regulations, which continued in force until 1873, thirteen years after the war began.

In the new Cavalry Tactics (1873) prepared by two field artillerymen and two cavalrymen the names "company," "battalion," and "regiment" were adopted for the cavalry. Under these drill regulations it would be possible to have a regiment of four battalions each of seven companies, although the normal was three battalions of four companies each. From that it may be seen that the cavalry anticipated the infantry in the three battalion organization (that of the infantry being adopted in 1891), and in the great effort at assimilation practically a cavalry brigade organization was adopted.

In fact, the same tactics (1873) provided as follows:

"All the rules for the evolutions of the regiment are applicable to the brigade."

General Orders,
No. 73.

HEADQUARTERS OF THE ARMY,
ADJUTANT GENERAL'S OFFICE,
WASHINGTON August 1, 1867.

The following order received from the War Department is published for the information and guidance of the Army:

WAR DEPARTMENT,
WASHINGTON CITY, August 1, 1867.

ORDER IN RELATION TO UPTON'S INFANTRY TACTICS.

The new system of Infantry Tactics, prepared by Brevet Major General Emory Upton, United States Army, recommended for adoption in the place of all others, by a board of officers, of which General Grant is president, having been approved, is adopted for the instruction of the Infantry of the Army of the United States, and for the observance of the Militia of the United States.

To insure uniformity throughout the Army, all Infantry exercises and maneuvers not embraced in that system are

prohibited, and those therein prescribed will be strictly observed.

EDWIN M. STANTON,
Secretary of War.

By command of General Grant :

E. D. TOWNSEND,
Assistant Adjutant General.

Extract from the proceedings of a board of officers which convened at West Point, New York, by virtue of the following orders, viz :

Special Orders,
No. 300.

WAR DEPARTMENT,
ADJUTANT GENERAL'S OFFICE,
WASHINGTON, June 11, 1867.

A board will assemble at West Point, New York, on Tuesday, the 9th day of July, 1867, to take into consideration the system of Infantry Tactics prepared by Brevet Major General E. Upton, United States Army, and will report its opinion whether the said tactics should be adopted as the system for the armies of the United States in lieu of all others. The board will be composed as follows: General U. S. Grant, United States Army; Major General G. G. Meade, United States Army; Brevet Major General E. R. S. Canby, United States Army; Brevet Major General W. F. Barry, Colonel Second United States Artillery; Brevet Brigadier General W. N. Grier, Colonel Third United States Cavalry; Brevet Colonel H. M. Black, Major, Seventh United States Infantry.

By order of the Secretary of War.

(Signed) E. D. TOWNSEND,
Assistant Adjutant General.

* * * * *

The general advantages of the new system are :

1. Its easy application to all the arms of the service, leaving nothing additional to any special branch except the manual of the arm with which it fights, the adaptation of the

words of command, the training of animals, and the management and care of the material with which it is equipped.

2. The readiness with which the principles may be acquired by new troops, abbreviating materially the time required to fit them for the field, and practically extending the effective term of service of the soldier. This is of great importance in relation to the volunteer force, of which in all great wars our armies must be largely composed.

The special advantages are :

That it dispenses with the maneuvering by the rear rank, by inversion, and the countermarch, and substitutes therefor rapid and simple conversions of front, and changes from column into line.

That it increases the number of modes of passing from the order in column to the order in line, facing in any direction; diminishes the time required for these changes, and preserves always the front rank in the front—advantages of vital importance in the presence and under the fire of the enemy.

That it provides for all column movements required in an open country and by the column of fours, for the movements necessary in narrow roads, wooded or obstructed countries, without the extension incident to ordinary movements by the flank.

That it provides for a single rank formation, specially adapted to the use of breechloaders.

That it provides for a system of skirmishing, from double or single rank, superior for defense or defense to any existing system.

The board, therefore, recommend that the system of Infantry Tactics prepared by Brevet Major General E. Upton, United States Army, be adopted as the system for the armies of the United States in the place of all others.

(Signed) U. S. GRANT, *General,*

(Signed) GEO. G. MEADE,

Major General, U. S. Army.

(Signed) ED. R. S. CANBY,

Brigadier and Brevet Major General.

(Signed) WILLIAM F. BARRY,
Colonel Second Artillery,
Brevet Major General, U. S. Army.

(Signed) WM. N. GRIER,
Colonel Third United States Cavalry,
Brevet Brigadier General, U. S. Army.

(Signed) H. M. BLACK,
Major Seventh United States Infantry,
Brevet Colonel, U. S. Army.

Approved and referred to the Adjutant General,
August 1, 1867.

(Signed) E. M. STANTON,
Secretary of War.

A true extract from official report.

HORACE PORTER,
Brevet Brigadier General and Aide-de-Camp.

General Orders, HEADQUARTERS OF THE ARMY,
No. 6. WASHINGTON, July 17, 1873.

The following order, received from the War Department,
is published for the information and guidance of the army:

WAR DEPARTMENT,
WASHINGTON CITY, July 17, 1873.

The revision of Upton's Infantry Tactics by the author, and the Tactics for Artillery and Cavalry (including the proceedings of the board—Major General Schofield, president—instituted by General Orders, No. 60, Headquarters of the Army, Adjutant General's Office, series of 1869), assimilated to the Tactics for Infantry, pursuant to instructions from the General of the Army, by Lieutenant Colonel Emory Upton, First Artillery, instructor of tactics, United States Military Academy; Captain Henry A. Du Pont, Fifth Artillery, commanding Battery F, Fifth Artillery; Captain John E. Tourtelotte, Seventh Cavalry, colonel, and aide-de-camp to the General; Captain Alfred E. Bates, Second Cavalry, assistant instructor of Cavalry tactics, United States Military Academy,

having been approved by the President, are adopted for the instruction of the army and militia of the United States.

To insure uniformity, all exercises, evolutions, and ceremonies not embraced in these tactics are prohibited, and those therein prescribed will be strictly observed.

WM. W. BELKNAP,
Secretary of War.

By command of General Sherman.

WILLIAM D. WHIPPLE,
Assistant Adjutant General.

OUTLINES OF A SIX-TROOP CAVALRY REGIMENT.

If the cavalry peace strength were fixed at 16,800 enlisted (approximately 4,000 above present authorized strength) and the regiment at 700 sabers, there would be twenty-four regiments each of six fighting troops of about 110 men, one reserve troop, four field officers, ten captains, fourteen first lieutenants, and eight second lieutenants. That would be an increase of nine colonels, nine lieutenant colonels, three majors, fifteen captains, 111 first lieutenants, and a loss of thirty-three second lieutenants.

Following the same organization and utilizing the present authorized strength very slightly increased, there would be twenty regiments as above. That would give an increase of five colonels, five lieutenant colonels, a loss of five majors, and a net loss of thirty-five company officers (twenty-five captains lost, fifty-five first lieutenants gained, sixty-five second lieutenants lost).

The drill regulations of the several countries cited above do not show their respective totals of regimental field officers, some of whom are with depot or reserve troops. In this suggested plan the ratio of field officers to company officers is as one to eight (in present organization one to nine), whereas the average of other cavalries is as 1 to 7.2. The ratio of captains to lieutenants remains practically as at present, that is, one captain to two lieutenants.

Perhaps it would be advisable to make the troops a little larger than 110 men, in order that at formations each troop might have a front of forty-eight troopers (three platoons of sixteen double files or four platoons of twelve double files). In war the troop strength should be set so as to give a troop front of sixty-four troopers. These tentative plans are cited to show in a general way what could be affected under a six troop organization, what would be the possible number of regiments involved, and what would be the results on the officer personnel both as regards the present and the future.

PEACE STRENGTH OF CAVALRY AND ITS RATIO TO INFANTRY.

There has been a disposition on the part of some persons to claim that the present cavalry force is sufficient for the country. Some have even claimed that we have more cavalry than we should have, therein losing sight of the extreme difficulty and great delay involved in making volunteer cavalry field-fit. The Knowland bill, which proposes six complete divisions, etc., for the mobile regular army, meets the approval of the infantry and field artillery. That bill provides for six divisions of nine infantry regiments each, two field artillery regiments, one cavalry regiment, and certain technical troops, also one cavalry division of nine regiments with horse artillery and certain technical troops.

It increases the infantry by twenty four regiments doubles the artillery, and leaves the cavalry as at present. This bill, with its provisions, is cited to show the trend of thought in certain spheres.

The proportion of sabers to bayonets is in various countries fixed at about 125 to 1,000, and is based largely upon financial reasons. Barring expense, there is hardly any limit that should be set to the amount of cavalry that countries should possess. Properly handled, cavalry has by reason of its speed, mobility, and capacity to fight dismounted, great superiority. Bearing these facts in mind, it would seem that the bill above referred to should have for each infantry division a regiment as provided, and two independent divisions for the larger and more important rôles of independent cavalry. In some countries, where cavalry is not in sufficient

numbers, provision is made for mounted infantry, or the sending of infantry in wagons or on bicycles to reinforce cavalry at important points. In fact, in our country war effectiveness alone should determine the amount of independent cavalry maintained.

The bill referred to relates solely to the regular establishment and makes provisions for a larger peace status than can be expected from Congress within the near future. In any event, in fixing the mobile forces of the United States the length of time required to make the various elements field fit, the present and expanded strength of the organized militia, and the probable number of volunteers called out must be given full consideration.

The following tables show the strength of infantry and cavalry of the several countries and the percentage of these two arms to the total peace strength:

Countries.	Infantry.	Cavalry.	Infantry	Cavalry.
			Per Cent.	Per Cent.
France	379,640	75,510	59.77	11.89
Germany	404,765	73,368	63.81	11.56
Austria	194,123	47,541	59.34	14.51
Russia	550,000	115,000	48.33	9.58
England	151,261	20,716	59.21	8.10
Italy	167,000	24,000	57.90	8.32
Mexico	20,326	7,318	63.50	22.56
Japan	149,402	14,555	64.95	6.34
United States:				
Regulars	27,370	13,540	33.64	16.64
Organized Militia	97,035	4,167	81.09	3.48
Total	124,405	17,707	61.70	8.80

These data show that our Cavalry, both regular and militia, is only 17,700, or 8.8 per cent. of the whole. It is considerably less than in France, Germany, Austria and Russia, and about equal to that of England and Italy.

The following gives the fighting strength of existing organizations of the various countries on mobilization:

Countries.	Infantry rifles.	Cavalry sabers.
France	618,450	66,750
Germany	633,000	76,500
Austria	420,300	37,800
Russia	973,152	111,825
England	135,020	15,000
Italy	300,000	20,880
Mexico	53,760	14,016
Japan	228,000	14,550
United States:		
Regulars	39,600	15,225
Organized militia	167,000	5,800
Total	206,600	21,025

This shows that our percentage of sabers to bayonets is less than that in France, Germany, Russia and England. The ratio of sabers to bayonets in the United States should, for reasons stated above, be larger than in other countries. A ratio of only 150 sabers to 1,000 bayonets would necessitate an increase over our expanded strength (15,000 regulars, 6,000 militia) of approximately 10,000 sabers. It is an unfortunate fact that much of our militia cavalry is far below a proper standard of efficiency, and in these estimates it is probably put too high.

The above data leave out of consideration the large volunteer army (at least 200,000) that would be organized at the beginning of a war. As it is not reasonable to believe that cavalry organizations could be created as quickly or as effectively as infantry ones, some additional peace cavalry organizations should be reckoned on to supplement volunteer requirements.

In the Rebellion the proportion of cavalry to infantry was approximately as follows: 223 regiments to 980 regiments. Since the authorized cavalry regiment was, by general orders, April 29, 1863, fixed at 1,244 and the infantry regiment at 1,022, to ratio of sabers to bayonets was as 1 to 3.62; in other words, 276 sabers to 1,000 bayonets (27.6 per cent).

In a reasonable consideration of our first line of infantry (militia 145 and regulars thirty), say 175 regiments (nineteen divisions—five field armies), it is right to assign nineteen cavalry regiments as divisional cavalry and to give to each two field armies at least an independent cavalry division, say two and one-half divisions—twenty-one regiments.

Summing this up, we see that the first line would require for its 175 infantry regiments forty cavalry regiments, instead of the twenty-one (fifteen regular and six militia) that we have. Estimating the cavalry regiments at 1,200 and the infantry regiments at 1,500, there results 183 sabers to 1,000 bayonets. Estimating the cavalry regiments at 750, half the strength of infantry regiments, the proportion would be 114 sabers to 1,000 bayonets.

CAVALRY DRILL REGULATIONS OF THE CIVIL WAR.

The accompanying plate shows the regimental formation and clearly indicates the organization that was used during the Civil War. Cook's Tactics with the single rank was tried out around Washington in the winter of 1861-2, but in the spring of 1862 the double rank system was resumed and continued till the end of the struggle.

The first edition of Poinsett's Cavalry Tactics, "printed by order of the War Department," was published in Washington in 1841, the second and third in Philadelphia in 1855 and in 1862, respectively, and the fourth at the Government Printing Office in 1864. The following appears in all the editions:

FORMATION OF A REGIMENT OF FIVE SQUADRONS IN ORDER OF BATTLE (OR IN LINE).

The squadrons of a regiment in order of battle are distinguished by the denomination of first, second, third, fourth and fifth; they are formed on the same line, in the order of these numbers, commencing on the right, and with an interval of twelve paces.

This is the primitive and habitual order of the squadrons in regiments.

Each squadron is composed of four platoons, distinguished by the denomination of first, second, third and fourth, commencing on the right.

The first and second platoons form the first division, the third and fourth form the second division.

The formation is in two ranks; the oldest soldiers in each platoon are placed in the front rank, and from right to left in each rank.

When the squadron is to be exercised it is composed habitually of forty-eight files; consequently each division is composed of twenty-four files, each platoon of twelve; if the squadron is increased to sixty-four files the platoon is then divided into two sections; that on the right is the first and that on the left the second.

That which is prescribed for the formation when mounted is applicable to the formation on foot.

POSTS OF THE OFFICERS AND NONCOMMISSIONED OFFICERS OF THE FIELD AND STAFF OF A REGIMENT IN ORDER OF BATTLE.

(Plate 1.) The colonel twenty-five paces in front of the center of the regiment, having a chief bugler behind him.

The lieutenant colonel twelve paces in advance of the center of the right wing.

The major twelve paces in advance of the center of the left wing.

The colonel moves wherever his presence may be necessary.

The lieutenant colonel and major move wherever the colonel may think proper to direct them.

The adjutant on a line with the front rank, two paces from the right of the regiment.

* * * *

POSTS OF THE OFFICERS AND NONCOMMISSIONED OFFICERS OF A SQUADRON IN LINE.

The captain commanding is posted at the center of the squadron, the croup of his horse one pace in front of the heads of the horses of the front rank.

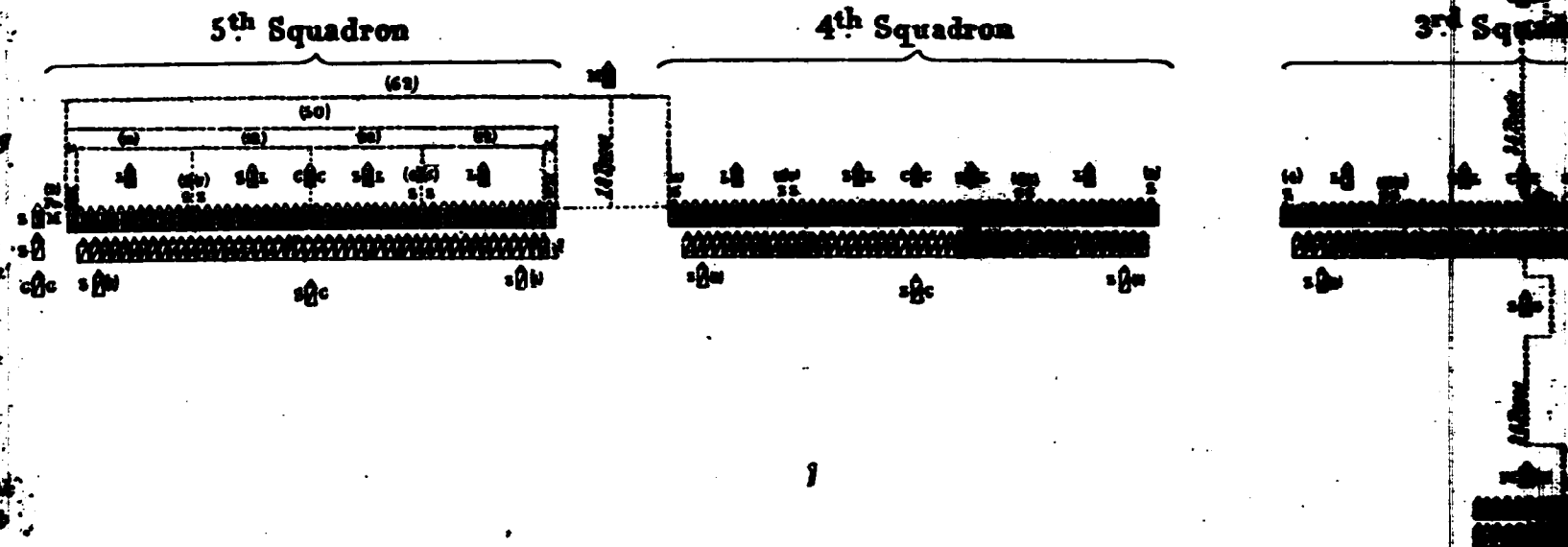
BASIS OF INSTRUCTION

Article, 1

FORMATION OF A REGIMENT OF FIVE SQUADRONS

Explanations of the Signs

- C Colonel
- Lt C Lieutenant Colonel
- M Major
- A Adjutant
- QM Quarter Master
- S Surgeon
- AS Assistant Surgeon
- COC Captain Commanding
- SC Second Captain
- L Lieutenant
- SL Second Lieutenant
- SM Sergeant Major
- QMS Quarter Master Sergeant
- S Sergeant
- COC General Guide
- PM Principal Musician
- CB Chief Bugler
- SB Standard Bearer
- B Bugler
- C Corporal
- Man of the Front Rank
- Man of the Rear Rank

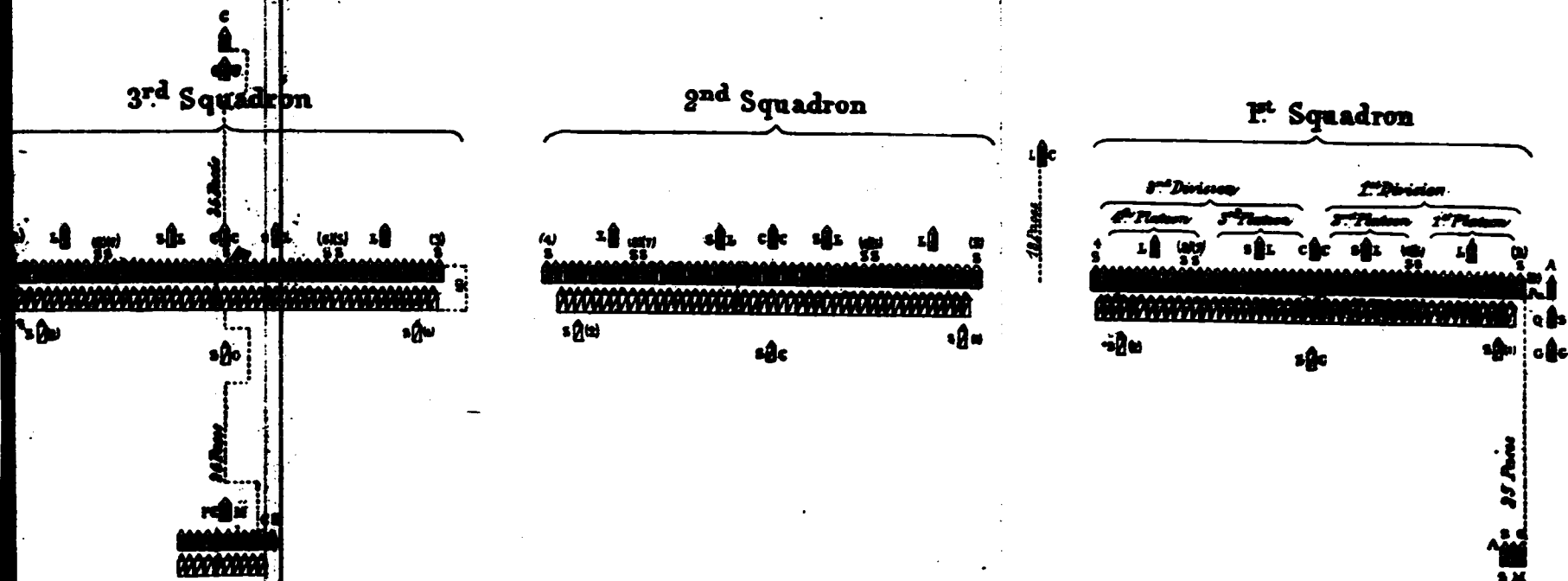


OF INSTRUCTION

Pl. I

Article, 1.

FIVE SQUADRONS IN ORDER OF BATTLE



The second captain three paces in the rear of the center of the squadron. He is charged with the alignment of the rear rank and file colors.

The senior first lieutenant commands the first platoon; the other first lieutenant commands the fourth platoon.

The senior second lieutenant commands the second platoon; the other second lieutenant commands the third platoon.

Each of these officers is posted at the center of his platoon, with the croup of his horse one pace in front of the heads of the horses of the front rank.

PONY PACKS IN THE PHILIPPINES.

BY MAJOR C. C. SMITH, PHILIPPINE SCOUTS, (CAPTAIN FOURTEENTH CAVALRY.)

AS one of the umpires with the red army at Colo, in Luzon, in February, 1910, it frequently happened that I could not connect handily with my mess and bed-roll. Upon retiring supperless one night with my saddle blanket substituted for my bed-roll, I began to think of the usefulness of an individual pack outfit for an officer, and on return to my station commenced to experiment.

My experiments were also made with a view to working out the following from General Order No. 1, Philippines Division, January 1, 1909:

"At the Division Meet it was demonstrated that the troops there represented were not sufficiently instructed in the use of pony packs. This subject should be carefully studied. The best method of packing ponies was judged to be with the sawbuck saddle, which may be made in the field, under which were placed the blankets of several men, protected from the horse by means of a canvas or other cover, and by using wicker baskets, canvas or matting sacks, which can be put on the pony at the last moment and removed in order to rest the animal whenever a halt is made.

"In campaigning in these Islands or in the Orient it is often found practicable to utilize pony transportation and cargadores."

The aparejo is made of bejuco (rattan) on the exact lines of the Q. M. aparejo, though smaller to fit the pony of the Philippines. It should measure from withers to lower front side corners (vertical) 22 inches; along the back (horizontal) 21 inches; and weighs when stuffed and ready for use, with cincha, lash rope and sling, 28 pounds.

The photographs opposite show the under side of aparejo when opened, and the aparejo when set up.

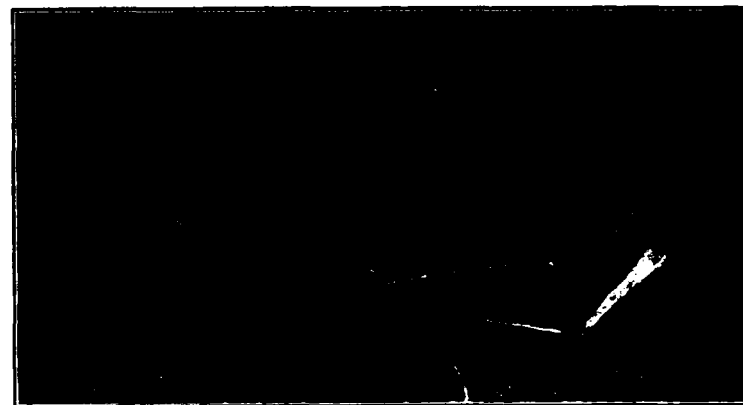


FIGURE 1.
APAREJO—UNDER SIDE UP.

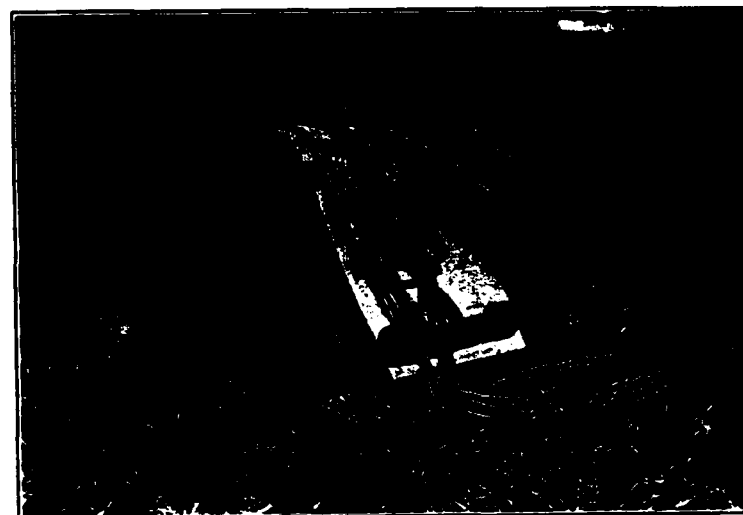


FIGURE 2.
APAREJO SET UP.

Bejuco was hit upon for making the aparejo on account of its durability, lightness and advantage over leather when wet. The aparejo is ribbed up with bejuco or bamboo sticks of suitable size. I believe that if a bejuco aparejo were adopted for the pack service of the army it would be better, certainly much cheaper, than the present heavy cumbersome leather one.

The corona or saddle-blanket shown in photographs herewith is combined with a piece of canvas provided with rope loops for small tent pegs, and brass rings sewed into the edge for use respectively in making a shelter tent and a hammock. In making the tent or hammock the sling rope, and ropes around the bundles are to be used with the canvas.

The first of the following photographs shows the saddle-blanket and canvas separated; the second and third shows the blanket and canvas buttoned together, one showing the blanket up, the next the canvas up. In folding the blanket and canvas for use on the horse's back under the aparejo, the canvas should be folded in the folds of the blanket so as not to touch the back.

The combined blanket and piece of canvas weighs 12 pounds.



FIGURE 3.
BLANKET AND CANVAS SEPARATED.

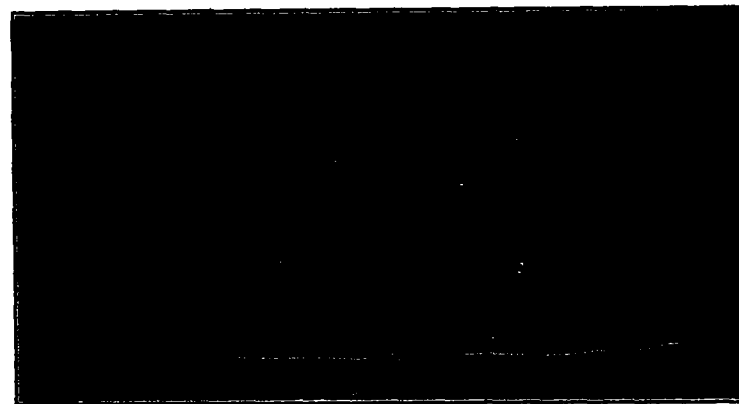


FIGURE 4.
BLANKET AND CANVAS BUTTONED TOGETHER—BLANKET UP.



FIGURE 5.
BLANKET AND CANVAS BUTTONED TOGETHER—CANVAS UP.

The next two pictures show how the aparejo looks on the pony without a load, and with a load.

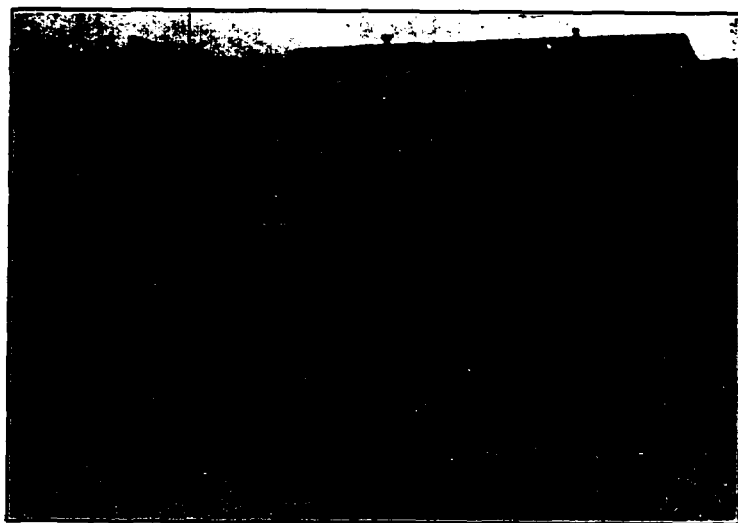


FIGURE 6.
APAREJO ON PONY—UNLOADED.

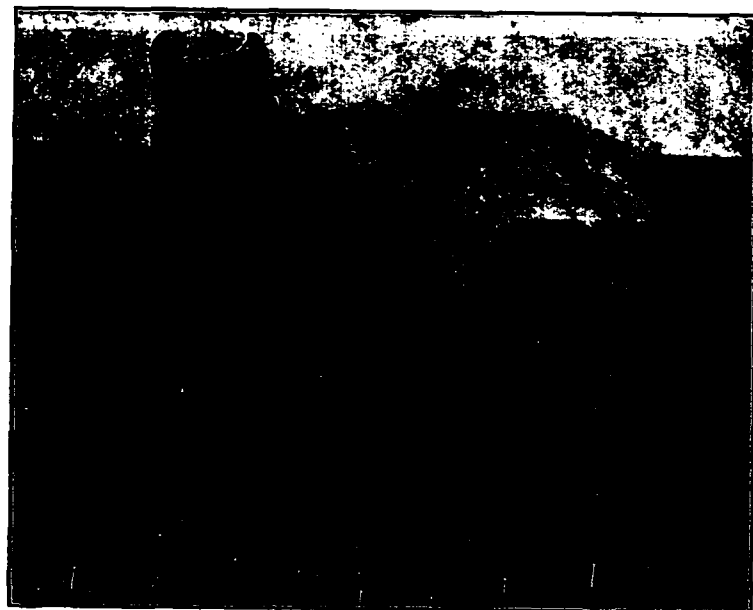


FIGURE 7.
APAREJO ON PONY—LOADED.

The pack shown in the last picture consists of two small boxes with mantas, and on top a small bed-roll with Q. M. cot, total weight 120 pounds.

It will be seen from foregoing paragraphs that the pony carries, including aparejo and corona, 160 pounds, which ought to be about right for such an animal in a country like the Philippines.

I have used this pack the last few months, and have found it satisfactory; and if the care is exercised that should be in readjusting it when it needs it the pony's back should not suffer.

The pictures below show the canvas piece of the corona used as a shelter tent, and as a hammock.

No doubt but that the mantas might have been worked into the contrivance for which the corona canvas is intended and thus save this much weight on the horse, but as it is desirable to protect rations and clothing from the heavy rains of the Philippines it was deemed best to use the mantas as box coverings.

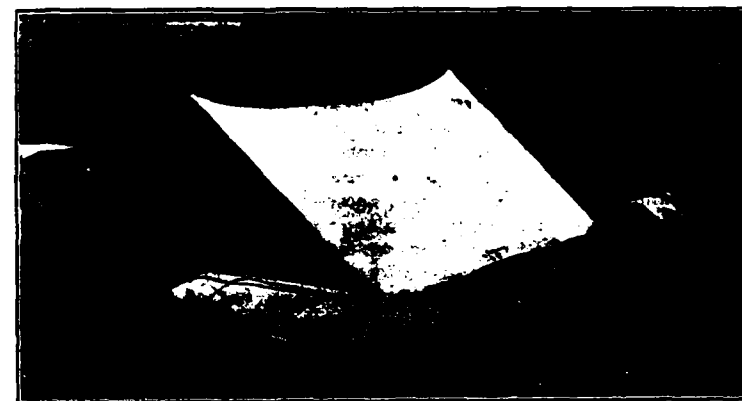


FIGURE 8.
CANVAS USED AS SHELTER TENT.



FIGURE 2.
CANVAS USED AS A HAMMOCK.

NOTE: In former days when our cavalry was serving on the plains, it frequently happened that a command would cut loose from its wagon train to follow an Indian trail and would be away from their base of supplies, the wagon train, for days at a time. In such cases, owing to the limited pack transportation allowed or on hand, it was necessary for the officers to mess with their troops and they could only take along such canvas and bedding or other supplies as could be carried on their own mounts.

Having been more than uncomfortable on several such occasions and having gone hungry for days—everybody being out of rations—on two noted occasions, your editor purchased a pony, in the spring of 1877, and fitted up an *aparejo*, something similar to the one described in the foregoing article. This pony carried an old time "A" tent with jointed poles, the bedding for the troop officers and their mess outfit when away from the wagon train, and even while with the train, it transported a tent fly and poles, the officers' lunch and other extras, so that on making camp, shelter from the heat or storms was had at once and long before the arrival of the wagon train.

This pony and pack outfit paid for itself many times over during the Nez Perce Campaign of 1877, and that of the following year around the Black Hills and the Southern Cheyenne Campaign.—*Editor.*

FORAGE.*

By VETERINARIAN GERALD E. GRIFFIN, THIRD FIELD ARTILLERY

FORAGE may be defined as food of any kind for horses and cattle, as grass, hay, straw, seaweed, rice, molasses, sugar, etc., and the various well known grains; but food for our horses is, when necessity demands it, frequently of an animal nature, such as eggs, milk, meat soup, dried fish and even flesh itself.

The constituents of all foods comprise five groups, each having certain special qualities and existing in definite percentages, viz:

1. Flesh forming.
2. Fat-heat-energy producing.
3. Bone building.
4. Fibrous materials.
5. Water.

These qualities are not very sharply defined but often overlap, the flesh forming group can sometimes produce fat or supply energy, while the elements of the bone making group may be found in other tissues than bone; but as a practical division, which perhaps will give a clear view of the functions of the various elements in food, the grouping may be accepted as correct.

The flesh making elements are chiefly concerned with the building up of the body tissues, such as the muscles, the various organs and the skin, and in maintaining them in amount and quality. If a small excess of such materials is contained in the food given it may be stored up in the body as fat, which can be used to produce heat and work; but this

*Extract from lecture in Hippology to the Line Class at the Army Service Schools.

is not the essential function of the flesh-making elements, and a properly constructed food should contain them in such proportion as can be properly digested and will keep the muscles and other organs at their best; beyond this amount the digestion is disturbed by their presence. Foods which contain them in very large percentage are popularly called *heating*, a familiar example being beans.

The fat-heat-energy producing elements include the natural fats in the food and the starches and sugars. Their uses are to produce the necessary heat for maintaining the body temperature; to provide sufficient energy to enable work to be done without muscle wasting; and to store up in the body a certain quantity of fat as a reserve to draw on. The flesh forming and fat producing groups overlap to such an extent that too sharp a line cannot be drawn between them. Examples of fat-heat-energy producing elements are linseed, corn and rice.

The bone making elements are mineral elements termed *salts*, such as compounds of lime, soda and potash and are essential for young, growing animals. Such elements are found in the blood and other tissues of the body as well as bone, and there is a very intimate connection between their presence in the food and the quality of stock produced. They are particularly abundant in grasses and hay produced on limestone soils. The blue grass region of Kentucky is famous for its bone making forage.

Fibrous elements: These comparatively indigestible materials exist in varying proportions in all vegetable foods. Whilst their actual digestion may not be carried out to a very great extent, they are nevertheless found to be necessary as providing the bulk so essential to the rations of herbivorous animals. They also help mechanically during digestion in helping to split up the other parts of the food so that they may be readily absorbed by the body, as well as being to some extent digested themselves. The proportion in which they exist may vary from about two per cent. in corn to forty per cent. in wheat straw.

Water forms a considerable portion of all foods, even those which are usually considered dry, the percentage vary-

ing from about ten per cent. in oats to ninety per cent. in roots and grasses.

A good food for a service horse should contain the constituents mentioned in such proportions that the greatest possible percentage of nourishment can be extracted from it, and a sufficient amount and bulk can be consumed to satisfy all requirements, namely: to maintain the body temperature, appease the appetite, and produce the required work without upsetting the digestion or occasioning loss of flesh.

If no one food will answer all these demands then the ration should be arranged so that its several components will do so in the aggregate and such a ration is generally described as a balanced ration and from such a ration an animal can extract the largest possible amount of nutriment, though from no food, however suitable, is it possible for the total quantity of its nutriment to be absorbed by digestion. The digestibility of a food must therefore be taken into account when working out a ration.

Hay and oats with a small allowance of salt and a sufficiency of water has given the best results when given as a ration to service horses. It contains all the essentials necessary in the right proportions and does not disturb the digestion. I have had excellent results with a ration composed of thirty pounds of grass and twelve pounds of molasses while serving in Porto Rico.

OATS.

We know from experience that oats are the best of all grains for horses. They combine all the elements necessary for nutrition in such proportions that the animal is able to consume a large amount without disturbing the digestion, and to extract the greatest possible amount of nourishment from it. Many other grains are successfully used as horse foods, but wherever oats can be obtained they are universally acknowledged to be the best, provided the question of cost has not to be considered. In our country they are the staple food, although it must be admitted that corn is extensively used on the score of economy.

Good oats should be short and plump, of good color, hard to the feel, dry, without odor, rattling when allowed to fall

on a solid surface, breaking shortly across when bitten, tasting like good oat-meal, and, in a good sample, practically all the same size. On inspecting a grain closely it will be seen that there is a split down the under side of the husk, and a good grain should be so plump that the kernel bulges through this split, making a double line down the grain.

A plump oat is a heavy one; it has little or no beard, consequently lies close together, and therefore weighs heavier than a longer, thinner, more bearded variety. The size and plumpness of the grain should be due not to an increase in the husk but the size of the kernel, and consequently some thin skinned varieties may be smaller and meaner in appearance than thick, heavy husked though inferior samples.

Color: The color of oats varies considerably; some varieties being a deep brown, others black, and others again almost white. Whatever the color it should be good of its sort, any unusual discoloration showing that the grain has suffered from damp or has been tampered with to improve its appearance.

Practice alone is the only way of learning to successfully judge these points, and to tell by feel whether oats are in good condition or not. If a handful be firmly grasped it should not be possible to further close the hand by increasing the pressure, for this would show either that the grain was soft or that it was light and heavily bearded so that the individual grains did not lie as close together as they might.

Thorough dryness is very important when oats have to be kept long in bulk, and they should shell out of the husk with ease when nipped at one end. In well conditioned samples some grains may be found which have already escaped from the husk and this is a good indication of keeping condition.

To roughly test the proportion of kernel to husk a small quantity may be crushed beneath the heel on the floor when the whiteness of the contained flour should be apparent. A few grains well masticated should leave no bitter taste or flavor, but the taste should be of oat-meal, bitterness being indicative of dampness and subsequently kiln drying.

New oats may smell a little earthy, but an old sample should have practically no odor.

New oats are heavier and softer than old owing to the extra per centage of moisture they contain and they are considered to be less digestible, and are undoubtedly productive of digestive disturbance.

Oats vary greatly in weight, but the standard weight of a struck bushel in all states, so far as I can learn, is thirty-two pounds.

To ascertain the natural weight per bushel the grain should be poured quickly from a sack until the measure overflows, and the sample immediately struck from the top with a thick, round stick—striking stick—which should be long enough to afford a firm grasp at each end, and so enable the striker to level the grain with the edge of the measure at one stroke.

By pouring the grain slowly or from a height by shaking or striking the measure during the process, or by allowing the oats to settle before they are struck, the weight may be increased as much as four pounds per bushel, and care should be taken when weighing samples that none of these things are permitted.

A poor quality of oats always has the same characteristics. The worse they are the longer, thinner, more abundantly bearded and lighter do they become, and although such a sample may be hard and dry, when a handful is squeezed tightly it will feel soft and compressible owing to the excess of beard which prevents the seeds lying close together.

Clipped Oats: By passing oats rapidly over a revolving wire brush or by shaking them violently, it has been found possible to remove an excess of beard without damaging the grain. "Clipping" can scarcely be regarded as a defect, but the fact of the process having been thought advisable shows that the sample was not a very high class originally. *Clipping* may be detected by the appearance of the altered oats, which have a square-cut end, and by plunging the hand some depth into the sack when quantities of the removed beard will be found adhering to it on removal.

Foxy Oats: When oats are stored in large quantities before they are sufficiently dried they become "heated," at the same time their color alters to a deeper brown or yellow than before and they acquire an acrid smell; such oats are termed foxy and when the defect exists to any extent it is readily detected.

Kiln Dried and Bleached Oats: Kiln drying in itself is not a defect, and if the process is adopted only to make certain that the oats are dry enough to keep in bulk, it does not affect their quality, but generally speaking, oats are only kiln dried because they were previously damp or foxy, and the fact that the process was thought necessary is generally therefore an indication of damaged quality. Kiln drying gets rid of the foxy odor, restores the hardness and further deepens the color, so that grains originally of a pale yellow become quite brown.

To restore the pale color of kiln dried oats they are often *bleached* by exposing the grains to the fumes of sulphur. To detect this it may be a matter of difficulty, but if a small quantity is rubbed rapidly between the hands and quickly held near the nose the odor of sulphur may be detected. Chewing a few grains will leave a sulphurous or bitter taste in the mouth, and a careful scrutiny of the suspected sample should also be made, as some grains may have escaped the bleaching process and remain brown from the kiln drying, while others again may be so excessively decolorized as to be almost white.

Mustiness and Moldiness: Both of these conditions are the result of the grain having been damaged by rain during harvesting or accidentally after storing. When the growth of mold is so great as to be noticeable a simple inspection is sufficient to detect it, but the defect can be detected by the musty smell on opening the sack; these conditions are frequently accompanied by a soft and spongy feel, varying with the amount of dampness present.

Ratty Oats: The presence of a large number of rats in a shed will sometimes cause the grain to become so tainted that horses and mules will refuse it. The condition may be

detected by the presence of nibbled oats and the characteristic odor and droppings of the vermin.

Dirty Oats: Oats threshed in the field often contain quantities of earth and pebbles, and in addition they are often adulterated with inferior corn, coarse salt, sand, etc., with intent to deceive.

Grades of Oats: Oats are graded according to rules adopted by the various warehouse commissions throughout the country and are based upon those of The Illinois Railroad and Warehouse Commission at Chicago.

No. 1, white oats shall be white, dry, sweet, sound, bright, clean, free from other grain and weigh not less than thirty-two pounds to the measured bushel.

No. 2, white oats shall be ninety-five per cent. white, dry, sweet, shall not contain more than one per cent. of dirt and one per cent. other grain, and weigh not less than twenty-nine pounds to the measured bushel.

No. 3, white oats shall be sweet, ninety per cent. white, shall not contain more than three per cent. of dirt and five per cent. of other grain and weigh not less than twenty-four pounds to the measured bushel.

Standard White Oats shall be ninety-two per cent. white, dry, sweet, shall not contain more than two per cent. of dirt and two per cent. of other grain and weigh not less than twenty-eight pounds to the measured bushel.

It will be seen that standard white oats are graded higher than No. 3 white oats.

Yellow oats are never graded higher than No. 3 white oats.

Mixed Oats: No. 1, mixed oats shall be of various colors, dry, sweet, sound, bright, clean, free from other grain, and weigh not less than thirty-two pounds to the measured bushel.

No. 2, mixed oats shall be oats of various colors, dry, sweet, shall not contain more than two per cent. of dirt and two per cent. of other grain and weigh not less than twenty eight pounds to the measured bushel.

Red Oats: No. 1 red oats or Rust Proof shall be pure red, sound, bright, sweet, clean, and free from other grain

and weigh not less than thirty-two pounds to the measured bushel.

No. 2, red oats or Rust Proof shall be seven-eighths red, sweet, dry, and shall not contain more than two-per cent. of dirt or foreign matter, and weigh not less than thirty-two pounds to the measured bushel.

Clipped Oats: No. 1, white clipped oats shall be white, clean, dry, sweet, sound, bright, free from other grain and weigh not less than thirty-five pounds to the measured bushel.

No. 2, white clipped oats shall be ninety-five per cent. white, dry, sweet, shall not contain more than two per cent. of dirt or foreign matter, and weigh not less than thirty-two pounds to the measured bushel.

No. 1, mixed clipped oats shall be oats of various colors, dry, sweet, clean, sound, bright, free from other grain, and weigh not less than thirty-five pounds to the measured bushel.

No. 2, mixed clipped oats shall be oats of various colors, dry, sweet, shall not contain more than two per cent. of dirt or foreign matter, and weigh not less than thirty-two pounds to the measured bushel.

Purified Oats: All oats that have been chemically treated or purified shall be classed as purified oats, and inspectors shall give the test weight on each car or parcel.

Inspectors are authorized when requested by shipper to give weight by bushel instead of grade on clipped white oats and clipped mixed oats.

The moisture in a sample of oats should not exceed twelve per cent. The Quartermaster Department allows a wide latitude in the inspection of oats which accounts for the many controversies between the local quartermaster and the grain contractor. I am of the opinion that the grade of oats should be specified and that the contractor should be required to live up to the specifications; the government in all cases receiving the benefit of the doubt, if such should arise in reference to the grade.

In the service, as you know, it is the rule to appoint a board to pass on grain when the controversy between the quartermaster and the contractor becomes acute and very

often such boards may be without expert knowledge of grain, consequently the findings of such a board is lacking in weight.

Feeding Oats: Oats are the easiest grain to feed to horses and mules; these animals thrive on them and are able to consume and digest a larger quantity of them than any other grain without special preparation and without their digestion becoming upset. With horses at hard work the amount which they may be given is practically as much as the animal cares to consume, provided that a suitable quantity of other forage is included in the ration, this will usually vary from twelve to eighteen pounds per day.

For animals in moderate work an average of ten pounds per day, or even less, suffices, and working horses when resting for a length of time may be given only four to six pounds per day with advantage.

In some private stables it is the custom to crush the oats and this has its advantage as it insures that the husk of each individual grain is split so that any which do escape mastication may be readily acted upon by the gastric and other fluids during the process of digestion. Animals that eat hurriedly, either from natural greediness or for fear that their neighbors may rob them, are naturally inclined to swallow their grain ration without proper mastication, and especially is this the case in large bodies of horses fed in open stables.

Our stables are famous for their grain bolters due no doubt to the hurry of the animals in their efforts to appease the ravenous hunger induced by the long period of absolute fasting between morning feeding at 5:30 and evening stables at 4:45.

It would not be out of place at this point to indicate the advantage of feeding three times per day, but we will speak of this later. This plan, however, has been suggested, and reasons given, by our veterinarians and horsemen, but it appears the old custom, born of convenience, of morning and evening feeding only will not die until killed by a general order.

CORN.

Corn is used extensively as a horse and mule feed in all sections of this country, Mexico, The West Indies and South America.

Containing as it does a very small percentage of mineral salts, it is admittedly, even where in general use, an unsuitable food for the raising of young stock; but experience has thoroughly proved that it produces excellent results in all classes of working horses when *carefully* and *judiciously* fed. Still I am afraid of it, for when fed in the service, uncrushed, it has caused many cases of acute indigestion and not a few deaths and I feel justified in saying that corn is a dangerous grain when fed only in the morning and the evening as is the custom of the service.

Corn contains less of the flesh forming elements than oats, but it is superior in the elements of the fat-heat-energy group. It is very inferior to oats in the bone making elements and is woefully lacking in woody fibre. It is considered to be a *heating* food for the reason that it puts on fat rapidly, but it cannot be fed as safely as oats.

I have been informed by a farmer in this vicinity (Leavenworth) that even hogs do not readily digest corn. To make this statement clear he informed me that if a drove of hogs of similar age and weight be taken and equally divided, one-half being fed all the corn they care to consume and the second nothing but the droppings of the former, those eating the droppings alone will put on weight faster and are less liable to hog cholera.

Many cavalry and artillery horses appear to be unable to properly digest corn and this is probably due to their habit of bolting their grain at evening stables, at which time the appetite is keenest.

Corn is more readily bolted than oats, for while one pound of oats requires about one pound of saliva to properly prepare it for passage to the stomach, one pound of corn, though harder, may be sufficiently lubricated for passage by one-fourth less.

Strange to relate, I have never encountered a case of choke produced by shelled corn, although I have been called on to treat numerous cases of choke by oats.

Few cases of acute indigestion can be traced to oats, but hundreds of deaths can be laid at the door of acute indigestion, brought on by feeding uncrushed, shelled corn.

I am prejudiced against corn as a service food unless it be properly crushed, and fed morning, noon and evening, as is done in civilian stables.

Mr. C. L. Carlson, of Nebraska, an authority on horse breeding, has this to say of corn as a feed for breeding animals:

"Feeding has much to do with successful breeding, and it requires even more than a balanced ration for best results. Corn can be used with bran, clover, alfalfa or other feed rich in protein, that chemically it will not differ from oats, yet mares will produce more foals than when corn is any part of the ration.

"Chemically there is no reason why corn cannot be balanced and made a good feed, yet in fact, unless the breeders of draft horses in the corn belt change from corn to some other feed, within a century their mares will be all barren. It has the same effect upon the stallion. Either stallions or mares that have never been fed corn can be put upon a corn ration for a year or two without apparent injury. After that length of time the injurious effects of the corn becomes noticeable. I have known many stallions to be fed corn exclusively for their grain ration for three or four years, acquitting themselves nicely in the stud during this time, and then becomes sterile all at once. These same stallions were again made breeders within a year by simply substituting oats for the corn. The same has proved true of many mares. I have often succeeded in restoring to bearing corn fed mares that were supposed to be barren, by simply changing their diet from corn to other grain or alfalfa.

"I have made many extended observations as to corn being a factor in degeneracy. In the case of two lots of mares of the same breeding and quality, the one fed corn and the other oats or no grain, and both lots bred to the

same stallion, these fed corn always produced the poorer foals. These foals were not only inferior to the others, but did not mature into as good horses.

"In many tests I have made of the bones of horses fed upon different grains, those fed corn always showed the weakest bone. In weight per cubic inch, it appeared to be as good as the bone of horses fed other grain, but as soon as it would be given the leverage test it was found possessing very little strength. Those reared from their colthood to maturity upon an exclusive diet of western alfalfa, showed the best quality of bone of any draft horse tested.

"I shall not attempt to say why a corn diet has such an effect upon stallions and brood mares, for I do not know. To be positive concerning this question, I shall want to experiment further. However, this fact I have settled to my own satisfaction, *that corn is indigestible for any horse*. It may be because of its indigestibility that the system becomes so impaired in all its varied functions that degeneracy naturally follows.

"* * * the nearer we get to a corn ration, the lighter the foal crop; while the nearer we get to a grass ration the larger the foal crop."

Good corn should be perfectly dry, of bright color, not at all brown, hard and free from dirt, mold, weevils and mustiness; when bitten into it should taste sweet and have no distinct odor. It should not weigh less than fifty-six pounds to the measured bushel.

No. 1, white corn shall be ninety-nine per cent. white, sweet and well matured.

No. 2, white corn shall be ninety-eight per cent. white and sweet.

No. 1, yellow corn shall be ninety-nine per cent. yellow, sweet and well matured.

No. 2, yellow corn shall be ninety-five per cent. yellow and sweet.

No. 1, mixed corn shall be corn of various colors, sweet and well matured.

No. 2, mixed corn shall be corn of various colors and sweet.

No. 3, mixed corn shall be corn of various colors and sweet.

No. 4, corn of any variety, shall include damp, damaged or musty corn.

Corn travels very badly in bulk when shelled and is very liable to get *heated* unless it starts in perfect condition, for this reason it has to be closely inspected before shipment for long distances by sea. When *heated* the grains become darker in color, soft to the feel, and acquire a peculiarly pungent odor.

Weevily Corn: The weevil is an insect of the beetle family and gains entrance to the grain at the point and lives upon the interior. In all cases where the quality of this grain is under suspicion the points of the seeds should be closely examined as this is the spot where damage is most easily detected.

The feed by weight of corn is the same as that of oats and when the change is made from the latter grain, it should be made gradually so as to avoid digestive troubles. A new set of feed measures of proper capacity should be promptly provided for corn so that the exact amount by weight of the same and no more shall be offered.

BARLEY.

Though not generally used in the service, except at some of the southwestern posts, barley is a very good horse food.

The grain should be plump and short, quite hard, with a thin, wrinkled skin and small, fine but not shrunken ends; its color should be of a golden white and it should be free from distinct odor.

It should weigh not less than forty-four pounds to the measured bushel.

No. 1, barley shall be sound, plump, bright, clean and free from other grain, and not scoured or clipped. It shall weigh not less than forty-eight pounds to the measured bushel.

No. 2, barley shall be sound, of healthy color (bright or straw color), reasonably clean and reasonably free from other

grain and seeds, and not scoured or clipped; shall weigh not less than forty-six pounds to the measured bushel.

No. 3, barley shall include slightly shrunken or otherwise lightly damaged barley not good enough for No. 2, and not scoured or clipped; shall weigh not less than forty-four pounds to the measured bushel.

Feed Barley: No. 1, feed barley shall test not less than forty pounds to the measured bushel, shall be clean and reasonably free from other grain and seeds and not good enough for No. 4, and may include barley with a strong ground smell or a slightly musty or bin smell.

In the Southwest this grain is sometimes given uncrushed and without other preparation, in which state, however, the toughness and indigestibility of its husk is such that it can only be consumed in quantity by animals raised on it. For cavalry, artillery and pack animals it should be either crushed, parched or soaked, preferably the former, as it rapidly gives rise to acute indigestion.

While stationed at Fort Grant, Arizona, some years ago, the cavalry horses were given no other grain than uncrushed barley. All of them were low in condition; looseness of the bowels was always present, and colic was of nightly and daily occurrence. The barley offered was of good grade and was purchased from the Indians in the vicinity of the post.

Parching barley consists in heating it in small quantities until it is just ready to split when the contents become softer and of a floury consistency. Of course this method of preparation is impracticable in the service.

RYE.

In Sweden, Norway, Russia, Belgium and Denmark rye forms a large portion of the daily ration for animals. I have not seen it fed in this country outside of Oklahoma and there they informed me they did not consider it as good as oats or corn. It was offered uncrushed and sometimes soaked, but in the latter form it soon fermented and became unfit for food. This grain on account of its irritating husk readily gives rise to diarrhoea.

Rye is a grain that is often afflicted with a smut or fungus known as ergot, which may be recognized as a small body about half an inch long and of a purpleish black color, resembling very much in shape the small, warty projection found in the center of the fetlock of horses and named after this fungus. Ergot taken internally, constricts the blood vessels, especially of the limbs, and may produce disease in the animals eating it.

WHEAT.

This grain is looked upon as a most undesirable food for horses. It is undoubtedly true that part of this prejudice is due to lack of experience in its use. However, it can be fed to animals without exciting those alarming symptoms generally supposed to be produced by it, and especially should this be borne in mind on service when it is necessary to turn every possible eatable thing to account.

I have fed wheat as a ration for long periods to my own horses and found that they preferred it to other grain. Of course it cannot with safety be given in as large quantities as oats, corn, barley or rye, but I do not hesitate to state that a ration of six pounds will be a safe amount. I found that mixing it with oats, chopped hay, or bran insured a more thorough mastication.

Wheat while still green and heading is a dangerous food for horses and mules as has been demonstrated time and again on the farms of Kansas and Missouri. After the battle of Waterloo a number of English cavalry regiments turned their horses loose in the wheat fields of the vicinity of the battle field and it is recorded that hundreds of them died from flatulency.

When wheat is fed it is essential that it should be dry as it is otherwise extremely indigestible.

BRAN.

The quality of bran as a food depends almost entirely on the amount of flour it contains and the bran from modern mills where nearly all traces of flour is extracted reduces the nourishing qualities of this portion of the ration to a

minimum; hence bran is given only to regulate the bowels which it sometimes does by stimulating them by gentle irritation. Bran is certainly high in the flesh forming elements but it is practically indigestible and, therefore, in itself possesses little value as a food.

Bran may be used to advantage when mixed dry with the corn or oats of a bolter, it being so dry that it compels him to thoroughly masticate his food before passing it on to the stomach.

RICE.

In our Island possessions and in some of the southern States rice is frequently used as food for horses and though it is more or less indigestible for animals unaccustomed to its use, yet for those constantly fed upon it it is a serviceable grain and keeps them in fair condition. This grain should not be fed without the husks, as the removal of this renders it unsuitable for horses owing to its want of woody fiber.

The amount necessary for a full ration is about fourteen pounds. It is deficient in fat.

MOLASSES.

During the grinding season in the West Indies working animals are extensively fed on molasses and grass with excellent results.

While serving in Porto Rico I experimented extensively with molasses and grass as a ration for cavalry horses and found that a ration composed of twelve pounds of molasses, properly diluted and sprinkled over thirty pounds of freshly cut grass kept troop horses in good working condition for months at a time. It proved to be an excellent food for sick, weak and thin horses.

VARIOUS OTHER FOODS.

Linseed (flaxseed) meal is often used as an addition to the ration of thin horses, its characteristic being that it contains a large proportion of fat-forming materials. When it is considered desirable to feed linseed meal it should be added

in small quantities, about one pound, to a warm mash of bran, oatmeal, salt and water.

Horses appear to relish the cake form of this food.

Kaffir corn is now much used in the South and Middle West as a food for cattle and sometimes for horses. It is said to give good results.

Turnips and potatoes are much used in the British Isles. They are always boiled, however, and offered in the form of a mash.

I have mixed soup with bran and have had it eaten with evident relish by a horse which I used for experimental purposes while serving at Fort Sheridan.

Several years ago, while hunting in the foot hills of Wyoming, my party was snowed in for eight days. The forage soon gave out, and as the snow covered the dried grasses to a depth of several feet, the subsistence of our eight animals became a problem. In this emergency I made it my duty for five days to chop up daily about sixty pounds of fresh meat (game) and mix it with flour, salt, willow bark and hard-tack crumbs. From this I formed many small balls and each morning and evening I balled the six wagon mules and two riding horses with quantities of this mixture. The animals did well on this strange ration, and as the teamster remarked: "It put more ginger into them."

I have been informed that Norwegian stock of all kinds are accustomed to consume a soup made of boiled fish when mixed with other food.

In the Shetland Islands and along the Welsh Coast I have seen the native ponies living on a sea-weed called *dilishk* in the winter season. While in the Highlands of Scotland and the mountain districts of Western Ireland many of the small, wiry ponies seem to do well on furz and the tops of heather.

Polo players of good judgment often use oatmeal gruel on the field to sustain their ponies. The gruel is made by adding a few handfuls of oatmeal to half a bucket of water. Others use for this same purpose a handful or two of flour instead of the meal, the so-called *white drink*, both with good results as I have reason to know.

EMERGENCY RATION FOR HORSES.

I have experimented for a number of years with an emergency ration for horses, one that would prevent loss of flesh for four or five days in the animals of a detached command, providing that a sufficiency of *roughage* in the shape of hay, straw, grass, twigs, etc., could be procured. I think I have been successful in producing the proper rations for it worked out fairly well experimentally, and I believe it contained the needed elements. It weighed three and one-half pounds to the day's needs and had good keeping qualities under ordinary conditions of march. I never tried to introduce this ration mainly because I could not think that the service needed it. Moreover, it is very difficult to obtain a hearing in such matters unless one has sufficient rank to attract attention.

HAY.

Hay may be considered the staff of life of many of our domesticated animals for without it in some form it would be difficult for them to subsist and work. On hay and water horses and mules may be kept in fair condition while doing a fair share of work, and when not called on to do any work at all they often put on considerable fat from this simple ration. This points to the fact that hay, especially if of a good grade, contains in fair proportions all of the elements needed by the body.

Hay as it is generally understood consists of dried grass and other plants which have been allowed to mature in stacks, although in some instances where the grass is quickly and completely dried it is at once made into bales.

Those plants which are not true grasses are spoken of as *herbage*.

The Missouri classification of hay makes the following divisions: Timothy, choice, No. 1, 2 and 3. Clover hay, No. 1, 2; clover mixed hay, No. 1 and 2. Prairie hay, choice, No. 1, 2 and 3, and prairie hay is further subdivided into Midland No. 1, Midland No. 2, packing hay and "no grade prairie hay." Alfalfa hay, choice, No. 1, 2 and 3, and "no grade alfalfa."

Hay is cut by the farmer at two distinct periods of its growth; first, if he desires to have the best possible quality and expects a second crop, he cuts early when the majority of the grasses are in bloom or just after the flower disappears; second, he often waits until the seeds form, with the result that he secures a heavier weight owing to the amount of woody fibre in the stems; the latter quality is less nutritious.

The process of drying, stacking and baling are all included under the term *making*.

Well saved hay has been dried rapidly without being wetted by rain, and is therefore of a much better color and less broken than that which has been rained upon, left lying upon the ground, and subsequently much tossed to dry it.

Rain is very injurious to hay because it dissolves out of the cut stalks a proportion of those nutritious properties which give it such a high feeding value.

The comparative greenness of well-saved hay, even when it is quite old, cannot fail to distinguish it from other samples which have been saved under less fortunate conditions.

Prairie hay, being generally a lighter crop and more easily dried than the cultivated kind which contain a large proportion of succulent clover and other herbage, is generally easier to save.

Carter, in his "Horses, Saddles and Bridles," illustrates the most important grasses composing hay; they are: Timothy, red top, Bermuda grass, orchard grass, blue grass, clovers, buffalo grass, blue stem, western blue joint and gramma. In addition to these he says that among the common grasses used for hay may be mentioned white or tall gramma, crow-foot, various reed grasses, wild oats, and several kinds of bunch grass.

In the eastern part of the country the character of the meadow grasses, such as the fescues, fox tail, cock's foot or orchard grass, cat's tail or timothy, dog's tail, sweet vernal, and red and red and white clover are well established, but in the different sections of the West the character of the grasses and clovers comprising hay differ widely, from alfalfa in California and the Rio Grande country to blue joint and buffalo in Nebraska and Wyoming, and gietta or black gramma in

New Mexico and Arizona; in the last mentioned places the gietta grass is often chopped down by means of a machette or a hoe.

Whatever the character of the hay may be the animal instinctively rejects weeds and plants that are least nutritious.

Grading of Hay: Choice timothy hay shall be timothy not mixed with over one-twentieth other grasses, properly cured, bright natural color, sound and well baled.

No. 1 timothy hay shall be timothy with not more than one eighth mixed with clover or other tame grasses, properly cured, good color, sound and well baled.

No. 2 timothy hay shall be timothy not good enough for No. 1, not over one-fourth mixed with clover or other tame grasses, fair in color, sound and well baled.

No. 3 timothy shall include all hay not good enough for other grades, sound and well baled.

No. 1 clover mixed hay shall be timothy and clover mixed, with at least one-half timothy, reasonably sound and well baled.

No. 2 clover mixed hay shall be timothy and clover mixed, with at least one-third timothy, reasonably sound and well baled.

No. 1 clover hay shall be medium clover, not over one-twentieth other grasses, properly cured, sound and well baled.

No. 2 clover hay shall be clover, sound, well baled, not good enough for No. 1.

No grade hay shall include all hay badly cured, stained, threshed, or in any way unsound.

Choice prairie hay shall be upland hay of bright natural color, well cured, sweet, sound, and may contain three per cent. weeds.

No. 1 prairie hay shall be upland and may contain one-quarter midland, both of good color, well cured, sweet, sound and may contain eight per cent. weeds.

No. 2 prairie hay shall be upland, of fair color, and may contain one-half midland, both of good color, well cured, sweet, sound, and may contain twelve and one-half per cent. weeds.

No. 3 prairie hay shall include hay not good enough for other grades and not caked.

No. 1 midland shall be hay of good color, well cured, sweet, sound, and may contain three per cent. weeds.

No. 2 midland shall be fair color, or slough hay of good color, and may contain twelve and one-half per cent. weeds.

Packing hay shall include all wild hay, and not good enough for other grades and not caked.

Choice alfalfa shall be reasonably fine, leafy alfalfa, of bright green color, properly cured, sound, sweet and well baled.

No. 1 alfalfa shall be coarse alfalfa, of bright green color, or reasonably fine alfalfa of good color, and may contain five per cent. of foreign grasses; must be sound, sweet and well baled.

No. 2 alfalfa shall include alfalfa somewhat bleached, but of fair color, reasonably leafy, not more than one-eighth of foreign grasses, sound and well baled.

No. 3 alfalfa shall include bleached alfalfa, or alfalfa mixed with not to exceed one-fourth of foreign grasses, but when mixed with above must be of fair color, sound and well baled.

No grade alfalfa shall include all alfalfa not good enough for other grades, caked, greasy, musty or threshed.

From what has been said about the classification and grading of hay one may readily perceive that the judging and inspecting of hay in a proper manner is not an easy matter by any means, and one is also lead to conclude that the inspection and grading of grain is comparatively easy. It is needless, I presume, to remark that the only certain method for gaining knowledge in these matters is by constant practice and thorough investigation of each lot presented by the contractor. I have been surprised on many occasions to see quartermasters and quartermasters' assistants fall back on the valueless opinions of outsiders when they have been in doubt themselves as to the quality of a grain or hay in a consignment. I take it that it is the duty of the inspector to qualify himself in methods of inspection so that he may give his opinion fearlessly and with justice

to himself, the contractor, the animals under his charge and to the United States.

Good hay should be of a good color; greenish or slightly brownish but not yellow, crisp to the feel, sweet to taste and of pleasant aroma; the grasses should be between flower and seed, and while the feel imparted should not be soft it should not, on the other hand, give the impression of being woody, while plants found in it should be recognizable by their form and not too brittle and dusty.

On opening a bale, the fibers of the stalks should not be much tangled, but should lie more or less in parallel bundles, showing that it has not been necessary to unduly toss the crop in its making. There should be no suspicion of must, mold or heating.

The general quality and character of the sample is naturally affected by the soil on which it was produced, that from poor soil being lighter in bulk and shorter and smaller in the individual grasses than the same class from a richer neighborhood.

The season has also a marked effect both on quantity and quality; a hot, dry spring and summer resulting in a light but well saved and fragrant crop. While rain during the spring will naturally increase the bulk, its continuance through the summer foretells a heavy but indifferently saved yield. The period at which the crop was cut is denoted by the presence or absence of seed in the grass heads and by the woodiness of its stems.

The second crop which consists chiefly of leaves with few stems and flowering tops, is called the *aftermath*; it is soft and woolly to the feel, lacking in aroma, and of inferior feeding value. Of course this does not apply to alfalfa, a plant from which three or even four crops may be cut in one season.]

Substance of Hay: The feel, when handled, should be crisp and firm, but not too woody; though this will naturally vary with the particular variety under consideration, prairie hay being much finer and softer than a mixture of timothy and clover. On the other hand, it should on no account be with-

out substance and firmness, lack of which is characteristic of second crop.

Old samples may be somewhat dusty, dust in hay being an invariable accompaniment of age; it is increased by the crop having been cut too late and so being extra dry, by unduly long exposure to the sun, or by the herbage having been rendered brittle as the result of having been wetted during the making; and while good hay is invariably slightly dusty, it may be taken that very dusty samples have originally suffered from one of the above causes.

Color: The color of hay may vary from greenish to light brown, but it should not be yellow or dark brown, nor should the stems of the grasses be spotted by blight.

Prairie hay is generally of a greener tint than artificial mixtures, since it is usually a lighter crop composed of finer, quicker drying plants, and therefore easier to save. Color lasts longest in flowering heads and grass stems, and fades quickest in broad succulent leaves of various kinds of herbage and weeds, it disappears slowly with age, but should be fairly preserved at one year; rain washes it out very rapidly, and a heavy shower may convert a crop from green to pale brown.

Must and Mold: Although hay may have been quite dry as regards the juice contained in the grasses, hay which is baled while damp from rain or subsequently wetted, is likely to turn musty, and if the dampness is pronounced, it becomes moldy. Musty hay is sometimes of a dark brown color and sometimes a bright yellow, has a characteristic unpleasant odor and bitter taste in spite of which, if it is not very badly affected, horses may eat it, though as a food it is naturally inferior in proportion as this condition is marked. When mold is visible it appears as light or white patches here and there in the bale, and the surrounding portions are generally deep brown or even black in color. It is naturally unfit for food.

Both mustiness and moldiness may be found in isolated bales of an otherwise good sample if they happen to have been exposed to damp just before being baled.

Quite frequently we read reports of deaths among horses due to what is termed *forage poisoning* and there are certain districts notorious for this ailment, notably western Pennsylvania. From what I have been able to learn about forage poisoning I am inclined to believe that it is due to mold and I might suggest that all hay received in a suspected neighborhood should be closely inspected, opened, well shaken out and exposed to the sun and air for several hours before being offered to the animals.

Taste: The taste of good hay is not very marked, being faintly sweet and rather mawkish. When musty or moldy it is bitter.

Aroma: The aroma of good hay is due to the aromatic grasses contained in it. Sweet Vernal being the variety which is mainly responsible, and when in perfection it has the well known odor of a newly mown field; it becomes fainter with age but persists as long as the hay is good. Rain destroys it very rapidly.

Mowburnt Hay: If hay is baled or stacked before the juicy stems of the grasses are sufficiently dried up, the subsequent fermentation, *heating*, produces such great heat, especially near the center, that the bale or stack may be charred. When the condition is, however, very slightly marked, it merely imparts a brown tinge to the sample, which also acquires a sweet and somewhat pungent smell, both conditions being in proportion to the extent of the heating. In very slight degree it is no drawback to the quality, and is, as a matter of fact, much relished by horses, but if the condition is at all pronounced it becomes unfit for consumption, is often refused by the animal, and if partaken of, may bring on an attack of diabetes.

New and Old Hay: In the trade, hay is termed or known as old after the month of September. New hay, particularly when not well saved, very often produces indigestion which may appear in the form of colic pains and looseness of the bowels.

Good Old Hay is understood to be between six and eighteen months old, before which period it is not at its best as a rule, and after which it begins to deteriorate.

Clover Hay: When grown alone as a hay, clover is, owing to its weight and succulence, a difficult crop to save well except under the most favorable conditions, and even then it may waste, if stacked, to a fifth of its original weight. It is excellent and palatable feeding, though owing to its brittleness and consequent dustiness, it is liable to be wasteful, and is prone to be affected by mold.

Oat Hay: In many parts of the country a poor field of oats is often made into hay. For its production the field is cut when half ripe, whilst the grain is still in the milk and when well dried it makes excellent fodder.

Alfalfa: Alfalfa hay is coming into extensive use in the middle west and is very highly regarded by stock feeders and dairymen. I believe that its good qualities are overestimated. At present it is quite expensive and owing to its brittleness and dustiness it is very wasteful. It shrinks greatly from its original weight as clovers always do, but this is compensated for by its ability to furnish a second and even a third crop.

While alfalfa is a good grazing plant, as a hay it produces some constipation in horses when fed extensively.

Timothy: Timothy grass is an American product and Carter in his "Horses, Saddles and Bridles" informs us that it is named after one Timothy Herd, its discoverer, who cultivated it about 1720. It makes a most excellent quality of hay, grows in great luxuriance and when well saved is very nutritious. It is often very dusty when the bale is opened, and I have found it advisable to thoroughly shake it and dampen with a little salty water before offering.

Some battery and troop commanders have told me that in their opinions it gives rise to *heaves*.

STRAW.

When hay is not available straw may be used, it should be bright, clean, long, dry and free from mold. It is less nutritious than hay but as roughage it may take its place for a short time or in cases of emergency. In the service it is usually used for bedding

GRAZING.

When sufficient grazing is procurable and feasible, it is always to be preferred to *soiling*, i. e., feeding green food in the stall. In either case the tendency of horses to gorge themselves when freshly turned on green stuff, if allowed to, must be borne in mind especially when clover and alfalfa are the plants predominating.

CARROTS.

Carrots are much appreciated by horses when they become habituated to their use, but it is doubtful if they are of much value except to tempt the appetite of sick horses. When offered they should be cut in slices lengthwise and not in small cross sections as the latter is liable to be swallowed unmasticated and produce choke.

SUGAR.

A taste for loaf sugar is often acquired by horses whose owners often force it on them through sentiment. Sugar in quantity is undoubtedly a stimulating food but offered in portions of one or two cubes only it induces in the animal a habit of "nosing" which is often objectionable to those inspecting him, then too the use of sugar while the bits are in his mouth causes a flow of saliva which soils the reins and quite often the clothing of the rider and groom.

FEEDING.

It might be well to say a few words in reference to feeding although I am afraid that the custom of the service in this matter will be adhered to even with private mounts which are usually handled under the same conditions as public animals.

The general method of feeding in the service is so well known that it is scarcely necessary to mention it here. It will be necessary, however, to remark that our system is a poor one to say the least, and I am of opinion that the ragged looking coats of our horses and the running down in flesh of our remounts on joining is due to our feeding and watering system of convenience.

Horses, on account of their small stomach capacity should be fed often, and I am sure that if the grain ration was divided into three equal portions and one of these portions given about noon with a little hay we would have better results as regards appearance and health.

This is scarcely the place to go into the physiology of digestion, but I cannot refrain from saying that watering immediately after feeding washes out quite an amount of grain into the large intestines before it is properly acted upon by the juices of the stomach and small intestines, and the secretion of the liver. If one takes the trouble to examine the droppings of our horses he will be surprised to see a considerable amount of whole and partly digested oats therein, the explanation being that they were improperly masticated in the first place through bolting while the animal was very hungry and were probably washed through the stomach and small intestines by watering immediately after feeding.

Officers who are horsemen know or ought to know that the horse has a comparatively small stomach capacity, about three gallons, and that digestion is at its best when the organ is about two thirds full, but this is evidently lost sight of for most of our mounted organizations permit their mounts public and private to go without any kind of food from the morning feeding to evening stables.

The men, as a rule, are never instructed along these lines and many of them do not even know the daily forage allowance for an animal as laid down in regulations. These few remarks on feeding may appear to be out of place at this time but the object of this school is to be practical and to attain this it is sometimes necessary to invite your attention to some things that may be remedied without much effort on your part.

CAVALRY ORGANIZATION.

By MAJOR J. T. DICKMAN, (CAVALRY), INSPECTOR GENERAL, U. S. ARMY.

ANY thoughtful consideration of the organization of our military units must take into account the policy of the government. If the regiments are intended only to form a military police for domestic purposes, it is comparatively safe to disregard certain factors which would be of the highest importance in time of war. The numerical strength of the units, for example, could vary greatly without serious effect on the administration and discipline, or even the efficiency of commands for riot duty and patrolling of the frontiers. On the other hand, if the army is to be fit for war, we must adopt formations tending to promote tactical mobility and battle efficiency.

The contemplated war organization of the American Army is published in Field Service Regulations, but this has not yet the sanction of legislation, and, moreover, the men and animals for the necessary increase from a peace footing are not provided. No regiment of the regular army ever has been mobilized, and under present conditions it is impossible to place any regiment on a war footing without breaking up another regiment and transferring the trained men. If we are to follow long established custom, and the enemy will grant us three months time, we shall probably endeavor to fill up the regiment with recruits; but if the troops are required for immediate use, which will be the general case, they will have to go to the front in their present strength. Under the most favorable conditions this would mean troops and companies of sixty men—some of them only partially trained. These units do not form adequate commands for captains in time of war, and under the shrinkage due to absence of a service corps, as well as to the incidents of campaigns, soon would dwindle to handfuls.

Before proceeding to a discussion as to the best means of remedying this condition in the American cavalry, let us compare the organization of the cavalry in various armies. In the following table, compiled from M. I. D., Publication No. 4, the arrangement is in the order of numerical strength of the regiments in peace.

ORGANIZATION OF CAVALRY REGIMENT
IN VARIOUS ARMIES.

		Regiment.			Squadron		Remarks.
		Officers.	Men.	Squadrons.	Officers.	Men.	
Italy	Peace	45	1073	6	4	165	One depot squadron in peace and war; one reserve squadron in war.
	War	44	854	6	5	134	
Austria-Hungary	Peace	43	1037	6	5	166	One depot and one reserve squadron for each regiment.
	War	62	1639	6	5	166	
Russia	Peace	41	944	6	5	148	
	War	41	944	6	5	148	
America	Peace	50	854	3	15	263	One M. G. P.; one M. G. Troop.
	War	50	1188	3	15	351	
France	Peace	45	792	5	6	150	
	War	35	650	4	6	150	
Belgium	Peace	46	718	5	5	140	
	War	35	606	4	5	150	
Germany	Peace	25	701	5	5	137	
	War	23	660	4	6	160	
Gr. Britain & Ireland	Peace	24	468	4	5	107	
	War	28	562	4	6	140	
Spain	Peace	37	402	4	5	100	
	War	40	604	4	5	150	

Some changes have been made since 1894 in the strength of units of European cavalry, but the principles and general outlines still are the same.

Examination of this table shows that the Italian, Australian and Russian regiments exceed the American in time of peace; that the French, Belgian and German regiments would bring out about an equal strength on parade, owing to

small number of details; and that the English and Spanish regiments are decidedly smaller than ours. With reserves to draw on, the Austrian, British and Spanish regiments are larger in war than in peace; but only the Austrian regiment (1639) is larger than our regiment (1188), nearly one-third of which, owing to lack of reserves, is imaginary.

In all cases, except the British and Spanish, the field regiment is only equal to, or else is smaller than, the peace regiment. The basic unit in all foreign regiments is the squadron of about 150 sabers, with five officers. The American field regiment, theoretically only, is stronger than any European regiment (not counting depot and reserve units).

The assertion that our cavalry regiment is numerically too large to be handled by one man, does not receive much support from the above table, and when we bear in mind the lack of reserves and the necessity for detachments, fails in practice. The question whether it is less difficult to control the four, five or six units of a European regiment on the field of battle, than the three units of an American regiment, is at least a debatable one. The amount of space occupied by a regiment is governed by its numerical strength and its degree of concentration, and can be made entirely independent of the organization of its units. It certainly is feasible to put 700 American horses on the same ground occupied by an equal number of European chargers.

The tendency in a charge is to loss of cohesion—opening out. One of the means of counteracting this undesirable condition is to have a second line closely following the first. For the shock, the heavy mass of double rank is advantageous; but for the advance preceding the charge, probably under fire, some space is desirable, so that casualties in the first line will not necessarily involve troopers in the second line. We would give the preference, therefore, to the formation in two lines—say at platoon distance—with orders to close up just before the charge against a mounted force begins.

Our squadron can be formed in what is practically a double rank, by the commands of Paragraph 562, C. D. R., 1909. The troops could be formed in double rank by a

similar movement; anyway, whatever change in charging formation we may desire to adopt, it can be secured by the addition of a few lines in cavalry drill regulations. The squadron can be made a solid mass of 300—400 troopers in double rank, or with some distance between the lines, as may be desired. The charging formation, whether in single rank, double rank, or in two lines, could be left to the judgment of the commander, according to the kind of work in hand.

The road space of a cavalry regiment in columns of fours or twos would be the same, whether it started from single rank or double rank. Our column of twos could be shortened a good deal by the interlocking formation, that is, troopers not following in trace, but in the intervals between their predecessors.

For concentration, our mass formation, and for advance across the open, our line of fours, or line of platoon columns, seem to be at least as good as anything they have in European drill regulations. It would be interesting to make a comparison between two squadrons in line, one in single rank and the other in double rank, as to rapidity in throwing a dismounted skirmish line to the front. The result does not appear doubtful to me.

The ratio of officers to enlisted men in the peace organization of cavalry regiments is as follows:

	Officer.	Men.		Officer.	Men.
Austria	1	24	Germany.....	1	28
Belgium	1	16	Russia	1	24
British	1	20	America.....	1	17
France	1	18			

In the European squadron we find, as a general rule, one officer to twenty-five to thirty men; in the American squadron, one officer to seventeen to eighteen men. From this it is evident that if our authorized 13,110 enlisted men of cavalry were to be organized according to the Austrian, German or Russian models, there would be a large reduction in the total number of officers required. Such reduction, or an increase in the cavalry without promotion of officers, would hardly have a good effect on the spirit of the arm.

The combination of green recruit and untrained horse is such that at the outbreak of war, we can count only upon the cavalry already in ranks. It would be very desirable, indeed, to have a trained reserve of 5,000 men, who, as expert horseman, could be expected to do something in the way of training their own mounts in a reasonable time. Such a force would fill our fifteen regiments to war strength, and would cost only \$250,000 a year. However, as there appears to be little prospect of the requisite legislation, we must do the best we can with what we have. Upon receipt of telegraphic instructions to organize for war, the regimental commander should transfer all men untrained or otherwise unfit for the field, to the third squadron; all but about twenty of the fit men of the third squadron should be transferred to the first and second squadrons; and the band should be left with the third squadron. The regiment would thus take the field with over 700 men, eight troops and machine gun platoon. The incoming remounts and recruits would be sent to the third squadron, which would be organized as a depot. Eventually the third squadron would join the regiment in the field, leaving sufficient personnel to continue the depot, and having in the meantime supplied trained men and animals to replace vacancies at the front.

This system would require no legislation; experiments in organizing for war could be ordered by the Secretary of War at any time.

The best way to stimulate our cavalry is by putting younger men into the grade of field officer. Reorganization on European lines, by increasing the number of regiments, might benefit a few field officers at first, but would be a detriment to the body of cavalry officers as a whole in the long run.

It requires no argument to show that the necessity for mental and physical activity among field officers is at least as great in the cavalry as in other arms of the service and in the navy. Only the energetic and enthusiastic are fit to command cavalry in war, or even to instruct it and maintain a proper spirit in time of peace. If our cavalry is to be up

to the mark some way must be found to lower the average age of our field officers, so that the opportunity to exercise command shall come to them before they are too far past the prime of life.

The following memoranda for a bill for the selection of field officers of cavalry for promotion and retirement are submitted for consideration:

Memoranda for Bill for the U. S. Cavalry, on similar lines to part of Navy personnel, Act of March 3, 1899.

SEC. I. That field officers of cavalry may, by official application to the War Department, have their names placed on a list which shall be known as the "list of applicants for voluntary retirement," and when at the end of any fiscal year the number of vacancies for that year among field officers of cavalry has been less than fifteen, the President may, in the order of rank of the applicants, place a sufficient number on the retired list, with the rank and retired pay of the next higher grade, to cause the aforesaid number of vacancies for that fiscal year.

SEC. II. That should it be found at the end of any fiscal year that the retirements pursuant to the provisions of law now in force, the voluntary retirements provided for in this Act, and casualties are not sufficient to cause the vacancies enumerated in Section 1, of this Act, the Secretary of War shall, on or about the first day of June, convene a board of five general officers, and shall place at its disposal the service and medical records on file in the War Department of all field officers in the cavalry. The board shall then select, as soon as practicable, after the first day of July, a sufficient number of officers from the before mentioned grades, as constituted on the thirteenth day of June of that year, to cause the vacancies enumerated in Section 1 of this Act. Each member of said board shall swear, or affirm, that he will, without prejudice or partiality, and having in view solely the special fitness of officers and the efficiency of the military service, perform the duties imposed upon him by this Act. Its finding, which shall be in writing, signed by all the members, not less than four governing, shall be transmitted to the President, who shall, thereupon, by order,

make the transfer of such officers to the retired list as are selected by the board. The promotions to fill the vacancies thus created shall date from the thirtieth day of June of the current year: *Provided*, That any officer retired under the provisions of this Section shall be retired with the rank and retired pay of the next higher grade: *Provided, further*, That no officer retired under either Sections I and II shall be retired with a higher grade than that of Colonel.

EXPERIMENTAL DRILL IN DOUBLE RANK.

By COLONEL THADDEUS W. JONES, TENTH CAVALRY.

THE regiment is composed of four to six troops of three or four platoons of three or four squads (eight troopers) in double rank, with four feet between ranks.

Count fours is executed simultaneously in the two ranks. Nos. 1, 2, 3 and 4. of the front rank will constitute a four, and Nos. 1, 2, 3 and 4 of the rear rank will constitute a separate four.

Nos. 1, 2, 3 and 4, front and rear rank, will constitute a squad, of which No. 1, front rank is the guide. When dismounted to fight on foot these designations will apply to sets of threes.

In forming the regiment, the principles of the present squadron formation will be observed, with intervals of four yards between troops. For formation with five troops the order of seniority of first captains from right to left is first, fourth, third, fifth and second—with six troops, first, fifth, third, fourth, sixth and second.

The colonel's post is forty yards in front of the captain of the center or right center troop when the regiment is in line. When marching in line he is the leader. In column his post is a corresponding position on the flank. He is accompanied by the lieutenant-colonel, who becomes the guide in line when the colonel temporarily leaves his post.

The regiment is divided into two half regiments, or divisions, to each of which a major is assigned. In line, the majors are forty yards in front of the captains of the center or right troops of their respective divisions and are the leaders thereof. In column they occupy corresponding positions on the flank.

First captains in line are twenty yards in front of the

chiefs of the center or right center platoons of their respective troops, and are the leaders thereof.

Second captains are three yards in rear of the center or right center platoons of their troops. When the regiment marches to the rear in line by wheeling about by fours second captains take the posts of first captains and first captains those of second captains, retaining command of their troops.

Chiefs of platoons are one yard in front of Nos. 1, front rank of the left center squads when platoons consists of four squads; one yard in front of Nos. 1, front rank of the left squad when platoons consists of three squads. They are the leaders of their platoons.

Posts of, and instructions for, guidons are as in Drill Regulations except that guidons in rear of centers of platoons will when necessary be allowed sufficient latitude to avoid interference with chiefs of following platoons.

All commands which can be executed as prescribed in present Drill Regulations without modification for double rank will be so executed, the rear rank following the front rank.

In all movements in close order except the wheels by fours, the obliques, and those following formation of single rank or column of eight, the rear rank follows the front rank.

In line: 1. *Prepare to mount*, or 1. *Prepare to dismount*.

Nos. 1 and 3 front rank move forward four yards. Nos. 2 and 4 rear rank reign back four yards.

In line: 1. *Right* (or left), 2. DRESS. Both ranks dress.

1. *Right* (or left) *oblique*, 2. MARCH.

Rear rank troopers do not follow front rank, but oblique independently keeping their relative positions.

1. *Platoons right* (or left), 2. MARCH.

The pivot trooper front rank moves forward four yards after completing the turn.

The distance in column of platoons is five yards when the platoons consist of three squads. It is nine yards when the platoons contain four squads.

The distance between troops is four yards more.

1. *Troops*, 2. *Right* (or left) *by platoons*, 3. MARCH.

Each platoon after the first moves as soon as disengaged from the rear rank of the preceding platoon.

In line of platoon columns the close interval is four yards. The extended interval is thirty-six yards when there are three platoons and forty yards when there are four platoons. With closed intervals the formation is called a mass. Line is formed from mass as in the present Drill Regulations, the movements being made by platoons instead of by fours.

From line: 1. *Double Column*, 2. MARCH.

The center or right center troop executes left by platoons; the left center troop executes right by platoons, and the other troops follow.

From double column: 1. *Platoons left* (or right), 2. *Right* (or left) *platoon on left* (or right) *into line*, 3. MARCH.

From line: To form road columns, or column of squads:

1. *Right by squads*, 2. MARCH. Or 1. *By squads by the right flank*, 2. MARCH.

To reduce the front to two troopers, or form column of twos:

1. *By twos*, 2. MARCH.

The rear rank men move out with and follow their front rank men.

And similarly for forming column of troopers.

Column of twos or troopers may be formed from line, substituting "twos" or "trooper" for "squad" in the commands for forming road column.

To form column of squads from column of twos: 1. *Form squads*, 2. MARCH. Three and four front and rear rank oblique to the left.

And similarly for forming column of squads from column of troopers.

To form single rank from column of squads:

1. *Fours left* (or right), 2. MARCH.

To form line to a flank from column of squads, twos or troopers:

1. *Left* (or right) *into line*, 2. MARCH.

The regiment in line to form for attack:

1. *Form for attack*, 2. MARCH.

If a reserve is designated, at the command march, it takes its place to protect the flanks and follows up the attack.

If no reserve has been designated, at the command march, the first and second platoons, first troop, form echelon on third platoon and the third and fourth platoons, left troop, form echelon on the second platoon.

The regiment is put in a trot if not deployed at that gait.

When it has gained the proper distance the colonel commands:

1. *Draw*, 2. SABER. 3. *Gallop*, 4. MARCH.

At the fourth command the colonel, lieutenant colonel, majors and captains take their places in the line of chiefs of platoons, every trooper rides straight for that part of the outlined or represented enemy directly in his front; the gallop is gradually increased, regulating on the center, and at the proper distance the colonel commands: CHARGE. The front: rank charges saber, the rear rank executes the first motion of front cut, the men cheer, the trumpeters sound the charge, and all take the highest speed of the slowest horses.

The regiment being in line:

1. *On (such) Troop*, 2. *Line of Platoons*, 3. MARCH.

The deployment is made on the center or right center platoon of the designated troop. Or the second command may be followed by the command:

Guide right (or left).

From line of platoons:

1. *Line of squads*, 2. MARCH.

The deployment is made on the center or right center squad of each platoon. Or the first command may be followed by the command:

Guide right (or left).

From line of squads;

1. *As skirmishers*, 2. MARCH.

The deployment is made on No. 1, front rank, in each squad, who moves forward at a trot. Nos. 2, 3 and 4 of the front rank oblique to the left at a gallop until they gain their

places. Nos. 1, 2, 3 and 4 of the rear rank oblique to the right at a gallop until they gain their places.

During the deployment into line of squads, and after deployment into line of squads, or as skirmishers, No. 1, front rank, commands the squad from his place in ranks or in line of skirmishers.

The regiment being in column of platoons:

1. *Line of platoons* (or squads), 2. *Guide right* (or left), 3. MARCH. Or, 1. *Line of platoons* (or squads), 2. *First and second troops guide right* (or left), 3. *Third and fourth troops guide left* (or right), 4. MARCH.

The deployment is made on the leading platoon or squad of the first troop.

Deployed as skirmishers:

1. *Squads*, 2. *Assemble*, 3. MARCH.

Assembly is made at a trot on No. 1, front rank, who marches twelve yards to the front and halts.

Or, 1. *Platoons*, 2. *Assemble*, 3. MARCH.

The assembly is made at a trot on No. 1 of center or right center squad in each platoon, who marches twelve yards to the front and halts.

From line of squads:

1. *Platoons*, 2. *Assemble*, 3. MARCH.

The assembly is made at a trot on center or right center squad of each platoon unless another squad is designated in the command.

The assembly may be made on the march by moving the base unit forward

The regiment deployed as skirmishers, in line of squads or platoons, at the command or signal, 1. *Assemble*. 2. MARCH, the troops are assembled on their captains or on the guidons placed by the captains, and the regiment is formed at adjutant's call, at a walk unless an increased gait is signaled.

The regiment being in line to dismount to fight on foot:

1. *Fours right* (or left), 2. MARCH. 3. *To fight on foot*, 4. ACTION LEFT (or right).

Nos. 1, 2 and 3 of each four dismount without opening out and each squad forms in single rank opposite the horses' heads, facing in the same direction as, and one yard to the

left of, the column, in the order in which their horses stand in column. (Platoons do not assemble.)

Dismounted to fight on foot, to deploy as skirmishers facing in the same direction as the column:

1. *As skirmishers*, 2. *Guide right*, 3. MARCH.

At the command march the leading squad deploys on No. 1, front rank, who moves forward in quick time. Nos. 2 and 3 front rank oblique to the left in double time until they reach their places; Nos. 1, 2 and 3 of the rear rank oblique to the right in double time until they reach their places. No. 1 is the guide and commands the squad from his place in ranks or in line of skirmishers.

The other squads are marched to the left front and deploy on the line in the same manner.

If the command before dismounting be 1. *Fours left*, 2. MARCH in the deployment as skirmishers dismounted the rear rank men pass in rear of the front rank in obliquing to the right.

Dismounted to fight on foot, to deploy as skirmishers, faced to the left:

1. *Fours left*, 2. MARCH. 3. *As skirmishers*, 4. *Guide right* (or left), 5. MARCH.

The right squad deploys at the fifth command. The other squads oblique to the left and deploy on the line.

Or, 3. *On (such) troop*, 4. *As skirmishers*, 5. MARCH.

Line of squads facing to the front or left may be similarly formed.

To form line of platoons, the platoons are first assembled.

Certain troops may be designated to deploy and the others to assemble. The assembled troops would then act as reserve.

Dismounted to fight on foot, to form in single rank faced to the left.

1. *Squads left*, 2. MARCH.

Having been formed in single rank dismounted, the regiment may be deployed in line of platoons, or squads, or as skirmishers, or a reserve may be designated and the remainder deployed.

DAILY DIARY OF EQUITATION WORK AT THE MOUNTED SERVICE SCHOOL.

OCTOBER AND NOVEMBER, 1911.

GENERAL Order No. 113, War Department, 1911, directs that instruction in equitation be made a part of the post school course for officers and noncommissioned officers, and it further directs that the instruction be based on the methods followed at the Mounted Service School.

The War Department has directed that the Mounted Service School furnish the Journals of Cavalry and Field Artillery Associations with data as to the work at the Mounted Service School, suggesting that the monthly schemes of instruction be published in these Journals.

To give the post schools a proper basis on which work would require the writing of a manual on equitation. This is a very difficult task and one that would take great care and time.

In order, however, to carry out the desires of the War Department, the daily diaries of instruction at the Mounted Service School will be published. These diaries for the various classes of horses for each two successive months will be printed in the Cavalry and Field Artillery Journals during the ensuing school year. To this diary will be added, as soon as possible, such remarks and suggestions so that with the articles printed, and Saumur Notes, it is hoped the instructors in the post schools will find some assistance in arranging their courses and in giving their instruction so as to follow the methods of the Mounted Service School.

This diary cannot be published until the January numbers of the Cavalry and Field Artillery Journals, and, therefore, will be rather late for this year's post school course. It will, however, give the service a record of the daily work, step by

step with each class of horses. It should, therefore, be of great assistance as a general guide to officers who are handling similar classes of horses away from the Mounted Service School.

The course of instruction at the Mounted Service School commences October 1st and ends June 15th. The school has four classes of horses:

1st. *Breaking Class*.—These are colts of three or four years of age which are taken out of pasture about April and turned over to the officers' class to be gentled, taught to work on the longe, to be saddled and bridled, and also to carry the rider straight to the front at a walk and trot, and to make the simple turnings. The average post school probably has no class that would conform to this.

2d. *Training Class*.—These are four or five year old colts that have been through the breaking class the previous year. Each student officer is given at least one of these colts, and during the school year he is supposed to train this colt as an officer's charger. The post school which is taking up the training of remounts would have a class which resembles this one.

3d. *Schooled Class*.—These are horses which have been through the two preceding classes and are therefore supposedly well trained animals. On these horses the student is taught a good seat, good hands, and the proper application of the aids. On them also when the aids are properly applied the horse should respond to their application and perform the movement desired. On these horses the student learns and practices the various movements that he is to apply to the colts that he is given to train. The average post school has probably no class that will conform to this.

4th. *Jumping Class*.—These are aged horses with more or less training and a certain amount of jumping ability. Generally speaking, these horses are used to pound the student into a good firm seat, to teach jumping both indoors and out of doors, for cross country rides, following the hounds, and general rough work. In the post school a good troop horse would compare with this class.

At the beginning of the school year the last three of the above named classes of horses are in use.

The general object of the instruction for the first month is to harden both horses and men. The former have been in pasture all summer and are very soft. The latter must be gotten into condition to perform from six to eight hours hard physical work per day.

DAILY DIARIES.

TRAINING CLASS.

Schedule October 1st to 30th—1 hour per day.

2. Adjustment of cavesson. Explanation of the use of the longe and the purpose of this work. Colts longed both hands at a walk. Those going quietly worked at trot.
3. Same as on the 2d, combined with stroking the legs and lifting the feet. All colts working at trot on both hands.
4. Same as on the 3d, and in addition surcingles were put on in the last five minutes
5. Same as on the 4th, except that surcingles were put on fifteen minutes before the end of the lesson and drawn tighter.
6. Review previous work. Surcingles put on early in the lesson and in last five minutes saddles were laid on the backs of the colts. Saddles were without girths or stirrups.
7. Longed, both hands, and in last fifteen minutes saddles without stirrups were put on, girths drawn firm, and colts put back to work on the longe.
9. Colts longed thoroughly on both hands, and saddles without stirrups girthed on in last few minutes.
10. Saddles were put on early in lesson with stirrups up, colts longed. In last few minutes stirrups were let down and colts longed on both hands.
11. Saddles adjusted and colts longed, both hands. Stirrups let down and colts again longed. Then riders were mounted with an assistant to hold the colt, first testing the colt by bearing weight on stirrup. Colts were then led on a circle by the assistant.

12. Same as on the 11th, except that colts were mounted earlier in the lesson and led for a longer period.
13. Snaffle bridles put on. Colts longed to both hands, mounted and released by the assistant. Fifteen minutes at walk on both hands.
14. Same as on 13th, only walked for twenty minutes.
16. Only thirty minutes available and colts were exercised on longe.
17. Colts longed, mounted without assistance, and ridden at a walk.
18. Same as on the 17th, with short trot on either hand in column.
19. Same as on the 18th, with trot at will, and colts that pulled in column put on circle.
20. Longed with and without saddles; mounted; walk and trot in column and at will.
21. Same as on the 20th with short gallop on both hands—no regard paid to lead.
23. Same as for the 21st. Longing time decreased. Few colts saddled in stables. All ridden from hall to stables.
24. Longed without saddles, with saddles, stirrups up, and with stirrups down. Mounted and ridden at walk and trot on straight lines and circles.
25. Same as on the 23d.
26. Same as on the 24th, with some galloping on the track without regard to lead.
27. Same as on the 25th, also alternating slow trot and trot out.
28. In addition to work of the 26th, a few minutes was given to half turns in reverse.
30. Longed. Colts mounted and ridden at natural walk and natural trot. Explanation of seat and aids at trot.
31. Longed, mounted and rode at walk and natural trot. Correction of seats, hands, and legs of the riders.

November 1st to November 11th—1 hour per day.

1. Longed only a few minutes. Mounted and rode at walk and natural trot. Correction of seat, hands and legs. Advance: "First trooper front to rear at a walk and last trooper from rear to front at trot."
2. Same as on the 1st for review. On right (left) into line at walk with large intervals.

3. Same as for 2d for review. Advance, crossing the hall from one long side to other at trot. Short "trot out" on both hands.
4. Same as on the 3d.
6. Longed ten minutes. Trot out and natural trot on both hands. Crossing the hall at will to avoid crowding. "Trot out" with riders rising to the trot on both hands. Increase and decrease of gaits, walk to natural trot, and vice versa, with explanation of driving and retarding aids.
7. Same as on the 6th.
8. Same as on the 7th for review. Advance, dismounted flexions, lateral and vertical.
9. Same as on the 8th for review. Advance individual work at trot on smaller circle. Dismounted work displacing the haunches with a whip.
10. Same as on the 9th. Advance, canter on left hand by extending the trot.
11. Exhibition of all previous work to date for Secretary of War and Chief of Staff.

November 13th to November 30th— $\frac{3}{4}$ hours per day.

13. Longing omitted. Trot out on both hands at will. Dismounted flexions, slow trot with moderate collection on straight line and circles. Dismounted, displacing haunches with whip used on same side as the trainer stands.
14. Review work of the 13th. Advance, dismounted, displacing the haunches with whip used on opposite side to that on which the trainer stands.
15. Review work of the 13th and 14th. Advance—
 1. Moving haunches one step to right or left, mounted at halt.
 2. Flexions, mounted, at a walk.
16. Review work of the 13th and 15th. Advance, slow trot, holding proper distance for few minutes.
17. Review work of the 13th and 16th.
18. Review work of the 13th and 16th.
20. Trot out on both hands at will with good intervals, crossing the hall at will. Flexions, mounted, at a walk. Increase and decrease of gaits, walk, slow trot, trot out. Explanation and exhibition of the "half turn in reverse."

21. Review work of the 20th. Slow trot on circle holding true distance. Canter. "Half turn on reverse" at a walk.
22. Review work of the 20th and 21st, with particular regard to holding distances and the "half halt" in decreasing gaits.
23. Review work of the 20th and 22d. Advance. "Half turn in reverse" at slow trot.
24. Review work of the 20th and 23d, with particular regard to increasing and decreasing gaits, the holding of prescribed distances for a short time and the "half halt."
25. Same as on the 24th.
27. Trot out on one hand, rest and canter on the other hand. Sharp changes of directions at slow trot. "Half turn in reverse" at slow trot. Increase and decrease of gait with halt from slow trot, and "trot out" from halt.
28. Review work of 27th. Advance, individual circles at will at a slow trot.
29. Straight away work out at trot and canter on both hands. Colts getting a little sour on the aids.

NOTE.—All the work of this class was in the riding hall.

SCHOOL CLASS.

Schedule October 2d to October 7th—1 hour per day.

2. In hall: Longed each horse one hour. (First explained the principles and use of the longe and gave demonstration, including longeing over a jump at 3 ft. 8 in.)
3. Horses exercised for one hour; first twenty minutes longeing, then mounted work. An object lesson in longeing, saddling, mounting, riding and dismounting an untrained (green) horse was given.
4. The program for the 3d was followed throughout for today's work, with a few minutes less time spent in longeing, and a corresponding amount added to the mounted work.
5. Spent one hour in hall at mounted work, horses equipped with snaffle bridles. Explained and demonstrated how to mount and dismount. Explained how to hold the double reins, how to post at the trot, and how to adjust stirrup straps, and how to observe the fit of saddles for individual rider. Work was at a walk.

6. In hall: At a collected walk, "slow trot" and "trot out" on both hands, with frequent brief rests; also individually at an extended trot from front of column around track to rear of column.
7. In hall: Work at "extended trot," alternating the "close seat" with "posting," keeping on track but changing hand frequently. Rode in "spirals" and "serpentines."

October 9th to October 31st—2 hours per day.

9. In hall: one hour at a walk and trot and one hour outside at a walk. Each student rode individually at trot from column around track, passed the column and took his place at head. Instructions in the position of feet, legs, body, etc., were given.
10. One hour in hall and one hour outside. Gave exercises in the application of the aids and in collecting horse; individual circles; first trooper at a trot from head of column along track to rear of column; figures of 8.
11. One hour in the hall at walk and trot and one hour outside at a walk. Repeated yesterday's program. Work is with a view to settling riders down in saddle.
12. Followed the program used on the eleventh—weather very warm.
13. In hall one hour, in open country one hour. Work inside was at the trot with a view to acquiring a stronger seat. "Suppling exercises" were executed, including leaning back and resting shoulders on horse's croup, looking to the rear (right and left), opening knees, dismounting and mounting at a halt on near and off side (both with and without stirrups), and vaulting.
14. In hall: one hour, sitting down and rising at extended trot; also executed suppling exercises.
16. In hall: One hour, sitting down and rising at extended trot on the track, also on circles, figures of 8, and by the flank. Executed, "first trooper from front to rear" and the suppling exercises at a walk, both on and off the road. Outside one hour at walk and trot.
17. Repeated yesterday's program throughout.
18. One hour in hall, and one hour outside. More collection and more exactness in seat and the handling of the reins being required. Short galloping during the hour outside.
19. Followed program for the 18th.

20. In hall one hour and outside one hour. Work outside consisted principally of walk through the woods and up and down bluffs.
21. In hall one hour, riding at the trot, alternating the close seat with posting. Executed the suppling exercises.
23. In hall, one hour outside, one hour at walk, trot and gallop. In hall, first five or ten minutes used exercising individually on the track, on both hands, first at a walk then at a trot; on circles, straight lines, changes of direction. Also each student at the head of the column takes inner track, halts his horse and keeps him standing quietly, then moves forward in time to join the rear as it passes; also leaves the column, rides around track, passes column and taking his place at the head. Also figures of 8, the diameter of the circles being about twenty-four feet.
24. Followed the schedule for the 23d.
25. In hall: exercises for the 23d were executed with the addition of the gallop on the track along the wall, and on straight lines.
26. In hall one hour and outside one hour. Work at walk, trot and gallop, both individually and collectively. Worked on figures of 8, suppling exercises (see 13th), individual riders leaving the column at different gaits.
27. In hall one hour. Worked at walk, trot and gallop, individually and collectively, on circles, changes of direction, serpentines, spirals, and by the flank. The suppling exercises included leaning back at a trot. Outside one hour over rough country.
28. In hall one hour following the program of the preceding day. Outside one hour at road work.
30. Inside one hour, and outside one hour, at walk, trot and gallop. Work included figures of 8 at the slow trot, riding out of column individually, suppling exercises, serpentines, (rising and sitting down at the trot); individual circles and work at will in suppling and collecting up the horses.
31. Attended Garrison Review. Took brush and rail jumps on return home.

November 1st to 11th—2 hours per day.

1. In hall one hour. Five minutes workout at will at the trot. Worked collectively at the trot and gallop on the track on both hands; on circles, by the flank, on figures

- of 8. Executed the suppling exercises at walk and trot, One hour outside at the walk, trot and gallop over varied ground.
2. One hour inside and one hour outside. Followed program laid down for the first instance. Temperature considerably lower—freezing point.
3. All work was inside, same as for indoor work on the 1st. Some snow, weather freezing.
4. One hour in hall; executed by the right and left flanks, individual circles, serpentines and figures of 8 at the trot. Rode on both hands on the track at the walk, trot and gallop. Executed the suppling exercises at the trot.
6. One hour outside at the walk, trot and gallop, including up and down slopes, through the woods and broken ravines.
7. One hour inside. Walk, trot and gallop on track on both hands after five minutes individual workout at walk and trot. Practiced riding on circles and by the flanks at a trot; leaving column at an increased gait and rejoining after passing same; leaving column, halting and rejoining; also suppling exercises. One hour outside at the walk, trot and gallop.
8. Same as for the 7th.
9. Same as for the 7th, and in addition, practiced riding into corners of the hall at the trot by using sufficient pressure on inside rein and leg.
10. Same as for 7th; also practiced extended walk and trot with the column on inner track, leaving track along wall free or faster horses.
11. In hall: Exhibition of all work to date for Secretary of War and Chief of Staff.

November 13th to November 30th— $\frac{3}{4}$ hours per day.

13. In hall forty-five minutes. First worked out individually for five minutes, then on track at walk, trot and canter. Executed circles, by the flank, first trooper from front to rear, both toward center of hall and to outside between column and wall, also suppling exercises.
14. Outside forty-five minutes. In pairs for exercise at walk and trot.
15. In hall forty-five minutes. Trot out—slow trot with considerable collection—change from slow trot to halt—canter.

16. In hall: Balanced trot, half halt, change of direction and holding haunches, canter.
17. Same as on the 16th.
18. Sent out to Ogden Flats to Artillery Review.
20. In hall: The "slow trot" at regular distances, small circles. Half turns in reverse.
21. Same as on the 20th.
22. In hall. Work at half halt and retarding aids to assist work on training colts, half turn in reverse, trot and canter with stirrups, mounted flexions, canter, halt, trot out.
23. Same as on the 22d.
24. Same as on the 22d.
25. Same as on the 22d.
27. In hall: Same as on the 22d. Also trot out with stirrups and without reins; same at gallop. Canter, halt, trot out and decreasing gait without changing same.
28. In hall: Work out, flexions mounted, small circles, canter, halt, trot out.
29. Run with wolf hounds.

NOTE.—The general object of the instruction with this class of horses was the acquiring of a correct seat, learning the proper application of the aids and continually demanding as much perfection in the execution of each exercise as could be expected from the riders and horses at the stage of instruction so date.

JUMPING CLASS.

Schedule October 1st to October 31st—2 hours per day.

2. Explanation of saddling and bridling; road work at walk, trot and half-mile slow gallop.
3. On road about eight miles alternating walk, slow trot, and trot out, and twice a half mile slow gallop.
4. Seven miles on road at a walk and trot; remainder of time trotting and galloping at will on Ogden Flats.
5. About seven miles on the road at walk and trot; individual trot and gallop on Flats and about fifteen minutes slow trot on circle in column of troopers.
6. Across country walk and slow trot about eight miles, and slow gallop three-fourths mile; work at will ten minutes.
7. Walk and trot across Flats for about seven miles and one and one-fourth miles slow gallop; visited paddocks.

8. On road and cross country about six miles at walk, trot and gallop in column of twos at fifty yards distance; jumped small brush jump.
10. Short drag hunt; inspected kennels.
11. In hall: At a walk and slow trot, executing circles, serpentines, etc.; loosening reins at trot, finally dropping them on horses' necks, hands on thighs.
12. Forded river, belly deep; walk, long trot and one and one-half mile gallop column of troopers, extended distances, through woods on road.
13. With fox hounds after coyotes, mostly at walk, short gallop; jumped five or six post and rail jumps through pasture two bars let down.
14. Walk on road; column at slow trot on circle, individually trot out from head to rear of column; column at trot out, gallop from head to rear of column; over two brush jumps three feet high.
16. In hall: Changing gaits; riding without reins, with and without stirrups; suppling exercises for riders.
17. Across river: Long trot, well spread out; gallop about one mile through woods on road, about fifty yards distance in column.
18. Same as on the 16th; in addition over a small jump individually.
19. Thirteen miles road work, walk, trot and short gallop.
20. In hall: Changing gaits; riding without reins; with and without stirrups; suppling exercises for riders; individual circles, stakes marking centers; over a small jump individually.
21. On woods road: One mile trot in column; in column of troopers at 100 yards distance, individually taking at trot about six small log jumps indicated by instructor; in column fifty yards distance at slow gallop over three log jumps about 25 yards apart.
23. In hall (1st hour). Trot out with stirrups, with and without reins; short gallop without reins; slow trot with and without reins, also with and without stirrups; suppling exercises for horses and riders; twice over one and one-half foot jump by walking to edge of wing, then trot over jump; twice over same jump without reins, horses led by attendant to wings then released. (2d hour). At a walk over rough ground; two three-fourth mile gallops in woods in column of troopers at ten yards distance.

24. (1st hour). Same as on the 23d. In addition, individual circling, stakes to mark centers. (2d hour). At a walk over rough ground; in woods, attempting a mile in six minutes at a trot, individually.
25. (1st hour). In hall; same as the 23d; also several times over two wicker jumps two and one-half feet and one and one-half feet high. Jumps placed on same side of hall. (2d hour). In woods attempting one mile in six minutes at a trot, individually.
26. (1st hour). Same as on the 25th. (2d hour). On road and attempting a ten mile per hour trot for one mile, individually.
27. After jack rabbits with wolf and grey hounds.
28. Quiet work up and down cañons, galloping in between.
30. In hall: Suppling exercises for horses; jumping same as usual on the 23d.
31. Drag hunt up Magazine Cañon to Morris Hill taking three or four brush jumps. All student officers required to keep in rear of two instructors at head of class and in front of one riding instructor at the rear.

Schedule November 1st to November 11th—2 hours per day.

1. In hall: Work out at will; usual jumping except none without reins; also once over without wings.
2. Ground frozen; on road one hour walk and slow trot; in hall one hour; individual gallop taken by extending trot and also taken from slow trot by using lateral aids.
3. In woods: Trotting in column with closed distances and then open distances; over several small jumps. In hall: over two wicker jumps about fifty feet apart without reins or stirrups; also over two jumps placed about three feet apart.
4. (1st hour). In hall: Suppling exercises for horses and riders, mostly without stirrups; over three small jumps twenty feet apart without stirrups or reins. (2d hour). Horses weighed; on road in pairs for quiet work.
6. Rode to coursing meet west of Junction City; going, rode at walk and trot; returning, same, except about one and one-fourth miles extended gallop.
7. In open air hall for one hour: Trotting and galloping individually, with and without stirrups, taking gallop from slow trot by use of lateral aids, particular atten-

- tion paid to keeping neck straight with inside reins and use of inside leg to drive. Outside: one mile gallop, well strung out, over Republican jumps (gallop rate, eighteen miles per hour). Stopped on way back at race track to look over fifteen young horses just received from the Fort Reno Remount Depot.
8. Long trot and gallop in open air hall for one hour; then outside for walk and gallop over two Republican flat jumps, coming back led over three small jumps.
 9. In hall: Suppling exercises for riders with and without stirrups or reins. Outside: one by one over three log jumps in woods.
 10. Without stirrups across river, over flats and through woods at a walk, slow trot and about two miles gallop; over a few jumps—small banks and ditches.
 11. Exhibition in hall for Major H. T. Allen, General Staff, showing resumé of work up to date. Same for Secretary of War and Chief of Staff in afternoon.

November 13th to November 30th—¾ hours per day.

13. Workout in hall; jumping small jumps, with and without reins or stirrups.
14. In hall: suppling exercises for horses and riders; trotting and galloping without stirrups; jumping two wicker jumps one and one-half feet and two and one-half feet high, about four feet apart.
15. In hall: Short workout at trot and gallop at will; twice over 3 foot six inch post and rail; suppling exercises for horses and riders, without stirrups.
16. In hall: Galloping in pairs; suppling exercises for horses and riders, without stirrups or reins; twice over three wicker jumps about twelve feet apart.
17. Same as on the 16th, except third jump about 100 feet beyond second, taking reins between second and third.
18. On road in pairs, quiet walk and trot; looked over eighteen horses at race track just arrived from Kentucky.
20. Light work in hall: One by one over few small jumps in woods.
21. In hall: Suppling exercises for riders and horses; over three foot six inch post and rail twice.
22. In hall: Suppling exercises for riders and horses; with and without stirrups; galloping in pairs individually and in column; jumping with reins and stirrups, first

over one and one-half foot wicker in center of hall at slow trot, halt at wall, then take in and out of wickers three feet high and about twenty feet apart placed on the track. First jump without wings, second and third with wings.

23. Repeated work of the 22d.
24. Suppling exercises for horses and riders in hall.
25. Work out in hall: Over two three-foot wickers on same side of hall about seventy-five feet apart. Visited pastures, inspecting all horses.
27. In hall: Suppling exercises for horses and riders, mostly without reins or stirrups; over three wicker jumps about twenty feet apart, without reins or stirrups.
28. In hall: Worked out individually; galloping from head to rear of column, column at slow trot; twice over two three-foot wickers on same side of hall about one hundred feet apart, no wings.
29. Work out in hall at trot and gallop; outside winding through woods taking log jumps and rail jumps.
30. Thanksgiving.

NOTE.—Suppling exercises for riders consist in mounting and dismounting from both sides without stirrups when at a halt, leaning back at halt, trot or gallop; raising arms to the front, sides, overhead and folding behind back at trot or gallop; carrying knees away from flaps of saddles, seat kept by balance alone; twisting body at waist looking to right and left rear. Suppling exercises for horses are serpentines, circles, movements by the flank, half turns on the forehand at slow trot. Student officers change horses daily. Jumps in hall are with wings unless specified otherwise.

Reprints and Translations.

THE CONDUCT OF OPERATIONS WITH GREEN TROOPS.*

BY CAPTAIN A. T. HUNTER, TWELFTH REGIMENT.

A LECTURER addressing the frequenters of this build. ing can safely assume, I think, that he is speaking to men who are reasonably addicted to military literature. We may not all be able to give a precise academic definition of "Strategy" or "Tactics," or quite able to make oath that an "appreciation" is not the same as a "mentioned in despatches." But we all have been reading more or less military history; some of it by compulsion, as when the classics suffered by our attention to Xenophon or Cæsar; some of it voluntarily owing to a diseased appetite for historical fiction; and some of it by habit—the habit of reading day by day the newspapers. From all this reading any of us could, if industrious, construct systems of strategy and tactics; but being busy we neglect this. When we want to know the principles of these things we consult text books, and there are great numbers of these; very clear and precise and dealing with selected campaigns so that a child could see where Napoleon or Wellington broke some of his teeth. But reflect, gentlemen! Do not nearly all of these text books deal throughout with what some soldier with vast experience of the highest grade of military work did with the obedience of other soldiers who had long been both disciplined by drill and seasoned by war?

* From the transactions of the Canadian Military Institute, No. 18.

We read reverently these books and we read also the Sermon on the Mount; but our environment postpones their application.

What is this environment. Let us see:

The army of the British Empire consists in part of an admirable over-seas force similar in qualities to those historic bodies that enabled Wellington and the Emperor and the other text book heroes to give us their rules of war. But numerically by far the greater part of the army of the Empire, if ever the Empire shall come to handgrips with a real opponent, must come from the Territorial Army of England and the militias of the Dominions beyond the seas. In other words, what the navy cannot do, must ultimately devolve on the green troops of the Empire. The United States is still more pointedly in the same position. For with a quite excellent though small standing army, even in contesting with so backward a nation as Spain, she immediately resorted to her green troops. The Spanish American Republics are in like case and must, like all the English-speaking countries, depend for success on their *conduct of operations with green troops*.

I shall not attempt a strict definition of "green troops." Their greenness may extend to some only of the qualities of a soldier; as in the case of the Russian troops in Manchuria. These were green in shooting and skirmishing, but had a regimental organization which enabled them to be rallied and returned to duty in a manner that is highly creditable to their nation. We in Canada and our American cousins are resentful of drill and discipline because these hamper the natural bent of our genius, which is towards baseball. But we are superlative marksman except for the fact that the vast majority of us have never done any shooting. If you want to know what I mean by green troops, let each C. O. look at his neighbor's corps.

Now, to pass from the abstract to the concrete, let us begin with one historical operation by green troops where the proceedings were of a sufficiently startling nature to challenge attention.

In the operation I refer to, we have an officer with a splendid record as a professional soldier, trained in France and at West Point, in the learning of the text books, seasoned by campaigning, only forty-three years of age, and of the finest physique, intrepid in character, self-controlled and still full of initiative, having, in fact, all the qualities (short of genius) which you look for in a commander. Nevertheless, when you add to him an army called blue force, but composed of green troops and as gorgeous in raiment as the Toronto garrison, and when he establishes tactical contact with the grey force, the result is Bull Run.

What were the phenomena of Bull Run? These: An army of unbounded enthusiasm marching with the war cry "On to Richmond;" so brilliant with their uniforms and silken banners that it all reads like a page out of Lord Byron. And when they encamped at Centreville, almost within cannon shot of the Confederates, so thronged were they by visitors—ladies, senators, sightseers—that it had all the appearance of "a monster military picnic." And nevertheless there were those strange fits of depression, of sulky funk, such as when the Pennsylvania Regiment and the New York Battery looked at the clock, found their time up and went home; as the unfortunate general said, "marched to the rear to the sound of the enemy's cannon." And all day on the 21st day of July, 1861, until about 4:30 in the afternoon, General McDowell's green troops fought wonderfully well; and then, according to one of his aide-de-camps, "the men seemed to be seized simultaneously by the conviction that it was no use to do anything more and they might as well start home. Cohesion was lost, the organization, with some exceptions, being disintegrated, and the men quietly walked off." After they had thus quietly left the danger zone and there was a rear guard formed up between the Confederates and themselves, they were seized by delusions of pursuit, resulting in a frenzy of panic that carried them first to Centreville and then twenty miles further to the Potomac, a total distance for some of them on that day of forty-five miles, in addition to the fatigues of the battle. Their enemy, the grey force (also green troops and arrayed as Solomon never dared) likewise fought well,

and if we can believe General J. E. Johnson, who claimed to be their commander, they were worse disorganized by their victory than the others by their defeat. That was Bull Run.

Now who or what was at fault? Not even his contemporaries felt that McDowell was to blame. His reports before the battle showed that he correctly estimated the enemy's force and intentions. Also we must admit that he showed fully as profound a knowledge as most regular officers of the dubious character of operations with green troops and attempted to make their work light for them by turning the Confederate flank. It is safe to say that few officers of his time or our own would have known how to take any better precautions to prevent happening the things that did happen.

On the other hand, it will not do to blame the green troops. Popular instinct is against such criticism. Richard Harding Davis was not publicly thanked for saying in 1898, after the battle of San Juan, "what the public needs to know now is that in actual warfare the volunteer is a nuisance." Probably the popular instinct is right. At any rate, after Bull Run public opinion in the United States settled the blame for the extraordinary things done before and after the battle squarely on the shoulders of Russell, the war correspondent. It was clear that in exposing what he saw and heard he was guilty of a gross indelicacy. For the proceedings of green troops should be treated as highly confidential, except, of course, when they secure a victory, encumbered more or less by the regular troops, who officiously drive out the enemy for them.

But to return to the question, *what* was at fault? The answer is simple. The military education of that day, and for that matter of this day, is at fault. The phenomena of Bull Run, while quite exciting to witness, are as normal as colic in a baby. But military science has barely condescended to deal with the warfare of the undisciplined, which to us on this continent is the normal type of warfare.

Is it not clear that in West Point, as at Kingston and Sandhurst, there has been a missing series of text books, the books that detail all those endearing little tricks that green troops will do if they are not headed off; the precautions that

must be taken in using green troops in certain operations; the other operations in which they must not be used at all; the methods of turning their enthusiasm as volunteers to good uses; the devices for relieving those inevitable fits of depression and disillusionment of their rank and file, and for counteracting the dangerous omniscience of their officers.

The materials for text books on this subject are numerous and entertaining, but they do not deal with the campaigns that are usually studied. It is not of much use for this purpose to read Napoleon literature. For Napoleon's first Italian campaign as commander was in 1796, and the war with the allies began in 1792. The French campaigns of 1792-3 are well worth reading for our purposes. Likewise the People's War in 1870-71, which, fortunately, is the subject of a text book. Likewise the beginnings of any war joyously entered into by a people without military preparation. All the wars of America have been people's wars in this sense.

Let us now outline a few of the uses made of green troops by astute officers. We may begin with the mobilization of the twenty-first Illinois, under Ulysses Grant, recently made colonel and replacing an elected colonel whose reputation illustrated the difference between gaining popularity and securing confidence. Grant had the advantage of limited text book attainments and a great knowledge of civilian nature. After taking a few coarse measures to introduce discipline, he started to march through the friendly country from Springfield to Quincy. This marching of green regiments to the concentration point is a very wholesome measure even in peace training. In war it has at least three secret advantages besides the obvious ones of building up the regimental organization and hardening the men's feet:

1st: During the time occupied something may arise that will obviate the necessity for bringing the green regiment into action.

2d: By making all the company officers walk it eliminates some of the unfit.

3d: It enables everybody to send back home from twenty to 100 pounds per man of absolutely indispensable clothing and equipment.

Before approaching debatable land it is good practice to accustom the men to falling in for repelling an assault at any or all points of the compass and at any hour of the day or night. A veteran of the Northwest Field Force of 1885 has described to me the effect on green troops of the alarm sounding at night, when done for the first time. It had a thrilling effect. An officer who served in the Philippines says that when posting an outpost of volunteers it was his practice to call up the non-coms. shortly before dusk and say to them: "That is a stump; and that is a stone. The reason I point them out to you is that when it begins to get dark that stump and that stone will begin to steal up on your sentries and try to injure them. You had better point them out beforehand." In fact a very interesting volume could be written on the devices for hardening the courage of green troops so that they will not be terrified by anything but a real enemy.

When in the actual tactical zone the best use to make of green troops appear to be in straight defense or straight attack, and on no pretext in retreat. I intend writing a monograph on Retreats by Green Troops as soon as I discover some instances in history where the army survives. The rules of defense by green troops are alarmingly simple. Their flanks must be absolutely secure. Andrew Jackson quite understood this. His troops were, as he knew, maneuver-green, and the one thing he dreaded was having to meet flanking moves. His troops were not shooting-green, as some of England's best soldiers found that day in 1814, when Old Hickory's riflemen "picked their turkeys" by New Orleans.

In Grant's Memoirs you will find that Abraham Lincoln was kind enough to pick a battle ground for him. "He pointed out on the map two streams which empty into the Potomac and suggested that the army might be moved by boats and landed between the mouths of these streams. We would then have the Potomac to bring our supplies and the tributaries would protect our flanks while we moved out." Grant did not accept the suggestion; but Lincoln on that occasion voiced the soul of green troops.

Having protected the flanks, the next thing is to prevent the display of military genius in front. For military genius from the time of Hannibal has concerned itself with devices by which certain troops trained to the part will engage the enemy and artfully fall back to lure them within reach of the main body. Devices of this kind are always practised in that pastime The War Game when played by volunteer officers. They never fail to have a lot of outposts skillfully posted where in case of actual operations with green troops behind them it is an even bet whether the green outposts will carry away the main body in their frantic retirement or be killed by their comrades' well-directed volleys before they can get back in line. Just here I may mention that at Niagra any year you may see groups with sentries seventy-five yards in front, and may form your own conclusions whether the group could hit the sentry during the seven seconds he would take to sprint back.

Of attack by green troops, I should like to speak, but it is too long and intricate a branch of this subject.

Of the preponderance of green troops required as against regulars, we have the opinion of General Wolfe that 100 soldiers were a match for 500 Highland clansmen, and the opinions of various authorities that modern rifles demand about a five to one superiority of attack. The French won some victories in 1792 with a two to one majority, but that was due to an inaptitude in their opponents that we cannot hope ever to see in ours. The troops that secured the surrender of General Burgoyne were about four to one. But some of Gates' army were not what we should call green troops. On the whole we had better call it five to one, and if we have to meet 50,000 disciplined invaders, the quarter of a million will be about fair.

I wish to say a few words about the fits of depression that affect green troops. This disease has a very simple cause. You know that with regulars their home is where the regiment is. The regiment may be in comfort or in bivouac or in difficulties, but the private's abode day or night is just where the regiment is. When he gets up, goes to work, quits work, eats, drinks or sleeps, it is always with the

regiment. Whether he fights or runs he still cannot get the regiment out of his head. But a civilian knows a lot of places more familiar and pleasing than the spot where his military lodge may happen to be assembled on the battle field. When proceedings get tedious he impatiently awaits the motion to adjourn. Towards evening he has the instinct of the mechanic that it is time to quit work and go home. If you want to overcome this eight hour movement you must keep feeding up his enthusiasm by a constant stream of supports, and the more noise the supports make in coming up the better the result. If you want to turn this instinctive depression into panic, merely withdraw a body of troops, preferably mounted men, through the midst of the green troops. This is what the Greeks did in 1897, when the rapid retirement of the staff pulled the whole Greek army inside-out like a wet sock.

And now, lastly, let us consider the approved and traditional methods of destroying that great strength of green troops—their enthusiasm. This is where the text book regular officer is hopeless. Like the doctor, whose only practice has been as house-surgeon and who then turns to family work, his bedside manner is atrocious and kills his business.

In passing from peace to war a regular regiment easily shifts from the dual control of the adjutant and the colonel's wife to the single control of the commanding officer. Not so a volunteer regiment, which in time of peace is a collection of debating societies and social clubs, with features of military entertainment. It is not easy for a captain who has been nursing along his company with all sorts of blandishments, to make the company suddenly realize that it is a unit, "and that the captain is it." Nor is it easy for the colonel, who has had to keep sweetening up eight or ten captains and a host of other dangerous cranks, to suddenly announce that all debates are adjourned *sine die*. Of all persons to effect this change in habits of thought and speech, the average type of regular officer is the second worst agent to select; the first worst being the officer who, without their merits, imitates the styles of the regular officers.

It is not surprising that young men who thought they were doing something rather decent in volunteering to serve their country should experience strange emotions to find their officers possessed of that austere manner which has been abandoned as unnecessary in most schools and some reformatory prisons. War correspondents who found the Japanese officers fraternizing and exchanging cigarettes with privates when off parade were amazed. But that shows the perverse and unscrupulous character of the Asiatic, who, in adapting foreign military methods, has the curiosity to take off the red tape and look inside the package.

The time-honored methods used in English-speaking countries of teaching drill by a series of scoldings, of teaching duties by wrapping them up in a quaint phraseology that has come down from the Romans, of teaching shooting with sedulous instruction by shouters who cannot shoot, of making a religion of the absurdities of barrack housekeeping, and above all, of making the patriotic private feel that he is a verminiferous brute who must not approach his officer unless herded by a non-com.—these methods explain why whole regiments ask their discharge when the time is up, and why many an officer has unwittingly walked with God when the men he brutalized had dipped their hands in the hat for the marked bullet.

The one chance of green troops lies in the constant and mutual replenishing of their numbers and enthusiasm; enthusiasm constantly bringing greater numbers into the field, and these reinforcements constantly adding fresh fuel to the fire of enthusiasm. As Carnot, the organizer of victory, declared, "cover the want of discipline and skill by numbers and enthusiasm." This, and not the "exact squareness of the body and shoulders to the front," is the first and great principle in the "conduct of operations with green troops."

NIGHT EXERCISES IN THE CAVALRY.*

NIGHT actions of troops in general, and of cavalry in particular, have lately become of great importance and interest. At maneuvers scouting parties ride the entire night, outpost sentries remain on duty from sunset till morning, night marches and night attacks are executed, and certainly nobody will deny or dispute the usefulness, profit, enormous moral effect and success of cavalry night actions.

During the night the greatest impediment to cavalry actions, the gun and rifle fire, does not exist and the cavalry has only to watch for locality and wires. But locality can be studied and wires cut (our lances have already special nippers adapted to that purpose). The chief question is to train men and horses for action in darkness. During the last campaign many detachments were perfectly drilled in that respect and executed many daring and successful night operations. This must be continued.

Night drilling of cavalry must be executed in strict conformity to a system, at least once every week, during the whole year. One needs to get accustomed to darkness and it takes time to overcome the feeling of uneasiness and discomfort, to be able to carefully estimate time and distance, to be prepared for aggressive action. Horses are easier to train to it than men. They move on very willingly and cautiously, provided the rider does not impede by keeping the bridle reins tight.

First of all, the men must be carefully selected; only such as have keen sight should be employed in night actions. Next, they must be trained to be attentive and able to ride on any ground, good or bad, and to be careful in relying only on themselves, not, as we see it often done, being constantly warned by seniors.

* Translated from *Voenny Sbornik*, by Captain N. K. Averill, Seventh Cavalry, military attache, St. Petersburg, Russia.

The training of horses in this respect is not less important.

In establishing the order of work of a squadron, one day in every week must be given to every one for night training, viz: Those rides must be calculated so that every soldier should have his turn of a night ride once a week, for one to two hours. At first it will be simple rides, later with some given aim (scouting, attack, etc.), and in summer in crossing rivers also.

The nights for such rides must be fixed in advance, so that there can be no choice of weather or moonlight; it will be good or bad luck, rain, storm, snow or fine weather; the date fixed in advance being an element of chance and nearer to fixed conditions. The time for the ride must not always be the same, eleven o'clock, midnight, one, two or three o'clock, etc.

The officer will have to choose the locality in day time and form for himself a plan how and where to lead his men during the night. The first rides must be over easy ground; if possible the formation must be in line of skirmishers or on a road in column of threes (the column of march of the Russian cavalry); absolute silence; no smoking; strict attention are essential; the gaits alternate. On coming back to quarters, immediately interrogate the men on what they may have observed. Corporals and sergeants should be trained to act as leaders, the officer keeping well away from the party.

This seems to be very easy, but it will take time, and even much time, before men and horses get used to move in dispersed formation, silent, attentive to locality, in darkness and bad weather.

When the first difficulties have been overcome, terrain with obstacles will be chosen, ditches, fences and such like. Then, after a certain amount of experience has been gained in the more difficult rides, the training will be continued with various incidents, resembling a real campaign, *i. e.*, one squadron will prepare ambush for another, etc. This can be continued in northern provinces until the country is covered by a deep snow, allowing runs only on skis. Ski-runners will play the scouts and lead the horsemen, showing them practicable roads.

As three-fourths of the success of a cavalry attack depend on horses, the latter will require also certain training. The following is very good practice for the horses: Half of the squadron will carry bags of oats to a certain point on the road, the men dismount and fight on foot as infantry, firing at the other half of the squadron, which advances across open country and has to reach the road after passing over ditches and pits. On jumping on to the road, the riders run into the crowded "infantry" which must treat the "enemy's" horses with oats, patting and carressing them. By such means the horses get used to attacks on infantry.

We must keep in mind the details of our Cossacks' ride on Jacou and must try to repeat similar actions under similar conditions, arranging night operations of attack and defense by dismounted squadrons, making two squadrons act one against the other. One will drag Maxim guns, dismount and simulate the gun's action by flashes of light from electric pocket lanterns and by rattle noise; the other will execute an outflanking movement and attack mounted.

It is absolutely necessary to learn easy tactical maneuvering during action on the battle-field; in the Russian-Japanese War we expected too much from direct attacks and paid no attention to skillful maneuvering. This error has to be corrected day and night by the constant pushing of our cavalry to independent action.

A most important training is the transmission of orders and verbal messages. It will be very useful to proceed thus: One officer with a platoon will ride off to ten or twelve versts distance from the point where the bulk of the squadron remains with another officer. But officers will regulate their watches very exactly. Stopping at some place, the first officer calls out one soldier and tells him, so that the others can not hear, the substance of a report to be made to the officer who remained with the squadron, and then sends him off, noting the time of departure. Ten minutes later the officer sends another soldier with the same verbal message, which he will have prepared in writing in order that it be exactly the same. Again, ten minutes later, a third, and so on until the last. Then he returns himself.

The officer receiving the reports will thus obtain the most interesting data on this kind of competition as to: The ability of his men to note and understand certain peculiarities of locality; their ability in orientation; their skill in sparing the horse; in intelligent transmission of the verbal message. Comparing the time of departure and of arrival of the men, the officers will be able to judge and note: First, rapidity of execution; second, condition of the horses; third, transmission of message, that is if it is word for word; if text is slightly altered, but yet comprehensible; if it is altogether confused and quite incomprehensible; or if it is quite false, etc.

By comparing these notes after a series of experiences, the squadron chief will be able to sort out the men most intelligent and skillful; select a contingent of useful scouts, note such soldiers as deserve distinction, such who will prove to be most reliable, such in whom daring and quick execution are prevalent.

It is useless to say that the habit of night operations once acquired may be easily lost. Therefore the training must be constant. We must bear in mind the appearance of the new enemy, the aviator-scout. Mind also the night signaling, which has to be learnt.

THE EVOLUTION OF THE IDEAS CONCERNING THE ROLE AND EMPLOYMENT OF CAVALRY.*

BY COLONEL AUBIER. FRENCH ARMY.

I.

THE evolution of ideas concerning the role and employment of cavalry constitutes assuredly one of the modern military questions that have brought on the longest and

*Translated from the French (*Revue de Cavalerie* of June, 1910) by Lieutenant William H. Anderson, Thirtieth Infantry. Furnished for publication by the Secretary War College Division, General Staff, U. S. Army.

the most ardent discussions, not only in the army but also in Parliament and throughout the nation as well. And, in consideration of the somewhat minor part played by the cavalry in recent wars, in and out of Europe; in consideration of the ever increasing power of armament and the progress of ballistics, many writers and many thinkers have asked themselves this question: "Has not this arm, whose action depends almost entirely upon moral effect and shock, has it not become an engine not only costly, but also of little worth, has it not been condemned to see the day when the stronger and more reasonable utilization of automobiles, dirigibles and aeroplanes, will confine its use within very narrow limits and will reduce the art of war to a mere operation of material forces."

No problem appears more serious, for the way in which we pretend to solve it depends, in a great part, upon the way in which we shall regard future wars and upon the relative importance that we shall attach to material factors during those wars.

Between those who believe in the possibility and the efficiency of the intervention of cavalry and those who do not, there is a profound abyss, separating those who consider war to be a simply brutal weighing of two quantities and of two systems of armament from those who think that far beyond the influence of numbers or of ballistics soars the sovereign power of the moral element and of the sudden fluctuations of the human heart.

Essentially productive of movement, emotion and surprise, this arm, from its very nature, is found to be the one that most clearly places the moral problem in face of the scientific problem.

Though the particular tactics of the cavalry are but slightly connected with general tactics, the question still acquires an unexpected significance and breadth, when we perceive upon what a jumble of ideas and uncertainties it depends. The relative value of one arm is no longer the matter of discussion; the whole psychology of war is at stake, the terrible specter of the battlefields of tomorrow looms before us.

* * *

These primary considerations impose the obligation of entering straightway into the very meshes of the subject and of winding up, without further delay, this question of principle that dominates the entire debate; of ascertaining if really the tactical capacity of cavalry is merely tributary to the various other armaments and inversely proportioned to the ballistic capabilities of fire arms.

Of course the cavalry, like other branches, has felt the inevitable effects of the progress of ballistics, and no one would dream of disputing that in proportion as the effect of fire has become more powerful, just so the lines of approach, the attack and the assault have required either a longer period of preparation or a greater element of complete surprise.

We now come to a phenomenon of a *general order* which appears to have had a particularly decisive yet less exclusive influence upon the power of the intervention of cavalry. All authors who have tried to establish this correlation seems to have reasoned with theories rather than with facts. Historical inquiry cannot demonstrate it; otherwise it would be difficult to explain how this arm could have rendered greater services under Frederick and Napoleon than under Francis the I. or Louis XIII.; how the repeated charges of Prussian cavalry at Auerstadt could not break Davoust's infantry armed with flint-locks, when at Marengo the eruption of a few squadrons of Kellerman's cavalry put to flight masses of infantry which, up to that time, had been victorious; and how at Custozza, where the effects of fire were infinitely more powerful, a single charge of the Pulz brigade completely tied up an Army Corps.

On these occasions, as on many others, the relation between efficiency of fire and cavalry action seemed only to confirm their complete independence; and we shall have occasion to see that, in the most recent wars, it was certainly not the heaviness of fire, but more often a disregard of its own ability that paralyzed the play and the action of cavalry.

The dogma of the impotence of this arm is, therefore, a matter of opinion principally and has no premises founded on experience; now everyone knows the value of purely theoretical opinions. Did we not see in the recent war in

Manchuria, Prussians and Japanese reduced to making attacks at the point of the bayonet, when the utter impossibility of such contact had just been mathematically demonstrated!

In reality the problem is quite otherwise, is much less simple and much less scientific than is generally supposed.

Beside the ballistic factor, there is the moral factor; besides the rifle, there is the rifleman. And in the turmoil of battle the elevation of the piece is at times so completely deranged because of the nervous depression of the man, that flintlocks in the hands of certain men are of much more value than repeating rifles in the hands of certain others. On the field of battle we have the concrete case, which escapes all laws of theoretical deduction. The concrete case, that is to say, the combination of such and such immediate circumstances as cause the efficiency of material force to vary from zero to infinity.

We cannot conclude a general rule from one concrete case; and they, for example, who wish to deduce an absolute proof of the *omnipotence* of fire, from the repulse of the Prussian guard at St. Privat, are deceived in the same manner as they who, from the episodes at Chellala and Dogali, have arrived at the *impotence* of fire. St. Privat is one case, Chellala another, and Dogali still another, and all three very different.

In the first we see cool and energetic riflemen stopping a crack troop whose attack had been badly prepared. In the other two, on the contrary, surprised and frightened riflemen cannot, in spite of their perfect arms, resist the onslaught of undisciplined bands, armed with old guns, pikes and shields. At Chellala we have a prolonged and useless fusillade, thousands and thousands of bullets sent into the air; at Dogali we find fear paralyzing the riflemen to such a point that they cannot use their own guns.

Therefore, it is on these contingencies rather than on statistical prediction that we must count in time of war.

I would not insist upon standard examples, but I think it indispensable, nevertheless, in order to put the question in its proper field (in the field of battle realities and not of

polygonal calculations) to exhibit just a few documents in support of the fragility of theoretical deductions on the one hand, and of the duration of moral factors on the other, factors that prove most often to be quite independent of the intrinsic value of the rifle, while their connection with that of the riflemen appears very close and direct.

For this reason I shall borrow examples, some from old and hardened troops, and some from young and undisciplined levies.

First of all, here is an episode taken from the unpublished correspondence of a young officer of the latter days of the Empire:

"We are at Wachau, October 16, 1813. It is the evening of the battle. The second lieutenant of the Calendar Cuirassiers (father of the present general), who had been separated from his regiment, rejoined our lines, followed by a few troopers. He proceeded towards a square of our infantry that seemed to be resting at order arms. Just as he approached it the major cried to him: 'Go to the rear, sir; we are about to receive a charge of the cavalry.'

"The young officer threw himself in rear of the square and witnessed this spectacle, which he was never to forget. A regiment of Prussian cavalry galloped up to within a few hundred meters, while the little square of infantry continued to remain immobile, impassive, butts on the ground. Not until the charge had arrived within a few paces, almost on the points of the bayonets, did the major speak, when calmly and coldly he gave the command, aim! fire! Every bullet carried true and one volley sufficed to stop the charge."

Let us transport ourselves now to a period and to battlefields that show the most complete dissemblance to those of the Napoleonic period.

After the battle of Gettysburg, the three-days battle of the Civil War, there were surrendered between the 2nd and the 4th of July, 1863, troops undoubtedly inexperienced, but young, enthusiastic, and I may add perhaps less disciplined, but less impressionable than those of Europe.

The official report of the head of the War Department of the United States of November, 1864, recounts that "on

this battlefield 24,000 arms were collected still loaded, belonging to one or the other of the adversaries. One-fourth of these arms only were properly loaded. Half of them contained two charges. The remaining fourth contained from three to six. Some of the arms had received five or six balls for one charge of powder. In one smooth bore twenty-two balls were found mixed with powder."

Indeed these were riflemen who should have hardly dreamed of aiming or sighting a rifle.

Take still another example, so nearly legendary now that I would not have thought of it had I not searched it out beforehand as an example from life, to show to you one of the most frequent causes of the nervous fluctuations that derange all calculations.

Namely, the memorable, almost unbelievable charge of the three platoons of lancers of Captain (later General) Bechtoldsheim, made at Custozza against the first division (Cerule) on the left flank of the Italian army.

These three platoons debouching suddenly from Montecricole just as the Cerule division was about to assume the offensive, precipitate themselves with the most magnificent audacity and with an irresistible dash against the Forlì brigade, which forms the advance guard, turn a battalion, then a battery, then the brigade, and finally, by some sort of instantaneous contagion, they throw the entire division into disorder, which has to be rallied several kilometers in rear at Valleggio.

It is true that while returning one battalion that had been re-formed fired point blank upon those brave troopers, who left eighty-six men and two officers upon the field of honor; seventeen, only, among them the chief, survived that glorious charge. But the Cerule division was entirely disorganized and demoralized at this point, so that it could not be re-formed until evening.

What is the psychological phenomenon that brings on such moments as these? Ask Bechtoldsheim for the answer. He has given it in an article published by the *Revue Bleue* in the number of the 2d of October, 1897. This answer I desire you to hear above all things:

"Listen," said he to his interrogator, "the Cerule division left Manzambano at 3 o'clock in the morning, and at 11 o'clock I had it routed completely. It had marched eight hours without rest, not at the ordinary pace to which troops are accustomed, but at that enervating, killing gait of the battlefield, against accidents, blows, forever waiting to attack or not to attack. When troops come to this stage they no longer guard themselves, they do not even think of doing so."

Now compare this episode with the reflections that took place in the mind of Vonder Goltz, when he viewed the battlefield on the evening of Vionville:

"The forces were decreasing," he cried, "as they advanced across the meadows and the ammunition was being exhausted. Many officers had fallen.

"And those who were directing the advance kept asking themselves: 'What if a mass of the enemy's cavalry should appear on our flank and pass over the battlefield like a tornado?' It would sweep away the debris of the infantry without any trouble."

Those who have been in actual service understand perfectly what such moments are like; they know that the time often comes when the most energetic and the best tempered men have to make superhuman efforts to stay awake, to remain conscious. When such lassitude overcomes troops, they are at the mercy of the slightest incident.

Cavalry, more than any other, is the arm productive of such incidents. The commander who remembers how to make resolute use of it at certain times, especially toward the end of a battle, will be able to obtain considerable tactical results for a long time to come.

So that, without being paradoxical, we might conclude from these suggestive comparisons that the role of the cavalry has grown greater in proportion as the old troops have given way to new and modern arms, and that, in order to let it resume its glorious work upon battlefields of the future, it will suffice simply to do and dare.

To finish this question of doctrine, I desire to select an

example from the Boer War, which, by the way, elaborates exactly the dogma of the pretended failure of the cavalry.

We shall see that it was only necessary to place at the head of the much decried English cavalry, a commander capable of taking full value of its precious advantages of mobility and speed, in order to cause it to suddenly become the one arm that with a single blow, shattered all resistance and terminated magisterially a campaign which, up to then, had been so laboriously conducted.

At the beginning of the year 1900, after the disasters of Maggersfontein, Colenso and Spion Kop, the situation of the English in the Transvaal seemed to be one of serious compromise. All their generals had successively undergone defeat; Kimberly and Ladysmith had been blockaded; their best troops had become decimated and demoralized; and only the latent energy and bull-dog tenacity that characterize this people remained to keep them from despairing of success.

If these developments astonished the world, the way in which those Boer farmers fought and checked a large army, solidly and richly organized, did not cause less surprise.

Being, as they were, hardy troopers and expert shots, they knew how to exploit these two qualities simultaneously against adversaries who, it must be recognized, had never attempted to operate against a mode of warfare which consisted in repeated efforts to take the enemy's columns with sudden fire, forcing them to deploy, and then, after having done the greatest damage possible in shunning the inevitable engagement, by galloping off to repeat the same performance at some other point. Altogether, it was a triumph for mounted infantry to have known how to unite the power of mobility with that of fire, and to have realized the futility of struggling against a stronger and superior enemy.

This condition lasted until the day that the army was put in the hands of a commander, and its cavalry in the hands of a cavalryman.

When Lord Roberts took command of the reinforced English army, in January, 1900, he made up his mind from the very first not to deliver attacks by main strength against ambushed sharpshooters, which, in spite of superiority of

numbers, had always ended either in complete disaster, or else in uncertain and bloody success. In place of this costly and cruel method of combat against an unapproachable enemy, he resolved to substitute strategy.

Instead of attempting to take Kronje in his intrenched position at Maggersfontein, he caused him to evacuate it, by cutting him off from Bloemfontein, and at the same stroke forced him to raise the blockade of Kimberly.

For such a decisive move, a powerful and at the same time quick moving instrument was necessary; and for the first time in this campaign we see a corps of cavalry organized and put into action; three brigades, one consisting of six, another of three, and another of two regiments, making a total of eleven regiments of cavalry, supported by five horse batteries, and two strong detachments of mounted infantry: Total strength (effective strength very much reduced) 3,000 troopers and 3,000 infantry and artillerymen.

From Ramdan (where this corps of cavalry concentrated on the 11th of February) to Kimberly is a distance of ninety-five kilometers on an air line; considering the inevitable detours we could call it 120. Two rivers, the Riet and the Modder, guarded by covering detachments from Kronje's army, had to be crossed. These rivers, much the more because of the combats to which their possession would probably give rise rather than because of lack of water in the plain, determined the first ranges for French's artillery.

The dispositions for the march were quite as skillful as they were simple. Two strong advance guards, or better, two strong screens, each consisting of one brigade of cavalry with a few guns attached were directed, the one toward the ford at Waterval-Drift, the other toward the ford at Kills-Drift. The third brigade of cavalry, all the mounted infantry, and the remaining batteries marched in rear of the center of this advance screen. Each brigade was to reconnoiter its ford and to seize it if possible. The main body, informed in time, moved to the ford in air, the one most weakly defended. The operation succeeded fully.

Having departed on February 12th, at 2 o'clock in the morning, French marched slowly and with the greatest of

precautions until dawn. At 5 o'clock he increased the gait, and at 11 o'clock he had captured the ford at Kills-Drift, camping on the right bank of the Riet. The same sort of a ruse on the following day, February 13th, gave him possession of the ford at Klipt-Drift on the Modder.

The first mission of the cavalry was ended; it had opened the route to Bloemfontein. Waiting until the infantry should have arrived to hold the fords, he set out two days later, the 15th, to accomplish the last and most difficult part of his task; namely, the raising of the blockade at Kimberly.

It was a critical moment; for any hesitation, any delay whatever, would expose the plan to Kronje and give him time to rally his forces.

From the Modder to Kimberly is a distance of hardly forty-eight kilometers; but the horses were exhausted and hungry and incapable of moving, for any length of time, at an increased gait. The men still impressed with former reverses, lacked the confidence that is indispensable to a deed of daring; finally, between the point of departure and arrival, waited Kronje's army, strongly established between Maggersfontein and Alexandersfontein; while, upon the numerous kopjes which bordered the route, detachments of those redoubtable marksmen lay hidden, the memory of whom still haunted the English troopers. In short it was like battling with a terrible unknown foe.

At this point let us leave the talking to the historian of that brilliant deed of arms, to the much regretted and remarkable military writer, G. Gilbert, who died precisely at the moment when he was about to put the last touches to his work, so detailed and so conscientiously prepared.

"The field of Alexandersfontein which we are about to penetrate," he writes, "is a vast arena two leagues long and five kilometers wide, extending from the south-east to the north-west between two chains of sand dunes. Toit's troops occupied the kopjes bordering the plain on the east and on the west, and those that commanded its northern boundary; there he had established his artillery which was able to

afford a strong cross fire. The dilemma seemed formidable and the least hesitation would compromise everything.

"French plays his part in a way that does him honor. He sends three batteries and the mounted infantry against the enemy's wings to mask and carry these positions. In the center he forms the first line, with two regiments of lancers and the Scots Grays, and orders them to charge; behind them, the other squadrons deployed with intervals of eight to ten meters, advance at a trot. So they speed across the entire plain in a cloud of dust, under the fire of artillery and of rifles, which is rendered almost inoffensive on account of the rapidity of the movement. At the farthest edge they encounter a natural obstacle which stops the charge for an instant and permits the enemy to carry off their artillery, but they flee all along the line, in front and on both flanks. The impetuosity of this rapid march of sixteen kilometers and the final gallop have completely disconcerted them. It is a veritable surprise and Kronje has no time to reinforce his blockading corps. He knows nothing but that he has lost the fight and that the chain enclosing Kimberly is definitely broken.

"At the extreme northern end of the plain, the division runs into Villier's farm which affords a little drinking water; the men are able to drink, but not the horses, and after a halt of one hour, the troops are rapidly formed in column in the direction of Olifanfontein; eight kilometers are then covered at a trot; the horses, exhausted, dying of thirst, fall by the hundred, especially those of the artillery; still it cannot be helped, for this is not the moment to stop; they are now but five kilometers from Kimberly, and already have entered into communication with the defenders by a chain of messengers. The Boers in position at the north of the city, fire a last shot from their long-toms and fall back in turn. Kimberly is delivered after a siege of twelve days. The same evening French makes his entree. This great success costs him but seventy men; however, more than 1,500 horses strewed the path that had been so rapidly passed over."

The rest is known—how Kronje, disabled and thrown out of his bearing by this maneuver as daring as it was impressive, and realizing that the morale of his men had been irremediably shaken, decided to abandon Maggersfontein, and then how, through fear of French's cavalry, he retreated precipitously toward Bloomfontein, ending his course by foundering miserably though heroically in that narrow pass of Paardeberg, which marked the tragic threshold upon which the former successes of the Boers expired and the conquering march of the English columns began.

Indeed, it was the cavalry who fought the deciding battle, who struck the final blow. And that, too, by one of those audacious moves that would have been condemned without further appeal by the critics of maneuvers.

What! Hurl 3,000 cavalymen out upon a course sixteen kilometers long, across sand dunes occupied by cannon and rifles! Charge in the midst of shrapnel and rifle bullets! Why, that would be absolute silliness! Of a truth, yes, there was shrapnel, there were rifle bullets, and the Boers were the best shots in the world! But none the less, this whirlwind of squadrons swept past, leaving behind only seventy men and a few hundred horses. While at a single stroke all the covering detachments, all the fine positions of the Boers were rendered thenceforth useless. It was, therefore, not numbers, nor cannon, nor rifles that in reality vanquished the Boers; it was, after many attempts to evade the fact, a decisive maneuver, a cavalry event, an event that baffled all known rules of offensive and defensive tactics based solely upon blind faith in the unlimited power of fire. The Boers were good shots and not good soldiers. They succeeded as long as they were opposed to adversaries who confined themselves to fighting with the same methods in which their own superiority was established. They fell as soon as a tactician came forth who was capable of avoiding their methods. Thus, in face of the unlimited growth of ballistic forces, the cavalry continues to confirm the existence and the superiority of moral forces.

The higher law is still in vogue and dominates; and it is useless for the cold calculations of mathematical theories

or the entirely superficial aspect of maneuvers in time of peace to attempt to veil them from everlasting light.

Now if I have insisted on recalling these two feats of prowess to your mind, accomplished, as they were, under truly exceptional circumstances, it was only to demonstrate for you their very special character, and to destroy one more of those commonplaces which, too often, have the force of law.

It is not, in truth, a frequent thing to hear the value of a single arm judged by the coefficient of the losses which it inflicts, or by the percentage of dead or wounded that it produces?

Certain it is that in the examples I have just cited, neither Bechtoldsheim's squadron at Custozza, nor French's cavalry at Kimberly ever killed or wounded any one with their sabers, or even approached doing so! Yet they obtained noticeable and decisive tactical results.

Obtain tactical results. This is the only criterion by which to judge the value of any arm as an instrument of war. This is the elementary truth that the greater part of those who set themselves up as judges of the cavalry have never been willing to comprehend. Have we not all read these surprising statistics which, in comparing the losses produced by bullets and by sabers, are cited as a precedent in order to praise such and such a tactical advantage of the cavalry. One might do well not to come to a preëmptory conclusion either of its impotence or of its uselessness.

Indeed, who could have a conception of the principles of warfare so primitive and so narrow as to imagine that the role and the tactical capacity of cavalry is measured by the number of individual deaths that its saber inflicts? The five or six hundred troopers of Kellerman, who, at Marengo, routed the long columns of Austrian infantry; the eight squadrons of Pulz's brigade who, at Custozza, charged a number of times and forced the Third Italian Army Corps to stop still for several hours; Bredew's six squadrons who, at Vionville, arrested the attack, just begun, of the Sixth Corps; did all of these produce really serious losses by their sharp action alone? Certainly not—and what matter! They obtained great tactical results. By such acts they gathered

the fruits of long continued efforts and spared their armies many another sacrifice.

Out of regard for these positive results, has any one the right to invoke the depreciating spirit of calculated losses or to juggle before our eyes the specter of death? The philanthropist ought to be on our side. The soldier, by profession, in made to face death. And the cavalryman, more than any other; for, "if the infantry *walks* into danger, the cavalry *runs* into it."

Infantry and artillery are menaced in the same degree as we by the growing power of fire arms, yet do these arms renounce their tactical role for that alone, or better, does the cavalry make the strange pretension of attaining its purpose without leaving, along the route, its sacrifice to success?

Let us discard then, once for all, these diltory considerations, those discussions that apply to ancient combats in which the troops, colliding against shield and sword, had to measure their success by the figure of their losses. This undoubtedly is not an indifferent figure, for there are certain times and certain places where it may have its immediate effect upon the morale of the troops. But in the resolutions to be taken and the settling of the end to be obtained, especially for us cavalrymen, the tactical idea, the idea of our sudden entry into action, being able to obtain results profitable to the execution of the whole maneuver, is the only law that we should obey.

I cannot insist too much upon this point, gentlemen, for it surely strikes the characteristic note of our best action; we forget too often that, from the possibilities of speed, we are essentially an arm productive of surprise, of sudden events, of disturbances of equilibrium, an arm susceptible of begetting, at the critical hour, moral crises such that suddenly, the troops that uneergo them, slide away as if they were upon an inclined plane.

At such moments as these, it matters little whether the troops are armed with repeating rifles or with flint-locks; they no longer think of using them.

If, by mere contrast of these classic examples taken from periods and circumstances so different, I have succeeded in

bringing to light the teachings that they comport, then I may hope to have demonstrated for you experimentally that speculative theories may sometimes establish a sort of correlation in which the potential qualities of cavalry are inversely proportional to those of fire arms, and also that actual occurrences prove the extreme fragility of this relation, since it was sufficient for one battle and one commander who knew how to make proper use of it, to show that the cavalry was still a power in war and that it still exhibited great tactical possibilities. Moreover, the history of this arm is as disconcerting to theorists as it is comforting to soldiers; because it shows absolutely that, far above the influence of ballistic formulæ, the moralelement lives and reigns, and that the cavalry, in spite of the progress of firearms, will still be able to do great things every time that it has at its head commanders who will use it, and in its ranks, soldiers resolute not only to defend but to vanquish.

II.

The ground is now cleared of rubbish and the question directly put. Proof has been given that ballistic factors are neither intangible nor sovereign; that moral factors, and consequently the cavalry which is a living expression of them, still preserve and always will preserve a decisive influence upon the issue of battles.

We are, therefore, authorized to seek elsewhere than in the changes of firearms for the real cause of the growth or the decadence of the cavalry, and we shall ascertain the necessity of attributing it more especially to the good or bad employment that commanders-in-chief and its own commanders have made of it at various epochs.

In order to undertake this examination we need a base, which will act as a point of support and at the same time serve as a guide. This point of support and this guide must be taken in our own domain, in a medium appropriate to our temperament and to our race.

I shall do as we all do, turn again to that model of all models, I shall refer to one who in modern military history

remains incontestably master; to one who knows best of all how to dispose and to combine troops and how to draw the maximum efficiency of service out of them; to one who was not only a great organizer, possessing a masterly conception of the disposition of the general whole down to the arrangement of the minutest detail, but also preëminently a trainer of men, a battle leader; to one who was the most unerring of strategists, and the most skillful of tacticians; at the same time a psychologist, a mathematician, and an artist; to Napoleon.

Let us go back now one hundred years and look at the cavalry of the Grand Army which has left a trail in history so bright, that in spite of its remoteness and the shadows projected upon it since, its trace can not be obliterated.

One hundred years ago was the year 1810, which, if not the zenith, at least marked a point of tangency of the till then ascending curve of the First Empire, a point of transition between two epochs; one in which material and moral forces had not ceased to expand, and another in which they were beginning, by the very excess of the tension, to bend.

One hundred years ago was the Grand Army: That army of which all others will never be anything but a pale reflection, powerfully organized and concentrated, endowed with an incomparable fighting spirit, passionate for glory, which under the marvelous leadership of the greatest captain that the world has ever known, marched triumphantly across the whole of Europe as if on its own maneuver grounds.

What now was the nature of the cavalry of that army, the legendary cavalry of the pursuit of Jena, of the charges of Eylau, Nasling and Wagram? What was it, not only from the point of view of organization and tactics, but also from the point of view of morale? A rapid glance will explain all.

Let us look first at its effective strength: The decree of the 24th of September, 1805, had fixed its composition at eighty regiments, fourteen heavy cavalry, thirty-six dragoons and twenty-six light cavalry.

These regiments consisted of four squadrons of two troops each, and each troop of 100 to 120 troopers; in round

numbers, 65,000 cavalrymen for a body of 345,000 men, being about one-fifth of the total strength of the army.

This proportion is today reduced to one-eighth. But Napoleon did not judge this even to be sufficient, and from the year 1807 on he continued to press the director of the Department of War, M. Dejean, to arrive at a figure of 80,000 troopers.

"If I could put as many men in the cavalry as I desired," he wrote, "I would never be deferred from carrying regiments of cuirassiers and dragoons of 1,000 men each, and regiments of chasseurs and hussars of 1,200 men each, forming four squadrons of 300 men."

The total effective strength of the cavalry was to go on increasing until it reached 100,000 men in 1812.

How was this cavalry organized and distributed? We are touching here upon a delicate point. You are not unaware of the fact that at present our cavalry is divided into two essentially distinct parts; one consisting of independent cavalry divisions; the other of brigades attached to army corps. Neither are you unaware of the fact that this double organization has given and still gives rise to discussions and criticisms upon which at this point I do not care to pass.

Whatever it is, there was nothing similar to it under the First Empire. Cavalry is a unit, and if in time of peace it is territorially attached to army corps for purposes of instruction, it is under the direct authority of special inspectors.*

But a time of peace was not exactly the normal state under the First Empire. That which interests us particularly is the division of the cavalry among the armies. As we shall soon understand the flexibility, the plasticity and the efficiency of the system adopted by Napoleon.

In fact there is absolutely nothing fixed or immutable about this system; it is not the result of a theoretical ready

*Otherwise, about the same as what we had before the inspectors general of cavalry districts were suppressed, among whom were divided the inspections and instructions of the cavalry attached to army corps. The same things exist in Germany, where all the cavalry except the guard is attached to infantry divisions but is under the direct orders of special inspectors.

reasoner, but proceeds from the variable and practical necessities of war.

At the beginning of the campaign, the Emperor attached to each army corps a force of light cavalry, of a strength varying according to the duties that devolved upon it; the attachment itself was not definite and was often modified in the course of the campaign, particularly on the eve of a battle.

This done, Napoleon reserved the rest for himself—the lion's share—grouping it into an immense cavalry reserve, counting not less than 100, 150 to 250 squadrons.

The outline of this lecture and the time at my disposal do not permit me to enter into details, but those of you who might have occasion to examine into the archives of the ministry, the situations, and the various dispositions of the Grand Army would ascertain, for example, that in 1805, the First Corps (Bernadotte) had four regiments of cavalry; that the Second and Third Corps (Marmont) had three; that the Fifth and Seventh (Lannes and Augereau) had only one; and that the cavalry reserve, under the command of Murat, had 128 squadrons.

These variations are more considerable still in the following campaigns: In 1809, the corps of Bernadotte and Lefevre have fine regiments of cavalry; those of Cudinot and Massena have but half a regiment; the cavalry reserve consists of 170 squadrons.

It is true that we must not understand this expression "reserve" in the restricted sense of forces reserved for the climax of battles—but in the very broad sense of the reservation of unengaged forces from which one may borrow according to necessity.

Then, again, these first apportionments were modifiable and modified according to circumstances; frequently in the course of the same campaign the Emperor had recourse to the reserve in order to increase such and such a corps, or *vice versa* to the cavalry of such and such a corps, to enlarge the reserve—or yet simply to allow fatigued regiments to rest.

The cavalry of the guard alone remains intact and is a reserve in the real sense of the word.

It is, in short, an apportionment dependent upon circumstances and natural motive, substituted for a proportionate and schismatic distribution; one in which the principle of adaptation fills the place of formula. It is also a matter of concentration and economy of forces, only strictly necessary detachments being made and the remainder left in the hands of the chief. Nothing is lead astray on vague or inexactly determined missions; everything used is for a particular duty and for a precise purpose.

In line with this same spirit of practical selection, and in order to produce the maximum efficiency in each element, Napoleon required a complete specialization of the three classes of cavalry.

The autonomy of these classes constituted in his eyes an almost intangible dogma. "I desire," he writes to the Minister of War, "that you consider the cuirassiers, the dragoons and the light cavalry as forming three different branches, and that you never recommended cavalry officers to me to be passed from one branch to another." And to Murat: "I am pained to see that the light cavalry and the dragoons have been mixed; these are two different arms." In fact Napoleon is never willing to employ any but the proper persons and those best prepared to render the desired service.

Therefore we shall elaborate and further exploit these qualities, these aptitudes and these specialties.

LaSalle, Colbert, Pajol, Curely, Meda, Mathis, Parquin, Pire, as well as Stengel at one time, are wonderful officers of light cavalry. D'Hautpoul, Latour-Naubourg, Nansouty, Caulaincourt, are incomparable captains of the reserve.

Each is in his place and each performs his particular duty; light cavalry is the proper, and consequently the class employed to furnish detachments of all kinds, to perform the duties of advance guard, of reconnaissance, of information and of communication, because it is more easy of movement and because its dispersion is less prejudicial to the ordinary work and to the general strength of the implement—cavalry. "Light Cavalry," he writes, "must reconnoiter far in front of the army; it is necessary in the advance guard, in the rear guard and on the flanks of the army."

And still further: "If the light cavalry is to form the advance guards, it ought to be organized into brigades and divisions in order that it may be able to maneuver."

To maneuver does not mean to go through the evolutions of the drill ground, it means to advance, to retire, to threaten, to shun direct engagements, and to take dispositions proper for reconnaissance to harass and delay the enemy, all of which required of commanders, great boldness and a quick eye to grasp the military situation, and of the troops great speed and great freedom of movement. It means to stick to the present purpose and to pursue to the very end.

On the other hand, the heavy cavalry is deliberately held in reserve for the greater effort and for the decisive movements. It is the steel hammer which at the proper time will break the enemy's attack or shatter his last efforts of resistance; it must neither be frittered away nor used for distant excursions. It remains a unit, both morally and materially, always ready for coherent and massive action.

For this rough work, moreover, there is no need of chiefs to have the same knack of enterprise and sometimes of strategy that is required of leaders of raiding or reconnaissance parties. What is desired is trainers of horses who have the gift of conducting these intrepid charges that cannot be resisted.

Seldom did there not occur, in all of Napoleon's great battles, a certain moment which might be called "the hour for the cuirassiers." This hour rang at Eylau, at Essling, at Wagram, at Borodino, at Waterloo, and each time it was the signal for the decisive charge, for definite success—or for death. It was at the hand of the cuirassiers that d'Hautpoul fell at Eylau, Espagne at Essling, Montbrun and Caulaincourt at Borodino.

Between the two extreme classes so specialized, the Emperor had a third, called the dragoons, real cavalry of the line, mixed cavalry, adapted to supplement either of the other two in case of emergency; having the mobility necessary to follow close to the light cavalry, and the strength sufficient to protect and support it, and to even take the place at times of the reserve cavalry; having the aptitude

desirable for accompanying the infantry and, in case of need of taking its place. "The dragoons," he writes, "are necessary as supports to the light cavalry acting as advance or rear guard, and on flanks of the lines."

A division of 2,000 dragoons that can be carried quickly to a point on 1,500 light cavalry horses, is able to dismount and defend a bridge, the entrance of a defile, a hill, a wood, and to hold them until the infantry arrives. Think of the advantages that this arm would have in a retreat!

Then, too, it very often happens that a division of dragoons has to act as a support to a brigade of light cavalry. Likewise a brigade of light cavalry has to perform the service of security and information for a division of cuirassiers. The dragoons alone, being the least specialized, are expected to be sufficient unto themselves. At last, in his perpetual search after precision and clearness, in order to adapt the instrument to its use, Napoleon caused a fourth class of cavalry to be created, called infantry scouts, designed to exonerate the fighting cavalry from all service accessory and foreign to its action.

"The scouts," he writes, "will be attached to the infantry because the smallness of their horses (four feet six inches) will make them of little value for cavalry charges. There will be a squadron of 360 men (equal to two strong modern squadrons) to each division of infantry of 9,000 men; they will furnish orderlies for general officers, escorts for convoys, etc., and still enough will be left to form the several scouting detachments, and to occupy important positions where it would be well to have obtained previous information of the enemy."*

Applying this principle to its very limit, he endowed the cuirassiers and the dragoons with scouts in the proportion of one-sixth for the cuirassiers and one-fifth for the dragoons. "They would be employed," he writes, "in furnishing orderlies for general officers, escorts for baggage and for prisoners, they would serve as sharpshooters and scouts."

*This desire of Napoleon has just been realized in part and upon a still too narrow scale by the recent formation of infantry scouts.

In fact, with Napoleon the absolute autonomy of each combat unit was a religion. He never allowed any particular or any foreign service to enter into and restrict its operation; he never allowed it to be skimmed or drained and never permitted any combatant to be shorn of his own duties. No doubt the idea of the creation of the scouts had occurred to him naturally, the experience of his later wars, just when he was beginning to feel the lack of trained cavalrymen and after he had ascertained how many of them had been scattered about in accessory services.

Now that it has been properly classified and set aside within convenient reach, let us see how this cavalry will operate.

First, in its strategic employment in front and rear of armies.

Here again we shall find that same idea of precision and adaptation, that same disdain of ready made doctrines and speculative formulæ. Napoleon never let the conduct of his chiefs of cavalry be dictated by general theories or particular forms of initiative.

Never did he launch Murat or LaSalle out upon a vague mission of exploration or of security. He sent them to exactly specified places and they went; he described to them categorically what he desired, and they fulfilled it.

Not a system, this, not normal dispositions, not zones or distances theoretically fixed by regulations, but variable forces directed upon precise points for *precise ends*.

It would be superfluous here to recall otherwise than briefly the legendary circuits of Murat's cavalry and its performances in front of the army; its diversion on the Rhine, in 1805, and then, after the Grand Army had revolved around to Ulm, its flank guard mission: "You will," writes the Emperor to Murat, the 2d of October, "guard my flank during my march to the Danube, which is a delicate task; if the enemy decides to assume the offensive, *I must be apprised in time to make my decision, without being obliged to make the one that is convenient to the enemy.*"

Finally, after the capitulation of Ulm, when the Grand Army advances on Vienna, this same cavalry, taking the

front and supported by several entire divisions of infantry, successively and by great leaps, takes possession of the crossing points on the Inn, the Salza, the Traun and the Ips.

In 1806, thrown to the front soon after the passage through the Frankenwald, it moves rapidly to the line of the Saale, from which it sends reconnaissance parties all the way to Leipzig.

In order to get an exact idea of the preciseness of the orders given by the Emperor to his cavalry, we must recur to the commander-in-chief's letter to Murat, dated at Bamberg, on the 7th of October, as to the subsequent duties of the advance guard cavalry during the 8th of October, a letter that has been analyzed word by word by General Bonnal in his study of the campaign of Jena.

In this letter we shall find the duties and the purpose of each of the light brigades clearly defined and more clearly indicated still, the points that must be reconnoitered. Reconnaissance is not made a matter of accomplishing uncertain tasks of exploration in determined sections, but is made a matter of categorically answering a series of concise questions and of not giving room for ambiguity or misconstruction of them to arise.

Let us see, now, what methods and what processes were ordinarily employed by the cavalry of the First Empire, in carrying out its orders. Two words characterize them: *Audacity and force*. Confident of its own power, energetic and impulsive, it does not seek to deceive.

By saber cuts alone it intends to open the way. Reconnaissance expeditions generally take the form of large detachments or parties of fifty, 100 to 200 troopers.

These are not simply troopers selected at random, but are specialists, volunteers, almost always chosen at their own request, in which enters a very great proportion of graded cavalrymen. Each of these select men, because of his energy, his skill and his fearlessness, is worth five or six ordinary troopers. At any rate, a numerical superiority of the above proportion neither surprises nor frightens them. Every day we see these parties commanded by a Curely, a Meda, a Pire,

or a Parquin, approach detachments of the enemy four times, eight times, ten times superior in number, and destroy him.

Moreover, these parties are generally supported, at a short distance, by their regiment or their brigade; and the normal formation for independent cavalry deployed, or more exactly, drawn up in echelon, is telescopic.

The bulk of the cavalry is sent off in a body and the chief, keeping his heavy cavalry and dragoons near at hand, throws a light cavalry out in front. The latter, in turn, detaches a brigade and it is from this brigade that almost all reconnaissance parties proceed. Napoleon himself explained the principle of this mode of operation on the 25th of September, 1805, when he wrote to Lannes: "Order for Marshal Lannes to remain at Rastadt tomorrow, to extend to Baden, if necessary, and to send reconnaissance details of cavalry up to Wildbad. These details will set out before daylight. Three leagues will be covered by two regiments, two more by one regiment, another league by squadron, and another by a detachment of the best scouts."

Taking everything into account, we may be astonished that an entire brigade is drawn up in echelon in order to throw out a sounding line twenty-eight kilometers long. Yet it is the correct way to begin, the prudent way. And in order to pass judgment upon it, we must consider first the tactical situation, in that this reconnaissance is performed in mountainous country, through a sort of defile where it is necessary to organize a chain of supporting points; next the condition of morale, in that Napoleon was not sufficiently assured of the superiority of his young cavalry against the old Austrian and Prussian cavalry, the fame of which was at that time considerable.

This profound psychologist always reckoned with moral factors. Before Austerlitz and Jena, his dispositions were such as to make all his cavalry detachments numerically superior to the detachments of adverse cavalry. Later when he became certain that his cavalry was properly trained, he discontinued these precautions, and on the contrary, pushed it to deeds of extreme daring; but he came back to prudent

methods after 1812, after the disaster that engulfed the squadrons of the Grand Army.

And this change in itself, still further accentuates the necessity for rejection of the formulæ and the preconcluded systems that we have so often noted.

In any case, it must be remembered that, no matter how remarkable the deeds of the cavalry of the First Empire may have been in the domain of strategy, its most brilliant qualities, nevertheless, were not exploited in that domain.

On account of the specialization of classes, aside from its fighting temper and its disdain of ruse, after death had mowed down these remarkable light horsemen of the early wars, it was found difficult to replace them, and very often the cavalry was not conducted nor did not conduct itself in the same opportune and efficient manner as in the beginning.

It was thus, and it was an irreparable mistake, especially attributable to higher authority, that Grouchy, after the engagement at Ligny, lost contact with Blucher and did not even succeed in connecting with the Emperor's army at Waterloo. But then, outside of the guard, nothing remained, so to speak, of the light cavalry good for anything else than to charge straight ahead.

Of course this was the exception, the rule is that the Emperor, thanks to his cavalry and the intelligent use that he knew how to make of it, was always able to discover the plans of his enemy and to hide his own, to maneuver on known territory, and when he did operate against unknown foes to always force them to submit to his desires.

In coming to the tactical role of the Napoleonic cavalry, that is to say, its intervention in the battle action, we must bow our heads to confess and proclaim that no cavalry, at no time, and in no country, ever rendered more important and more splendid services.

Undoubtedly modern conditions of war will bring about many indispensable modifications in this powerful model, but before examining them we must understand exactly how the great captain divided and disposed of his cavalry for battle, what duty he attributed to it, and how it acquitted itself of this duty.

Above everything else let us consider the cavalry in the general scheme of Napoleon's battles. This scheme is too well known to require detailed explanation. It will suffice in order to trace the outline of it, to recall what the Emperor said to Gouvion Saint-Cyr, in 1813, at Dresden:

"Preference must not be given to any one kind of attack, but the enemy must be met in the greatest number of ways possible. After having sent our nearest troops into the engagement, they should be left to act without disturbing themselves as to their good or bad chances; only we should take great care not to accede too easily to the demands for reinforcements on the part of their commanders."

He added further, wrote the marshal, "that it was only toward the end of the day, when he perceived that the enemy had begun to jeopardize the greatest part of his forces, that he gathered together what troops he had been able to keep in reserve in order to throw out upon the field of battle a powerful body of infantry, cavalry and artillery; which, having been unforeseen by the enemy, produced what he called 'crisis' and that, in this manner, he had always been victorious."

No doubt this is the page that has so often been abridged into the lapidary axiom (which, for my part, I have never been able to find in the "Correspondence" or the "Memoirs of Napoleon"): "I start the battle everywhere and then I look on."

As a matter of fact, three principles stand out boldly in this magisterial picture: First, that of concentration, second, that of the general attack; third and last, that of final and decisive effort.

Of these three principles, the first and the last are carried out under the personal supervision of the commander-in-chief; the second, however, is relegated to subalterns, to the troops, so to speak. Napoleon never failed to make sure of the concentration and of the decisive effort, that is to say, he never failed to start and to end the battle; but, once begun and up to the moment when he judged that the time for the decisive blow had come, he let his lieutenants and his soldiers carry it on. This three-fold aspect of battle, of which the

median phase is the longest, and at the same time the most apparent, whilst the brief action of higher authority can only be perceived at a distance and after the blow has fallen has succeeded in deceiving military writers to the point of leading them to believe in the blind fatalism of chance, in the utter impossibility of directing the course of battle, once it has begun.

In all books that have been written on the battles of the First Empire, Napoleon is described as walking up and down behind the lines like an impotent and disinterested spectator.

Everyone, on the contrary, who had studied these battles, not only from a descriptive but also from a tactical point of view, has perfectly grasped the truth that his influence was manifested in two positive ways: First, in that he did dispose and divide the troops for the combat; second, in that he did reserve a part of the troops for the "crisis" and that this part—his own force, his own implement—he employed at the point and at the moment chosen by himself.

"His Majesty judged that the moment for the crisis which decides the gain or loss of battles had arrived.*"

In these initial dispositions, as in this final intervention, what role and what part did he attribute to the cavalry element?

In the first place, Napoleon does not admit that there are any special moments in the battle for the particular arms, artillery and cavalry.

No division into periods, or prologues, no duels outside of the general action. "Cavalry charges" he writes, "are equally good at the beginning, at the middle, or at the end of battles."

And in his battle formations, the cavalry is distributed so that it acts, not according to any fantastical desire of its own, nor yet to any preconceived formulæ, but according to his wish and to the immediate circumstances.

Consequently, for the tactical role, as well as for the strategic role, this disposition will not be conformably to doctrine, but to propriety. For the tactical role, as well as

* Bulletin of the Grand Army of the 9th of May, 1813.

for the strategic role, the different units (that is to say, in general, the army corps) will receive an amount of cavalry proper for the accomplishment of their particular tasks; the remainder he will group into one, two or three masses, which he will dispose and employ according to the situation and to the necessity. Furthermore, no matter what occurs, he will form a special nucleus of the cavalry of the guard, a sort of personal tool which will constitute his last reserve, otherwise very rarely used.

Let us add that this disposition, always with a view to energetic intervention, will take the cavalry very close to the line of battle. For, following one of his favorite maxims: "Tactically, the conservation of men is secondary; success only is important." He also desires the cavalry to be always near to its point of action. For this, he sacrifices willingly the consideration of losses and we are astonished, reading the *Memoirs of Cavalry Officers of the First Empire*, to find how often, as at Eylau, as at Borodino, that they were left exposed to artillery fire.

But in the last analysis we are obliged to acknowledge that humanity as well as tactics was considered. Because by this method, he imposed a more rapid march and a more prompt solution of the battle and of the campaign. In a single one of these charges, deadly but decisive, the cavalry of the First Empire produced more effect, and obtained greater results than twenty combats less bloody, perhaps, but partial, limited and indecisive.

The cavalry is always assigned to some particular part in the battle; it is divided and disposed conformably to this part, always very close to the first line, within immediate intervening distance.

The foregoing are deductions that can be evolved from an examination of the general whole. A few particular examples will demonstrate the variability of this disposition.

At Austerlitz, the cavalry is placed on the left flank of the line of battle: "The Grand Duke of Berg is ordered to instruct all his cavalry commanders to make their dispositions so as to re-unite on the left of the village of Gizikowitz."

Only the cavalry of the guard is held in reserve and at the center.

At Eylau, the cavalry is placed in the center; the cavalry of the guard is also at the center, but in rear and outside of the cavalry reserve.

At Friedland, the cavalry is no longer combined in one single mass, on the flank or at the center; it is subdivided into four groups, the most important of which (Espagne's division and Grouchy's dragoons) is put on the left flank.

These examples are enough to establish clearly the fact that Napoleon is no more guided in his tactical disposition by preconcluded systems or by theoretical formulæ than he is in his strategic dispositions.

Sometimes, like at Austerlitz, at Eylau, at Essling, at Dresden, the cavalry is united in one great body, on a single flank or at the center, and sometimes, like at Friedland, at Wagram, at Borodino, at Leipzig, at Waterloo, it is divided into two, three or more unequal parts, the strongest always placed close to the point where it can be expected to produce the greatest effect.

In every case, and it is proper to insist absolutely upon this disposition, the cavalry of the guard is reserved. It is the supreme resource, which is not used except under the most pressing conditions, as at Austerlitz, at Eylau, or at Wagram, which is husbanded to excess at times as at Borodino, where it was manifestly wrong not to employ it; or which escapes him altogether, as at Waterloo.

Napoleon did not intend for the cavalry of the guard to be brought upon the field at all. It was his reserve. When he perceived that it was conforming to the movements of Kellerman's cuirassiers, behind whom he found it, he ordered its retirement. Too late, however, for it was already engaged, and Napoleon found himself, at 5 o'clock in the evening, deprived of his reserve, which "properly handled had given him the victory so many times."* And his first words on arriving at Paris were to say to Caulaincourt: "Ney conducted himself like a fool; he made me massacre all my cavalry." This simple consideration suffices to prove

* Napoleon's "Memoirs."

the importance which the Emperor attributed, at the end of battles, to the cavalry element, an element without which no army, victorious or defeated, can promote or avoid a definite solution, explain a victory, or charm away defeat.

* * *

When cavalry is properly disposed, it must be acknowledged that it acts with incomparable vigor and energy.

It is, at Austerlitz, Murat's cavalry that, by repeated charges, gives Soult's and Bernadotte's infantry time to occupy the plateau of Pratzen; it is the famous charge of Rapp and Bessieres with the cavalry of the guard which breaks the counter attack of the allies and completes the victory.

It is, at Eylau, the legendary charge of eighty of Murat's squadron that whenever our center is threatened, pierces in twain the Russian center and brings that bloody day to an end.

It is, at Essling, the energetic and reiterated charges of the divisions of Lasalle, Espagno and Nansouty that, under the most dramatic circumstances, when the two army corps of Lannes and Massena are separated from the rest of the army by the Danube and find themselves resisting the Austrian army alone, make it possible for 30,000 men to hold out against 80,000 for one whole day and to wait for reinforcements that were to arrive during the night.

At Wagram, it is the furious charge of Nansouty's cuirassiers and the cavalry of the guard which permits Davout to pierce the center of the Austrian army.

At Borodino, it is still the cavalry reserve at the head of which Montbrun and Caulaincourt are killed in succession, that shatters the last resistance of the Russians. And perhaps it would only have taken a few more regiments of cuirassiers to have saved the day at Waterloo.

On the contrary, when the Grand Army is deprived of a part of its cavalry, at Lutzen, at Bautzen, at Dresden, at Harau, it still is able by prodigious heroism to snatch the victory, but remain powerless to render it decisive and still less to follow up the advantage.

We see from this rapid sketch what duties the Emperor attributed to his cavalry and what effective service it rendered, whether it was to prepare or to complete the assault of our infantry, as at Austerlitz and Wagram; whether it was to press the victory as at Jena to its utmost consequences and to add tremendously to its effect, or whether it was to recover a day compromised, as at Eylau, to conjure away disaster, as at Essling, or to decide the final and successful outcome, as at Borodino and at Dresden.

I shall only say a few words about the fighting tactics of the cavalry of the First Empire. These processes, like those of its strategy, are entirely based upon concentration and energy, and are so simple that we may justly this time and literally call them heroic.

Kept as it was, very close to the line of battle, under the guns,* so to speak, in order to be able always to enter rapidly into the struggle, the cavalry was ranged from front to rear in successive lines, generally of a regiment or a brigade. These lines were deployed and the regiments or the brigades placed one behind the other, formed a close column. Almost always the light cavalry formed the first line, then came the dragoons and last of all the cuirassiers.

This is the order in which the cavalry was launched to the attack, not only in a single square, but also in successive lines of a regiment, or a brigade, with greater or less distance, depending upon the turn of events.

Often when it had to act against experienced enemies the first line was handled roughly, but rarely, that is to say, never did retirement signify retreat.

The lines gave ground only when the cries "long live Emperor," announcing the arrival of following lines, caused their opponents to quit the combat. The broken lines rallied then on the flanks, or forward into column quickly in order to move to the rear through the intervals in the following lines.

*This expression, in so far as it concerns the Napoleonic cavalry, is literally exact; but the guns of this period fired solid shot. Today the cavalry will never be able to approach the line of battle until about the end of the combat, under the protection of cover and dead angles that will have been econnoitered, in order to cross very rapidly the uncovered zones.

In order to explain this method of combat, it must be remembered that this cavalry, especially before the year 1812, composed of old soldiers, of inferior bred horses, with shortened gaits, but very tactable, lent itself infinitely better than modern cavalry to these meleés and to these rallies executed almost in place. It must be recollected also that the cavalrymen of the first Empire were intrepid swordsmen in whose hand the saber was really a terrible weapon. They trained themselves constantly in fencing, even when bivouacked, old soldiers instructing the recruits. It was their favorite pastime, and from a military point of view, was of more value than many others that have replaced it since.

Moreover, despite the complicated order of the first day of Vendemiaire, year 3, (which is hardly more than a platoon document) and by reason of its closeness to the line of battle, the cavalry went through few maneuvers before charging. When the terrain and the conditions demanded it, the most usual method, its sole maneuver, we might say, consisted either in gaining ground to the right or left, then in facing to the rear by wheeling about, or in breaking into column in order to move to a flank, and in changing direction by simple platoon movements to the right or left.

Against cavalry, all these movements as well as the advance preparatory to the charge, were executed ordinarily at a trot and they did not take up the gallop until 150 or 100 meters. Against infantry, they charged in very shortened lines, generally by squadrons in echelons, and sometimes by demi-squadrons at a gallop, and preferably against the angles of the squares.

We may study all the battles of the First Empire, and we shall find almost invariably this general form of attack by successive echelons, that is a series of repeated charges, leading up to the meleé.

In fact, in strategy, in tactics, in reconnaissance and in battle, from the beginning to the end of its history, the cavalry of the First Empire is an irrefutable and a shining illustration of the truth that the first element of success is the moral element. Its tactics, very simple and the result of deep formations were energetic and aggressive in the greatest

degrees. But the brilliant and really distinguishing point about this arm was its leadership. Never had a body of men, more young in spirit and body, more enterprising and more impulsive, been placed at the head of our squadrons.

Take for example, one of the cavalry brigades whose history we have been able to recount:* Durosnel's light brigade (7th and 20th chasseurs) attached first to the seventh corps than to the general cavalry reserve, from 1807 to 1809, which in these latter campaigns won the name of the "hell brigade."

Who then were its chiefs?

Commander-in-chief, Murat; Major-general, Lasalle, and after his death, Montburn; Colbert, Brigadier-general, having Bank and Curley as aides. The eldest of these generals, Montburn, was only forty years old. The youngest, Lasalle and Colbert, were hardly twenty-six.

Their personality, however, surpassed their youth. At the top, Murat, that paladin of another age, always dressed (following the expression of the troopers of that period) "like a drum-major," so gorgeous and so loaded with embroidery and plumes, that he might have been a little ridiculous if his unbelievable dauntlessness had been able to leave room for any other sentiments than those of admiration. Let us see how he is painted by persons who saw him on the battlefield. It is first Parquin who speaks: "Follow me with your regiment, cries Murat to Colonel d'Ery, passing at a gallop in front of the fifth hussars, and charge those dogs!" Those dogs were just about 3,000 to 4,000 Russian dragoons that he intended to destroy with a single regiment.

And then Gonneville: "At that moment," he writes, "the Grand Duke of Berg appeared. He passed across our front at a gallop, crouched upon the neck of his horse, and yelled to General Espagne, as he passed rapidly in front of him, the single word, 'charge,' and on he galloped, rising from a cloud of dust like a fantastic specter, plumes trailing in the wind, whip high in the air, theatrical but irresistible."

Not so great, and of quite different manner, was Lasalle, with his sharp and nervous physiognomy so exaggerated by

* A regiment of light cavalry from 1793 to 1815.

hearsay, whose impetuous ardor was tempered at times with fits of cold and terrible fearlessness. At Golymin, when his brigade went into a panic, he rallied it, and fury in his heart, led it right under the enemy's guns, where for four hours, until nightfall, he held it, trembling and motionless. "He himself," Curely relates, "was 20 paces ahead. Two horses foundered beneath him, without causing him to waver from that attitude of stern impassability; behind him horses and men were falling at every second; not a man stirred and not a murmur was heard."

A few months later, in the grand review held on the Island of Nogat, Lasalle replied to the Emperor, who was reproaching him, smilingly, with smoking too much and drinking too much: "Sire, since I have the qualifications of a sailor, I ask your majesty for the command of a fleet." He was put in command of twenty magnificent regiments of cavalry and was killed at their head at Wagram.

And Montbrun, his emulator, who was called "Beau Montbrun," and whom good fortune and success should have attracted to Paris, answers angrily to Captain Lindsay, who was telling him the good news of the armistice of Znaim: "What the h—l do I care about that. I like nothing but bumps and wounds."

As to Edward Colbert, a complete declaration of his sentiments is contained in the letter which he writes to his brother August, in 1806: "He who has never charged at the head of a beautiful regiment has never known real happiness."

Such were the generals. Under them shone that pleiades of field officers, Gonneville, Curely, Parquin, Brack, Dupuy, whose memoirs reveal to us their energetic and alluring figures, and show the real spirit of the Grand Army, and how the broadest feeling of *camaraderie* united those men who had come from such contrary and such varied stations in life. In this body of officers in fact all classes were blended. Some arise from the old mobility, others are sons of the Revolution; all, however, agree and think alike, grouped around a general victor, around a single ideal. Undoubtedly, in their eyes the Emperor was a supernatural being, a special per-

sonification of the France of which they were so proud to proclaim themselves sons. For to them France was the Grand Nation, the French army the Grand Army, the name of Frenchman the most enviable of titles.

What now is to be said of the soldiers and the spirit which animated them; of their contempt of death, and of their gaiety, particularly even in the midst of peril, and in the darkest and most critical of circumstances.

In order to obtain a correct idea of this we must read, for example, Parquin's story of the battle of Eylau.

The battle had lasted during the whole day (the 7th), and the cemetery at Eylau where his regiment bivouacked was heaped with dead bodies, "I remember," he relates, "that when spreading the snow away in order to start a fire with the debris of the broken gates, we had to gather up dead bodies also, and that same evening, after covering one of them with straw, I made a pillow upon which I rested my head the whole night and slept soundly."

The following day, beneath a gray and dreary sky, the regiment is drawn up in front of the Fourth Corps' artillery park and remains exposed to the fire of cannon for three hours.

These men, who already knew the carnage of Austerlitz and Jena, never stop a single instant at the thought that some time, perhaps, their bodies will be strewn in turn upon this desolate plain.

On the contrary, they greet the approach of the enemy with pleasantries. This sombre dream begins with a joke. About 2 o'clock a great mass of Russian dragoons advance directly upon them, at a walk, as the snow and the marshy ground will not permit any other gait. They make the air resound with cheers, which they pronounced, it appears, "horra." "Cats," cries a little French chasseur, and a burst of laughter goes from one end of the line to the other. An instant afterward, 100 men of this regiment were stretched out upon the snow, but the Russian dragoons were completely routed.

At last, Napoleon unchains that famous tempest of cavalry that was to settle the momentarily uncertain outcome of

that bloody day. Eighty squadrons moved off, commanded by Murat, and the formidable column of Russian grenadiers which threatened to pierce the center of the French army is annihilated in an instant.

"This whole mass of infantry was stretched upon the ground", writes the same witness, "like a wheat field which has just been swept by a terrible storm."

To comprehend this good humor and this animation in the face of such fearful danger, we must remember that, into the imagination of these soldiers, a glittering vision of military glory had passed, sweeping away the ordinary, tenacious instincts of self-preservation. In their youth, they had become intoxicated with the noise of arms, with the scintillation of helmets, with the splendor of uniforms, and with the perpetual echo of reports of victories. Borne upon their dreams of glory and of conquest, they had crossed all the capitolis of Europe. Their magnificent dash was not to be stopped until it reached the walls of Moscow.

III.

Is this rapid synthesis we have evoked the picture of a cavalry, which, in every manifestation of its duty, in front of armies, in battle, and in retreat, was the most puissant and fascinating of modern cavalry.

And we have tried to evolve and to bring to light the principles of efficient and simple organization, of supple and elastic distribution, of young, impulsive and ardent command, of energetic and violent employment, which have produced its incomparable mastership.

Upon the whole, as to its higher direction; not mechanical formulæ, not systematic prescriptions, but an adaptation to the immediate situation, a perpetual "why," always resolutely answered.

As to its personnel, a point of honor strong enough to surmount the fear of death, that made them enter the combat with a determination to conquer, no matter what the price. Therein, above all, lay the secret of their great power, and it will always be, for the armies of all nations of the world, the alpha and the omega of their fitness for war.

How could it have happened that such striking truths as these have been so obscured that, in none of the European wars that followed from 1815 to 1870, have we been able to find a trace of that intense employment, the imperishable model of which had been bequeathed by Napoleon.

I firmly believe that we are confronting a phenomenon of obscurity analogous to that which was produced in the Prussian cavalry after Frederick's glorious period, and that the same causes which led our enemies to the defeat of 1806 led us to ours of 1870.

The analogy of the situation is indeed striking. It was, in truth, an epoch in which the Prussian cavalry, today confident and powerful, passed through a period of hesitation and trouble. Like the French cavalry, after Napoleon, this cavalry after Frederick, possessed the richest inheritance of glory; like the French cavalry, it was brave, well trained, ardent, yet it had succumbed, and, from the highest pinnacle of dreams and prestige, had fallen into overwhelming inferiority.

After Rossbach, it had been Jena, now after Jena, we have had Sedan. Yet neither the Prussian nor the French cavalry, apparently, were ever more disciplined, more brilliant, more versed in the niceties of strategy and tactics, than on the eve of their reverses. Both were victims of that deceptive illusion which attributes to regulations more or less ample, to formulæ more or less learned, to evolutions more or less complex, and mainly, to that which is perfectly tangible and evident after the war is over, an influence and a power with which they are virtually unprovided. The print excels the plate and an elegant front conceals a soul that no longer exists within.

And so, after Napoleon, the military world went to admire the brilliant evolutions on the field of Chalons, as it had gone, after Frederick, to watch the parades at Potsdam.

No one presumed to think that the vital spirit of this cavalry was, above everything else, a captain of incomparable genius, having a profound insight into the role and the employment of the arm, at the head of which were commanders young in body, hardy, and having in themselves

the impulse which they knew how to communicate to the troops. No one presumed to think that besides the qualities of vitality and energy, the regulation of processes is necessary, of course, but secondary, and that the important part of the doctrine is simply employment.

Gentlemen, I would like that you read the order of the 1st of Vendemiaire, year XIII, (the 1st of October, 1804) which succeeded without otherwise modifying it, that of 1788, upon the exercises and the handling of cavalry.

This order in two large volumes, one text and the other plates, was drawn up, or rather, signed by Generals Louis Bonaparte, Canclaux and Nansouty, the other members of the board, Boucier, d'Hautpoul, Klein, Kellerman, Ordener, at that time in the field, not having been able to be present at the sitting. Starting from the school of the squadron, especially from Part IV, subdivided into eighteen maneuvers, and from Part V, subdivided likewise into eighteen different brigade evolutions, it is a monument of formalisms in which one can rarely discover the least indication of the spirit that animated the cavalry of the Grand Army.

How could such officers bring forth such a work? Simply, I believe, because, having passed their whole military existence in resolving, in time of war, concrete cases, an immediate solution of which was furnished by their qualities of coolness and energy, they found it very embarrassing to have to reduce these varying solutions to rigid rules. They contented themselves with modifying slightly the text of of 1788, and like their successors in 1829, confined themselves to submitting, as it stood, that the regulations of the year XIII.

All these regulations, however, were more of a *vade mecum* for the use of instructors than the embodiment of a doctrine for the use of commanders. In any event, it was not in them any more than formerly, in the famous oblique order of Frederick's cavalry that we should have had to seek the real causes of superiority that had been so magisterially affirmed.

But if victorious armies have a natural tendency to let themselves reach this stage of blind confidence which tempts

them, using a common expression, to fall back on their laurels, defeated armies, on the contrary, are more strongly urged to look into the causes and to repair the consequences of their reverses.

Out of this was to be born that hard, patient, stubborn labor which, after sixty years, made conquerors in 1866 and 1870, out of the conquered in 1806. And when it sought to renew its traditions so rudely shattered, the Prussian cavalry had the merit of going back to the real, profound causes—to the great principles of employment.

All the generals consulted by Blucher attributed the success of Napoleon's cavalry to the manner in which he divided and used it in his armies; all were convinced that the Prussian cavalry had failed "because it was lacking in education, in exercise, and in organization permitting the employment of masses. It will have to be endowed," they concluded, "with these qualifications and with a single supreme director, unless we want it to suffer further repulses in the future."

In fact, the work of regeneration undertaken by Wrangle, Von Schmidt and Frederick Charles, who, by turns, had absolute command of the Prussian cavalry, was laborious and incomplete. Neither the campaign of 1866 nor that of 1870 revealed a cavalry in possession of any decided line of action, and still less a bold and daring cavalry.

In 1870, although its role was singularly facilitated by bad employment and lack of initiative on the part of its rival, we did not see it venture ahead of the army except at Woërth and at Spicheren, fulfilling so incompletely its duty of reconnaissance that it never succeeded, in spite of our inaction, in furnishing any positive information.

In the tactical employment it showed itself to be more efficient and its action was limited to the single but glorious day of Rezonville. The same thing happened at Rezonville as happened in Napoleon's battle, the "commander-in-chief wished to use his cavalry" and threw it himself upon one point at a given moment. Redern, Bredow, Rheinhaben, received the imperative order to charge. But, different from that which took place in the French cavalry of Napoleon's

time, he failed, as it seems, to insist upon the repetition of this order.

The recently published letters of General Krestclusen threw an unexpected light upon this incident. They describe Bredow as hesitating, timid, and deciding at last to begin the charge only at the violent apostrophe of his corps commander, General Voights-Rheitz: "Now, general, you have the order to charge the battery which is over *there*; you need not bother yourself about the losses."

When we compare this attitude with the proud and splendid gesture of General Galliflet, on the plateau of Illy, answering Ducret, who, for the third time in dramatic and desperate situation, begged him to charge "for the honor of the army:" "As many times as you like, sir; as long as a man remains," dashing off without further comment, we cannot help experiencing a feeling of admiration, pride, and hope, all in one.

However, Bredow's charge was well executed and well conducted; and in spite of the redoubtable armament of our infantry, it produced considerable effect. It stopped for an instant Canrobert's corps. Redern's charge overturned the artillery of the Second corps; that of the brigade of dragoons of the guard, stopped the attack of Cisse's division; that of Rheinhaben's division provoked serious disorder. The eighteen regiments that were engaged on that day lost about one-sixth of their effective strength; one thousand men.

We must stop for an instant and ponder over this figure, it represents almost half of the total losses which that glorious cavalry experienced during the whole campaign.

When we consult the tables indicating the effective strength of the German army in 1870-1871, and the table of losses undergone during the war (belonging to the General Staff of the German Army) we find that out of 1,113,000 men, of which 63,000 were cavalry, who had crossed the French frontier, the total loss was 123,000, of which 3,000, only, were cavalry (exactly 211 officers and 2,827 men.)

Carry ourselves back to the cavalry of the First Empire and we find with astonishment, but also with admiration, that in the charges of Eylau and Essling, the regiments of

cavalry engaged (and they were more than twenty) each lost more than eighty to 100 men. Thus, the reserve cavalry of the Grand Army, in the time of flint-locks, lost in two battles almost as many men as all the German cavalry, in the time of the chasse-pot, in eight months of war.

This simple comparison passes without comment. It throws the light of cold facts upon our theoretical discussions and shows the error of those who wish to attribute the impotency or the potency of cavalry to variations of armament.

In the final reckoning, unless satisfied with empty rules, we are obliged to admit that if the cavalry did nothing or almost nothing in the war of 1870, as well as in those that have followed since, it was always because those in command did not care or did not know how to employ it energetically—or that it even, at times, did not care or did not know how to employ itself energetically. Hypnotized by the dogma of the effect of fire, it has often hesitated to cross the bloody threshold that leads to triumph.

It would be unjust, to our cavalry especially, not to add that in the deplorable circumstances where we sent it, not to success but to sacrifice, it fell with a fearlessness and a determination which, better handled, would have obtained glorious results.

It must be granted, of course, that cavalry charges are rough tests. Once let loose, it is obligatory, without help or refuge, to carry them to the end, to the formidable shock; to deliberately confront them requires most uncommon strength.

Thus we saw the generals of the First Empire, after 1812, when they were deprived of their old troopers with which they had not hesitated to beard the lion in his den, so to speak, and to charge him at a trot, if necessary, modify very materially their methods of attack.

The incident at Montereau is, in this connection, characteristic. They are no longer troopers—not even soldiers on horseback—but children, Mary-Louises! And, yet as it was necessary to snap the situation suddenly and to create a surprise, the Emperor gave an order for Pajol to charge.

The latter did not delay with complicated dispositions. At the head of the column he placed several old non-commissioned officers, saber drawn, and threw the whole lot into a full gallop, packing away the entire column with him.

This was the last manifestation of that system of energy and violence which was the principle strength of the Napoleonic cavalry.

* * *

But let us return to 1870; let us see what precepts resulted from that campaign and what influence it exerted upon the destiny of the cavalry.

As usual, we perceive, at first, only the exterior and the most striking details. When the war ends the cavalry situation is summed up in a single word: "Uhlans!" And the legends of the Uhlans began, just as did that of the Cossacks after 1812.

Sixty years after Napoleon's mad charge, we could hear it affirmed that, outside of certain vague services of exploration, the cavalry no longer had a part to play in the wars of the future.

It was no longer an instrument of battle but simply one of optics, and some innovators proposed to substitute the field glass and pencil for the saber and the carbine.

Others, less radical, invoke as an example the Civil War, in order to extol the advantages of raids; but with the reservation that the cavalry abandoned attacks with the saber and that it fight with fire-arms only.

When a lull had occurred in the exaggeration and the trouble of the first hour, it was presumed that the enemy's cavalry also would experience the need of having a good eye and of undertaking raids; that in their duties similar and diverse, these rival cavalries would really be obliged to meet and that then unless they should fall back and abandon the conflict, they would have to come to blows.

The idea of cavalry combats appeared to be the inevitable prologue of the rôle of this arm, and grew to such a point that for several years no one doubted the new rule: "to explore is to fight." Everywhere we saw the two opposing cavalries prepare arduously, feverishly for the struggle.

In Germany, military writers and the most renowned commanders, quoting Frederick's remark: "In war, good cavalry makes you the arbiter of the campaign," fulfilled the triumph of the dogma always maintained and still in favor among our rivals, that the first duty of the cavalry was to defeat the enemy's cavalry.

The same ideas were admitted by us—and it will suffice to call forth the magisterial course taught at that time in the War College by Lieutenant Colonel Cherfils, whose premises and burning conclusions, of great import and of elevated style, inflamed a whole generation of officers.

It was truly the heroic period. We all thought that the hour had come when, upon the plateau of Woeverre, we should hurl ourselves into a death duel that our inflamed imaginations had planned and for which we were preparing with an ardor and a conviction coupled with the impulse and the confidence that had been inspired by that brilliant and energetic trainer of men, called at that time the grand master of cavalry—Galliflet, the Galliflet of Crimea, of Mexico, of the charge on the plateau of Illy—the cavalier whose proud answer and chivalrous attitude illumined with a blaze of heroism our bloody disaster; the chief to whom all of us cavalrymen owe the fact that we remain in the eyes of our conqueror and in the eyes of Europe "a brave people."

Gentlemen, the cavalry owes this homage to the memory of General Galliflet, not only because he has bequeathed us an imperishable halo, but also because on the morrow of our reverses he has inculcated in us a liberating strain, a conviction, a faith in our mission, a temper and a vigor not surpassed by any other cavalry in the world.

* * *

But temper and vigor are not enough; *a method of employment is necessary* in order to derive advantage from it.

This method we thought at first to consist in the employment of cavalry in great masses, "assembling in front of armies to retard the preparations of the enemy and to cover those of our own army; driving back the adverse cavalry and gaining contact with the main body;" then, in a second

line, combined with other arms, "seeking the place of action most profitable for the whole to intervene, *not by partial efforts, but with its whole numerical strength.*"

These were the very terms of the regulations of 1876. The field of action of cavalry, further, said the propagators of this method, ought to be proportional to the size of present wars. As the objective has grown larger, the means of reaching it ought to grow in proportion; in two words: A war of masses imposes the tactics of masses.

However, the events that were unrolled in the Russo-Turkish War, in the war in the Transvaal, and finally in Manchuria, seemed to demonstrate that the cavalry would rarely have the occasion and the possibility even of engaging *en masse* or of making any extended use of shock action. A reaction took place which passed all bounds. To the doctrine of employment *en masse* and of saber fights followed the doctrine of small disseminated fractions and of dismounted action in all its forms, erected into an exclusive system.

Time is lacking to discuss in detail the relative value of these two doctrines; moreover, it is a question in my mind whether it would be worth while. As a matter of fact, we cannot solve problems unless we reason with unities of the same species. War is a series of concrete examples. That which is opportune today in this place, will not be suitable tomorrow in that place.

What happened in the Transvaal or in Manchuria, where there never was a theater of operations with the faintest similarity to the theaters of operations of European wars, where there never was cavalry except on one side, and where the employment of this cavalry was manifestly defective, all this could constitute nothing put purely negative information.

Indeed, it is not a matter of our fighting in America, in the Transvaal, or in Asia—nor of formulating any abstract theory either—but more a matter of employing our cavalry to the best of our opportunity, on the frontier and against the German cavalry, whose motto is always: "*Die Heitermassen stets voraus*" (cavalry to the front always).

And if we were able to conceive of certain points where the cavalry can, acting with the covering troops, find situa-

tions and terrain propitious for its employment by separated units, or by fighting on foot, we must also be able to foresee that, at certain other points, and in more eccentric directions, the meeting of powerful units of cavalry will be inevitable. For the rest, it is not to the cavalry itself, but to higher authority, that the duty belongs of distributing and employing us.

Our duty is to hold ourselves in readiness for any task commensurate with our rôle, and not to shut ourselves up as those two schools, one after the other, have tried to do, in the exclusive exploitation of narrow doctrines. And it is in this broad and elastic solution that after a long period of incubation, the new regulations of the German cavalry of April 3, 1909, have ended.

The chapter dealing with the combat can be summed up thusly:

"Article 389—The cavalry has for its principal method of action, mounted action.

"Article 390.—It must also be capable of dismounted action.

"Article 392.—During the operations that precede the first tactical events, its first and most important adversary will be the opposing cavalry; it must seek out and engage this cavalry in order to drive it from the theater of operations.

"Article 393.—The use of great masses of cavalry alone will permit the arm to enter into the battle in a decisive manner."

From this it results that the German cavalry, while admitting to the frequent obligation of entering into the combat on foot, has preserved intact the doctrine of the employment of masses, and of the cavalry combat; that it must be able to act both on the offensive and the defensive, and that wherever we would like it to perform work of active intervention, we shall be assured of meeting it there.

And if in these meetings there are cases, that is to say—circumstances of terrain—favorable to the employment of dismounted action, there will be others, assuredly more frequent; where there will be neither points of support nor

time sufficient for going into dismounted action in front of a resolute and aggressive enemy.

If we should systematically recur to it then, if we should spurn the contingency of deliberately accepting the cavalry combat, we would have no other choice than that of defeat or withdrawal.

You will pardon the immodesty and the impropriety of recalling here, as a matter of argument, a too personal remembrance. But from great to small, the vested truth of principles stand good, and the truth has appeared to me too evident on this occasion, to neglect its teachings. I only bring forth this remembrance in order to reduce certain exaggerations to their real and juster value.

I had the honor to command at Madagascar, the squadron, or more exactly, the little detachment of cavalry which acted as advance cavalry for the light column during its march to Tananarive. Thanks to the slowness of the column's march, to the mountainous but closed character of the country, to the rudimentary tactics of the Hovas, attempting to occupy successive positions upon our line of march, and thanks particularly to the absence of advance cavalry, this feeble detachment was able to exempt the column from immediate disturbance, to gain contact with the enemy and to keep it, so to speak, without interruption all the way to Tananarive; to learn almost every evening the location of his camp, and after several skirmishes to start an immediate and consequently effective pursuit. Anyhow, I was clearly impressed with the fact and absolutely convinced that it would have been sufficient for the Hovas to have had a cavalry superior in numbers by enough to prevent this detachment from accomplishing all those useful tasks; and if this detachment had not been able to accomplish them, if it had not been able to scout and reconnoiter, if it had not been able to procure the indispensable zone of security and to assure the moral and physical quietude of the column, and if, on the other hand, the enemy's cavalry had succeeded in reaching our column, in disturbing and alarming it, I ask myself what resistance could have been offered by this handful of already winded and debilitated men, short of rations

and ammunition; I ask myself if the impotence of its cavalry would not have made it practically impossible for it to get anywhere.

And, I believe I saw there on the battle field infinitely reduced through the small end of the glass, so to speak, exactly what will happen in every operation, in every campaign, of whatever magnitude.

It is necessary that the infantry be surrounded by a deep atmosphere of security and clearness. No other arm but the cavalry can produce this atmosphere—and the one of two cavalries that, beaten and fearful, gives way to its opponents will condemn its army to an original and irreparable inferiority.

The saying of Frederick: "*In war, good cavalry makes you arbiter of the campaign*" is no longer absolutely true because the rôle of the cavalry in battle has been curtailed. But, at present still, *a goodly number of excellent cavalry is the best way to dominate military operations*. Just as in certain games he has the advantage who plays first, so in war, he will have the advantage whose cavalry shows itself superior to that of its adversary; it orients itself more quickly, it decides its plan of action and begins it more quickly." (Baron von der Goltz: *The Country in Arms*, 1884.)

We ought also to foresee the case in which enterprising cavalry boldly and intelligently conducted, would seek, above all, to cut away entirely this tunic of Nessus with which the enemy's cavalry will envelop it, and whether by annihilation or intimidation, to disembarass itself of its rival.

This done, it will have solved in a single stroke the double problem of covering and discovering; delivered from this network of the enemy, it will have acquired a full and complete liberty of reconnaissance, it will no longer mind obstacles, since its mobility and rapidity will permit it always to escape the embrace of other arms, or at least to break away from it, the latter being forcibly immobilized in defensive positions which it will not need to attack in order to move ahead, in order to scout beyond.

What will be the consequences of such a situation? While the happy army to which the victorious cavalry be-

longs will have all the advantages of certain, rapid and continual information, while it will enjoy all the benefits of a large cantonment, of easy subsistence (for to occupy is to possess, to levy requisition at will, and to press, when necessary, the whole zone over which it extends), the opposing army, on the contrary, deprived of the atmosphere of security necessary to its life, given over to poignant uncertainty, stripped of its resources, and incapable of adopting sound resolutions, will not be long in becoming demoralized and in being brought to bay. This mass, suddenly become inert, dumb and blind, will resemble somewhat a besieged fortress.

This was verified during the second part of the campaign of 1870* and will also be verified in the most insignificant operations of war.

We have animadverted a great deal on the causes of the disaster undergone by the Italian expedition to Adoua.

If we only remember that this detachment was operating without cavalry, against an enemy amply provided with the same (Galla's cavalry), and that at Adoua, Dabormida's and Arimond's columns were either able to reconnoiter or to gain contact with each other, we may be led to believe that the lack of cavalry was the principal cause of their disorder.

And is this not what so often happens in maneuvers, when we bring two sides face to face, one with a great superiority of cavalry? The latter, either with cannon or with machine guns, or with carbines, frequently engages the opposing infantry columns, forces them to deploy, even stops them.

* In his "Letters on the Cavalry" the Prince of Hohenlohe thoroughly confirms this theory: "Permit me to recapitulate," he says, "and to classify the services which our cavalry rendered in the last great war, to the end that the deeds themselves may furnish the base for what I shall advance in the following: "Cavalry divisions precede most of our fighting corps. They surround those of the enemy like a network and thus prevent the general officers of the French army from learning anything whatever about our movements, whilst they will keep our general staff in constant communication with what the enemy is doing. They will put the commander-in-chief of our armies in the way of declaring the law to the enemy, using the words of Clausewitz, that is to say, of defeating them when they please. Before the battle they have thus won half the victory, because the enemy is groping about in the darkness, while our chiefs see the way clear. When a blind man fights with a man who has not lost his sense of sight, he is bound to give in, no matter how strong he may be. Ulysses, by gouging out the Cyclop's eye, made him absolutely harmless."

and retards their movements so that the average speed of their march falls from four to three, even to two kilometers an hour. And we admire this judicious employment of the cavalry; we cry that it is the real way, and that we must renounce the particular research after cavalry duels and throw ourselves into the fertile exploitation of intervention by fire.

We simply forget that all these fine maneuvers, all these marvelous interventions, could not have been produced if the enemy had had superior or even equal cavalry, and that, in this event, in order to have brought them about, it would, at least, have been necessary to foresee and to accept the preliminary contingency of a cavalry shock.

This will be, undoubtedly, our condition face to face with the German army, and if we are willing to admit that by reason of the development, the approach and the density of opposing masses, these encounters of cavalry will have little chance to take place in front and in the early part of the campaign, then it is certainly necessary to expect them immediately on the flanks, in fact, on any part of the theater of operations, engaged in any part of the campaign from the first skirmishes throughout all its phases (contact, engagement, battle, pursuit or retreat). From one end of the campaign to the other, our cavalry will not be able to undertake anything without encountering its rival, and very frequently will be unable to avoid contact with the saber and the lance.

We must, of course, not discuss at random our doctrines of employment, but the contingencies of war impose the duty, at certain places and at certain instants, of being ready to abandon the combat of the cavalry. There is no tendency in that, understand me perfectly, toward particularization, but it is simply a demand of the situation.

Cavalry, in order to perform its highest duty, must remain both an arm of reconnaissance and of battle, and must preserve its power of contact and of combat.

* * *

I come now to what may be called the delicate point, the difficult passage of this study; for I must penetrate directly into the particularities of the arm, which, moreso than the

general tactics of its employment, have given place to discussions which are still far from being closed.

Without going at length into the details of these discussions, I shall tell you simply that they present two very characteristic phases, one of lines and the other of echelons; that the first, proceeding from the precept of Frederick, was the appanage of the German cavalry; whilst the second, allied more closely with Napoleon's principles, represented the French tactics; both proceeding, however, from the general tactics of the two armies.

Assuredly you are not unaware that Frederick's methods, modernized by Moltke, aimed at the initial envelopment of the enemy either by extension and simultaneous attack throughout all the lines, or by a strategic deployment before debouching on the field of battle for the tactical envelopment. And you are not unaware, either, that oppositely to this method Napoleon, by making his preliminary concentration under the protection of a general advance guard, always held the enemy with this advance guard while he maneuvered now on the flank, now at the center, keeping to the end a powerful reserve to bring on at the moment and at the place desired, this sudden, violent and general decisive attack, which he named the "event" (*l'évenement*.) Sometimes the formation was in line and sometimes in column.

Synthesize these two methods and reduce them in extent and in speed, in space and in time, and you will have the general outlines of what we call in the cavalry, *the tactics of lines and the tactics of echelons*.

From the outset, moreover, these two rival cavalries in their search after a method of combat, followed each other step by step and arrived, with a few months interval, in 1876, to two normal types of combat, which in spirit and in letter were to all intents identical.

There is one common point of departure, however, and after this period, the divergence is going to be accentuated.

The French cavalry, beginning with the regulations of 1852, marked a tendency toward echelonment in depth, and the German cavalry, on the other hand, in the regulations of 1886, lays great stress on the extension of front.

While we conceive the combat to be divided into several lines and to be developed by a series of successive shocks, our adversaries, reinforcing their first line to the point of having it almost absorb the other two, seem to pursue the ideal of a brutal assault closing around our lines in echelon, and of an unlimited front enveloping our whole system. In that way they wished to simplify their tactics.

The greatest difficulty of the cavalry combat results from its rapidity; all the phases of the combat are condensed into an almost simultaneous burst, and as the chief does not generally have time to coördinate his efforts, it appears, up to a certain point, logical to reduce it to the most simple form, one body for attack and one body for reserve.

But, by giving to the attacking body an inordinate extent, we run the double risk of not being able to use it on much of the terrain, and in case of a slight error of direction, of causing it to split in two, leaving a vacuum in the line.

Such has been the situation up to 1899. At any rate, despite those apparently inverse tendencies, we can say in reality and in the greater number of cases that the result of these dispositions in the marches to position, except as far as greater flexibility is concerned, have been almost identical, and that the deployment of the three lines, seeking for a simultaneous attack, nearly always lead up to the same linear development without clearly independent reserves, in a word, to parallel attacks, front to front. I recall still the efforts of General Gallifet on the field of Chalons, in 1888, to break away from these somewhat mechanical deployments, and to draw the commanders of the second and third lines into the more fruitful methods of attack on the flanks.

It was left for a single change of words to make us cross the decisive step that would consecrate our definite rupture with linear tactics and bring on a radical evolution of ideas.

The regulations of 1899, by replacing the old expression "lines" with that of "echelons," substituted in reality the principle of the deep for that of the linear formations.

Assuredly these regulations were merely consecrating an evolution which for a long time had been loudly extolled.

But the word veiled the idea and in spite of recommendations, in spite of instructions, in spite of criticisms, we persisted in understanding by the expression "line," not any line of troops in general, but deployed troops; so much so that we conceived the cavalry combat to be a sort of a combination of figures in geometrical order, when they should be a combination of forces in dynamic order.

It remained to define exactly the meaning of the new expression "echelon," and this was still the question that stirred our cavalry to its depth.

Certain people, taking as a base the fact that the regulations had prescribed that "echelon" would constitute not a *formation* but a *disposition*, wished to extend the meaning of echelon to any group detached from the main body for purposes of maneuver or battle, and they called "maneuver echelons" all those fractions which (under the name of advance guard, flank guard, reserve, attacking body, frontal or flanking) had a particular mission and were found for that reason more or less in echelons.

But as it was also necessary to give the name of echelon to the elements of a single group formed in echelon, they called the latter "drill echelons," meaning by this that these elements were related to each other by distances and intervals necessary to their employment.

A War Department circular in 1908 put an end to the debate by prescribing that the name "echelon" would apply exclusively to units echeloned from any group charged with a single mission.

Taking it all in all, after the attempt of total emancipation made by the regulation of 1899, which had imposed no rules for the echelons and no hindrances to their liberty of movement other than the obligation of concurring in the attainment of the common end, we ought, in face of the innumerable particular regulations which pretended to supply the inexactness of the official text, to have come back to a narrower limitation, to have reserved the independence of single combat groups, and to have considered the echelon no longer as a disposition, but as a formation, a little more

flexible than others and indeterminate between close and extended order formations.

However, the idea of the cavalry combat being divided into various groups, each of which are or may be formed in echelons—that is to say, the idea of a combat formation, deep enough to give the proper balance, that substitutes the contingency of maneuvers to that of parallel shock action—is henceforth entered among our customs. It conforms to the Napoleonic principle and appears to indicate fruitful and practical results, provided it remains simple and strong, and that we do not engage it in the way of complicated maneuvers that are absolutely contrary to the aptitudes of our race and to the characteristics of suddenness, energy and violence which will constitute its best guarantee of success.

What I mean to say is that the chief, who knows how to decide at the proper time, will recognize the character of the terrain and the dispositions of the enemy, and will adopt a plan and give his orders so that the troops, on arriving in sight and within range of the enemy, will have nothing to do but to burst forth at a given signal into a sudden and simultaneous attack.

I should like very much to be able to say that we are the only ones who have taken this way; but, nowadays, the progress made by any one army in organization, in armament, and in instruction seldom remains long as its personal possession, and is very soon taken up by neighboring armies.

The new regulations for the German cavalry, of the 3d of April, 1906, which have scarcely been put into application, seem also to have broken away from the conception of the battle of lines and to have adopted the principle of formation, either in echelon or side by side. Often, through atavism more than through fear of employing tactics still insufficiently understood, the Germans have avoided the formulation of any clear principles, and still more of any methods for the employment of echelons; it seems that their preferences still tend toward formations side by side, susceptible of procuring more rapid and more extended deployment. On the other hand, they accept and even extol, in certain condi-

tions, the contingency of intervention by fire and of the necessity for dismounted action.

So that the two rival cavalries that had separated in 1876 and have since followed diverging routes up till the present day, find themselves face to face again, with scarcely anything more to differentiate them than a few variations of names, their racial characteristics and their traditional virtues.

Such a situation should not discourage us. For if I have succeeded in presenting in this long talk, the conclusion of which it admits, you ought to be convinced that we have nothing to learn and nothing to fear from any one, if we know how to extract from our national patrimony all the comfort and also all the lessons that it offers. And the first of these lessons is that the base of our tactics is not found so much in the text of our drill regulations as in the brain of our chiefs and in the hearts of our soldiers; and as a consequence, that a just notion of the preponderance of moral factors and a jealous *conservation of the military spirit* will constitute always our principal force.

The military spirit! Surely it would never desert the hearts of those (officers of the active, reserve and territorial troops) whose profession and duty is to foster and prepare it.

Nevertheless, we have seen how, in periods of long peace, that it can be obscured and deformed; we have seen how the tendency has been natural and easy to lose sight of the spirit of energy and violence which characterize it, while dabbling in subtle discourses on regulation, formulæ and tactical dilettantism! But, at least, those who are so keen for details are neither indifferent nor skeptical; they live, they feel, and they believe! This is not the gravest danger. The stupendous danger that awaits the most civilized and the most generous nations is hidden in the thought that because of their very magnitude, because of the extent and the depth of the evils that they provoke, wars have become a sort of infrequent cataclysm, a vestige of heroic but barbarous times, destined some day to disappear altogether.

Then why prepare so arduously and so expensively for this formidable accident, this gigantic effort which, in all probabilities, is never to happen?

Preserve us from any deceiving delusions that might, under the influence of prolonged but always precarious peace, cause the birth of those philanthropic ideas which, perhaps, are very beautiful from the point of view of humanitarians, but certainly very pernicious from the point of view of the nation. Let us oppose them stubbornly and with iron determination.

We know too well, you know too well in the land of Lorraine, that nations, in their development and in their economic or historical claims, have always made use of the most brutal and the most violent force.

And even though we do preserve intact the military spirit, we shall not think that we have done our whole duty simply by accumulating war material and by devoting ourselves to the most elaborate physical training. We will only declare ourselves satisfied when, after having given the necessary military instruction, we will have molded the hearts of our soldiers into a determination to march like their ancestors into the battle willingly, not only to defend but to conquer — which is the veriest conception of war — and, like their ancestors, to march with the conviction that France cannot be a great nation unless she has a great army.

For success in arms brings not only moral prestige but material prosperity, not only honor, but profit. And it is unnecessary to mention that the startling truth of this historic verity lies at our own gates and under our own eyes.

TACTICS.

BY

BALCK

Colonel, German Army.

VOLUME II.

CAVALRY, FIELD AND HEAVY ARTILLERY

IN

FIELD WARFARE.

AUTHORIZED TRANSLATION FROM THE GERMAN

BY

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FOURTH ENLARGED AND COMPLETELY REVISED EDITION.

The following pages are from the advance sheets of a forthcoming work of which the above is the title.

THE TACTICS OF CAVALRY.

I. GENERAL.

I. ARMS AND EQUIPMENT.

Cavalry, unlike infantry or artillery, can not be improvised during the course of a campaign. This fact is most intimately related to the peculiar characteristic of cavalry—trained trooper and trained horse; the former to use his weapons while riding at top speed, the latter to carry a heavy load across country at a gallop.* In the infantry, trained men are used to fill up existing cadres, whereas in the cavalry, untrained horses must be assimilated. Even trained horses are not at once equal to the demands made by a campaign; they require some time to become accustomed to exertions under service conditions. If great exertions are demanded of them at the start, they will break down within a short time. By the time the battle of Königgrätz was fought, the Prussian cavalry had already lost half of its augmentation horses. Untrained horses are unsuited for movements in close order; they are unsteady, refuse to leave the ranks, and can not be sufficiently controlled to enable the trooper to use his weapons.†

* "The trained horse, which, owing to the equal suppling of all of its muscles, moves well balanced, saves its forelegs and joints, supports its back better, trots with less fatigue, and has, in general, more endurance than the untrained animal, which stiffens itself against the rider's load and thus expends power uselessly. Besides, the rider himself experiences far less fatigue on a trained mount than on an untrained horse, a point by no means to be underestimated." v. BERNHARDI, *Unsere Kavallerie im nächsten Kriege*, 1903, p. 131 (see *Cavalry in Future Wars*, by v. BERNHARDI, GOLDMAN's translation, p. 185).

† Failure of purchase horses: Charge at Ville sur Yron. According to the history of the 10th Hussar Regiment (p. 138), seven of the fourteen Hussars that were wounded rode purchase horses. After the surprise at Pont à Mousson, two out of thirty-two Dragoons were captured because they were unable to force their purchase horses to jump into the Moselle. *Cavalry on Service*, by v. PELET-

Cavalry formed during the course of a campaign is, for the time being and until it succeeds in attaining a higher standard of training, not much more than mounted infantry. This explains the complete failure of the French to make any battle use of their cavalry during the spring campaign of 1813, and of their march regiments (forty-five of which were newly organized) in 1870-71, and the similar failure on the part of the British in the South African war after all their available horses had been used up.

At the commencement of hostilities in 1813, the French cavalry numbered only 1,600 mounted and 1,200 dismounted troopers. After the victory at *Bautzen*, the French army, according to Foucart, numbered 202,500 men of all arms, including 11,000 cavalry. The failure of the French cavalry during the pursuit after this battle was not due to its small numbers, but to its poor training.

In May, 1813, the Prussian cavalry consisted of 76 escadrons with 7,291 horses, and at the termination of the armistice, it consisted of 84 Line and 116 Landwehr escadrons, 20 escadrons Volunteer Jäger, and 3 National cavalry regiments, with a total of 27,945 horses. This does not include 22 depot escadrons.

In a memorial addressed to Fieldmarshal Blücher in 1817, General von Borstell made the following observations in regard to the Landwehr cavalry raised during the War of Liberation: "The Landwehr troopers, however, could not ride, although that is indispensable for service in ranks. They rode poor, weak mounts, whom they were unable to control. Besides, they did not know how to use their weapons, and were, in addition, undisciplined. During a charge, they were brave to the point of forgetting all obedience and order; during a retreat, on the contrary, after a charge that had been repulsed, only natural obstacles were, as a rule, able to stop them. In a word, the Landwehr cavalry, even more than the cavalry of the Line, lacked physical and moral stamina and unqualified obedience to the trumpet. The latter, however, should be part and parcel of the trooper's make-up to an even greater extent than obedience to the signal horn is to

NARBONNE, LEGARD's translation, p. 225.—It is worthy of note that, during the mobilization in 1870, the purchase horses of the 15th Uhlan Regiment were formed into a fifth platoon in each escadron (*Eskadron*). This arrangement was practicable because the escadrons were still at full strength when they took the field, and, moreover, gave an opportunity gradually to accustom the horses to work under the saddle. *Ibid.*, p. 278.

NOTE: The term *Eskadron* has been rendered by escadron in this work. The escadron is the tactical, as well as the lowest administrative unit of European cavalry. For the strength of the escadron in the various armies, see table, page 746.—Translator.

* KÄHLER, *Preussische Kavallerie*, p. 10.

	WAR STRENGTH.		TRAIN OF A REGIMENT.		ARMS.	
	REGIMENT.	REGIMENT.	COMBAT TRAIN.	FIELD TRAIN.		
GERMANY	6 officers; 25 H. G. O.; 4 trumpeters; 100 privates; 100 horses; 2 vehicles.	4 escadrons. (One escadron remains behind as a depot escadron). Strength: 700 men, 700 horses, 10 vehicles.	Combat Train: 20 led horses; 2 saddle horses for postmen; 2 Medical Corps pack horses; 1 2-horse Car. ambulance; 2 2-horse bridge wagons; 1 2-horse Sig. Corps wagon.	Field Train: 1 4-horse Hqs. baggage wagon; 4 2-horse escadron baggage wagons; 5 2-horse supply wagons, (including 1 sutler's wagon); 5 4-horse forage wagons.	Lance; Carbine, model 1890; Saber, attached to saddle. H. G. O. and trumpeters carry automatic pistol, model 1901.	For each On the line, 10
FRANCE	6 officers; 100 men; 100 horses; 1 vehicle. Force strength: 6 officers; 100 men; 100 horses.	4 escadrons. Strength: Approximately 700 men, 700 horses and 1 M. G. platoon of 2 M. G.	In a Cavalry Division: 50-horse field forage; — 2-horse baggage wagons; 2 2-horse sutler's wagons; 12 2-horse supply wagons (carts); 2 2-horse ambulances; 21	In the Corps Cavalry: 1 5 2 12 2 21	Saber, attached to saddle; Carbine, model 1890; along comes the bank (Cavalrymen carry 25 to 30 lbs each). The Dragon regiment of the cavalry division carries red and white pannon. Officers, H. G. O., trumpeters and support carry Tolez. Revolver.	For each On the line, 10 The division remains behind Revolver Saber Rank H.
AUSTRIA-HUNGARY	Force strength: 6 officers, 100 men, 100 horses. Austrian Landwehr: 6 officers, 100 men, 100 horses. Hungarian Landwehr: 6 officers, 100 men, 100 horses. Force strength: 6 officers, 100 H. G. O., 100 men.	6 escadrons. Effective strength: Approximately 600 men, 1 platoon of pioneers (20 men) and Signal Corps detachment with 2 km. wire.	1 2-horse sutler's wagon; 20 2-horse supply wagons; 7 2-horse tool wagons; 7 2-horse escort wagons; 7 2-horse covered escort wagons. 21		Saber; Carbine, model 1890. Officers and H. G. O. carry repeating pistol, model 1877.	For each For each Saber For the cavalry
ITALY	Force strength: 6 officers, 100 men, 100 horses. Force strength: 6 officers, 100 men, 100 horses.	5 escadrons. Effective strength: 600 sabers.	6 2-horse supply wagons; 6 4-horse forage wagons; 2 2-horse escort wagons for regimental headquarters; 2 4-horse escort wagons; 4 4-horse field forage. 22		Saber, and carbine, model 1890 (with bayonet). Both carried attached to saddle. The first ten carry, in addition, a lance with a blue and white pannon. The lance is 2.50 m. long and weighs 2.50 kg.	For each For each
RUSSIA	6 officers; 25 H. G. O.; 100 privates; 100 horses.	6 escadrons. Strength: 25 officers; 25 H. G. O.; 100 trumpeters; 100 non-combatants; 100 privates; 100 saddle horses; 100 draft horses; 25 vehicles. Don Cossacks: A regiment consists of 6 eskadrons. Strength: 25 officers; 25 H. G. O.; 100 trumpeters; 100 non-combatants; 100 privates; 100 horses; 25 vehicles.	I. Eskadron (Combat Train): 40 led horses and 2 reserve horses. 25 vehicles: 2 1-horse ammunition carts; 1 medicine cart; 1 intramarching tool cart; 2 ambulance carts; 1 officer's baggage cart; 6 escadron baggage carts; 1 veterinary cart; 2 field kitchens.	II. Eskadron: 2 reserve horses. 12 vehicles: 1 baggage cart; 5 2-horse supply wagons; 6 escadron baggage carts. Note: Cossack regiments have 25 vehicles.	Saber has plain guard and is carried on a strap over right shoulder. Bayonet rifle with bayonet is carried on a strap over left shoulder. Bayonet is a standard standard to other standard. Fedor Cossacks (Don, Orenburg, Ural, etc.) Saber and Cossack rifle; both carried. Lance without pannon. Cossack Cossacks: Saber without guard, Cossack rifle in left hand, and knife (kindsap).	For each For each For each For each For each For each
ENGLAND	6 officers; 10 H. G. O.; 100 privates; 100 horses.	2 escadrons and 1 M. G. platoon. Strength of the regiment: 25 officers; 25 H. G. O.; 100 privates; 100 horses. Strength of the M. G. platoon: 1 officer; 1 H. G. O.; 10 privates; 10 horses; 1 machine gun.	15 vehicles (including one intramarching tool and tool wagon for each escadron).		Saber; Short rifle, model 1901, with bayonet.	There on the line, 10 The regiment remains behind The regiment remains behind

Cavalry formed during the course of a campaign is, for the time being and until it succeeds in attaining a higher standard of training, not much more than mounted infantry. This explains the complete failure of the French to make any battle use of their cavalry during the spring campaign of 1813, and of their march regiments (forty-five of which were newly organized) in 1870-71, and the similar failure on the part of the British in the South African war after all their available horses had been used up.

At the commencement of hostilities in 1813, the French cavalry numbered only 1,600 mounted and 1,200 dismounted troopers. After the victory at *Bautzen*, the French army, according to *Foucart*, numbered 202,500 men of all arms, including 11,000 cavalry. The failure of the French cavalry during the pursuit after this battle was not due to its small numbers, but to its poor training.

In May, 1813, the Prussian cavalry consisted of 76 escadrons with 7,291 horses, and at the termination of the armistice, it consisted of 84 Line and 116 Landwehr escadrons, 20 escadrons Volunteer Jäger, and 3 National cavalry regiments, with a total of 27,945 horses. This does not include 22 depot escadrons.

In a memorial addressed to Fieldmarshal Blücher in 1817, General von Borstell made the following observations in regard to the Landwehr cavalry raised during the War of Liberation: "The Landwehr troopers, however, could not ride, although that is indispensable for service in ranks. They rode poor, weak mounts, whom they were unable to control. Besides, they did not know how to use their weapons, and were, in addition, undisciplined. During a charge, they were brave to the point of forgetting all obedience and order; during a retreat, on the contrary, after a charge that had been repulsed, only natural obstacles were, as a rule, able to stop them. In a word, the Landwehr cavalry, even more than the cavalry of the Line, lacked physical and moral stamina and unqualified obedience to the trumpet. The latter, however, should be part and parcel of the trooper's make-up to an even greater extent than obedience to the signal horn is to

NARBONNE, *LEGARD's* translation, p. 225.—It is worthy of note that, during the mobilization in 1870, the purchase horses of the 15th Uhlan Regiment were formed into a fifth platoon in each escadron (*Eskadron*). This arrangement was practicable because the escadrons were still at full strength when they took the field, and, moreover, gave an opportunity gradually to accustom the horses to work under the saddle. *Ibid.*, p. 278.

NOTE: The term *Eskadron* has been rendered by escadron in this work. The escadron is the tactical, as well as the lowest administrative unit of European cavalry. For the strength of the escadron in the various armies, see table, page 746.—*Translator*.

* *KAEHLER, Preussische Kavallerie*, p. 10.

ARMY.	AMMUNITION.	SPECIAL EQUIPMENT.	LOAD CARRIED BY A HORSE.	REMARKS.
Lance; Carbine, model 1888; Saber, attached to saddle. H. C. O. and trumpeters carry military pistol, model 1888.	For carbine.....45 rounds; On the ammunition wagon, per car- bine, an additional.....30 rounds.	The two bridge wagons carry: 25 explosive cartridges, model 1888; 25 explosive cartridge fuses; 5 long explosive cartridge fuses; 45 primers. Demolition tools for destroying telegraph lines. 15 small spades; 1 pickaxe; 25 large spades; 45 hatchets; 15 mattocks.	Dragoons.....125 kg. Uhlans.....125 kg. Cuirassiers.....125 kg.	* Only in regiments belonging to a cavalry division. † Reserve cavalry regiments are equipped neither with bridge nor with signal Corps wagons. ‡ A cavalry division has, in addition: (a) One 1-horse tool wagon belonging to the de- tachment of pioneers and attached to the combat train; (b) Seven cavalry ammunition wagons belonging to the light ammunition column; (c) One 4-horse Medical Corps store wagon and one 1-horse for the commander of the de- tachment of pioneers, both belonging to the field train. Each regiment has one sewing ferry and material for constructing a foot-bridge 15 m. long, or a reinforced foot-bridge 5-10 m. long.
Saber, attached to saddle; Carbine, model 1888; along with the back (Cuirassiers carry 2 of the saber). The Dragoon regiment of the cavalry division carries red and white ponies. Officers, H. C. O., trumpeters and purs carry Teleg. Revoiver.	For carbine.....45 rounds; Cuirassiers, per carbine.....45 rounds. The horse batteries of the cavalry division carry a total of 24,000 rounds H. A. A. Revoiver ammunition: Each officer carries.....15 rounds; Each H. C. O. and private.....30 rounds.	Each trooper carries a malleable cartridge, weighing 125 g. A cavalry division carries 25 kg. explosives on its malleable wagons. Each escadron is equipped with 4 picks, 2 shov- els, 2 axes, 4 saws and 4 wire cutters. Bridge material Pont Vevry. Each regiment is equipped with 2 essential ponies and mat- erial for constructing a foot-bridge 70 m. long. Signal Corps detachment of 4 men.	Light cavalry.....125 kg. Dragoons.....125 kg. Cuirassiers.....125 kg.	A cavalry division has six sewing ferries and material for constructing a foot-bridge 150 m. long, or a rein- forced foot-bridge 40 m. long. † In a cavalry division there are carried, in addition, on the 1st and 2d ammunition wagons, 125 explosive cartridges as well as 2 sets of railway despatch tools.
Saber; Carbine, model 1888. Officers and H. C. O. carry repeating pistol, model 1887.	For carbine.....45 rounds; For carbine, in the cavalry ammu- nition column.....15 rounds. For the repeating pistol, there are available, per man.....30 rounds.	1 pack horse carrying explosives for the platoon of pioneers. 25 explosive shells each containing 1 kg. of coru- st. Signal Corps detachment equipped with 2 km. wire.	• 125 kg.	A cavalry division has six sewing ferries and material for constructing a foot-bridge 150 m. long, or a rein- forced foot-bridge 40 m. long. † In a cavalry division there are carried, in addition, on the 1st and 2d ammunition wagons, 125 explosive cartridges as well as 2 sets of railway despatch tools.
Saber, and carbine, model 1888 (with bayonet). Both carried attached to saddle. The first ten regiments carry, in addition, a lance with blue and white ponies. The lance is 125 m. long and weighs 225 kg.	For carbine.....45 rounds. For revolver.....15 rounds.	The wagons carry 2 boxes containing 75 car- tridges filled with explosive gelatin. Intrenching tool equipment and 4 cartridges filled with explosive gelatin are carried by the 9 pioneers attached to each escadron.	125-150 kg.	Some escadrons have mountain train equipment pack animals being used even for transporting ord.
Saber has plain guard and is car- ried on a strap over right shoulder. Dragoon rifle with bayonet is car- ried on a strap over left shoulder. Saber is in a scabbard attached to saddle girth. Plains Cuirassiers (Don, Grenadier, Uhlans, Saber and Cuirassier rifle; from 1888, lance without ponies. Cuirassiers Cuirassier, Uhlans, Uhlans guard, Cuirassier rifle in full dress, Saber, and knife (kitchen).	<i>Cuirassiers of the Line:</i> For rifle, in 3 ammunition pouches 45 rounds; For rifle, in the 3 ammunition carts 25 rounds; For rifle, in the ammunition park... 15 rounds. <i>Cuirassiers:</i> For rifle: On trooper's person.....30 rounds; In saddle bags.....30 rounds.	Each regiment is equipped with 125 kg. wet gun cotton (in the form of explosive cartridges). Each cavalry (Cuirassier) regiment is equipped with the following intrenching tools: 125 small spades; 125 hatchets; The wagons carry, in addition: 25 hatchets and 25 large spades. Railway demolition tools, telephones and heliographs are likewise carried.	125 kg.	
Saber; Short rifle, model 1888, with lance bayonet.	There are available per rifle: On officer's person.....125 rounds; In saddle bags.....125 rounds; In ammunition column.....125 rounds; In H. C. O. column.....125 rounds. Machine gun.....1,200 rounds; In H. C. O. column.....1,200 rounds; In H. C. O. column.....1,200 rounds; In H. C. O. column.....1,200 rounds; Total.....12,000 rounds.	4 pioneers and 1 pack horse carrying explosives are attached to each escadron. The regiment is equipped with: 15 spades; 15 picks; 71 axes; 125 pounds of gun cotton; 125 sand bags.	125 kg.	§ Without intrenching tools, which are provided as part of the wagon equipment.

that of the *tirailleur*. In the course of the war, I saw Landwehr cavalry regiments that, without having suffered serious losses at the hands of the enemy, had an effective strength of not more than 100 horses; and yet such organizations were classed as regiments and disposed of as such. This weakness is a result of rapidly and hastily raising cavalry units at the outbreak of war.* Until 1852, the Landwehr cavalry was armed with the lance, and troopers who had not been trained in handling that weapon had to learn how to use it during the period of mobilization. The Landwehr cavalry regiments to be raised in a future mobilization will have an advantage over those raised in 1813, in that they will at least possess trained riders, of whom, if they are recruited in a district where good mounts are available, something may be expected soon after the opening of hostilities. During the battle of *Noisseville*, the 1st Escadron of Prussian Reserve Dragoons began to charge, and at *Oswiecim* (also written *Auschwitz*), June 27th, 1866, the 2d Escadron of Landwehr Uhlans successfully charged Austrian Uhlans.

The German cavalry, both divisional and independent, is uniformly trained, armed and equipped. Differences in the physical development of men and horses necessitate a division into heavy, medium and light cavalry, but this in no way affects the tactical employment of the cavalry. To the introduction of a neutral tinted uniform, there is the objection that friend may not be distinguishable from foe,† and that it is more difficult to assemble a large unit after a charge. The trooper carries the lance, the carbine and the saber. The saber is carried attached to the saddle in order that the movements of the trooper may not be impeded when dismounted to fight on foot. This mode of carrying the saber is objectionable only in case the trooper falls or becomes separated from his horse. Officers, non-

* See also v. d. MARWITZ, *Erinnerungen*, II, p. 83. In regard to the charge made by Landwehr cavalry during the engagement at *Hagenberg*, Colonel von BISMARCK states: "I can turn them loose soon enough, but whether I shall afterwards again see a single man, that is a different question, and I can not be responsible for it." (v. d. MARWITZ, II, p. 170). In regard to a charge made during the armistice, and in which all order was lost, v. d. MARWITZ writes (II, p. 73): "His majesty observed that it was indeed fortunate that the wall had stood so firmly."

† KUNZ, *Reiteret*, p. 38 (Prussian Black Hussars and Baden Dragoons on August 4th); p. 69 (Prussian Uhlans, and Bavarian Cuirassiers in white overcoats on August 6th); p. 138 (French Light Blue Guard Lancers at *Vionville*, which, in order to prevent confusion, had left behind their white coats (*Uhlankeas*) on moving into the field); p. 142 (French Brown Hussars are charged by French Dragoons).

commissioned officers and trumpeters carry the revolver,* and non-commissioned officers, in addition, the lance.

Views on the lance. In the Russian cavalry, in which formerly the front-rank men in each regiment were armed with the lance, that weapon was abolished in 1884. In Austria, the lance was abolished in 1863, and in France, in 1871. At the present time, the lance has been readopted for the entire German cavalry, and the Dragoon regiments of the French cavalry divisions have likewise been again armed with that weapon. The first British Lancer and Dragoon regiments sent to South Africa carried the lance; the regiments mobilized later exchanged the lance for the rifle. The Germans enumerate the following as special advantages of the lance: the moral effect produced by a line of charging cavalry armed with the lance; the value of the lance in riding down the opposing cavalry; the chance it affords the trooper of defending himself against several opponents armed with sabers; and the dangerous character of the wounds produced by it.† The lance alone does not absolutely guarantee success, for the success of a charge is, in the main, determined by other factors, but the lance undoubtedly contributes to the successful issue of the fight. In a close *melée*, the lance may become an impediment and the saber may be an advantage.‡

But as soon as the *melée* turns into a number of isolated hand-to-hand combats, during a pursuit and during

* The revolver has been replaced by pistol, model 1908.

† Staff Surgeon Dr. Schaefer (Archive of Clinical Surgery, Vol. 62, Chapter III) lays particular stress on the mild character of the wounds produced by the lance. Out of 600 wounds reported to have been produced accidentally in time of peace, only 10.8 percent. resulted fatally. Although wounds produced by the lance belong to the class of puncture wounds (the lance penetrates, as has been observed, horse and rider when it is driven into the ground and the horse runs against it), its comparatively blunt and gently tapering point enables the lance to push aside unharmed, when it penetrates into the body, easily displaced organs, such as the heart, the stomach, nerves and entrails.

‡ "In a *melée* it [the lance] never proved troublesome or unnecessary to the trooper. In the various situations, he always knew how to use it to advantage. The greater length of the [Prussian] lance was an advantage and cost the enemy much loss in a charge. The shorter Austrian lance, provided with a button, was often used as a club, and the purpose for which the lance was intended was thus ignored." BESEMER, *Preussische Kavallerie in der Campagne von 1866*, p. 101.

an attack on infantry or artillery, the lance at once regains its superiority. A trooper armed with a lance will be better able to keep a pursuer at a distance than a trooper who is armed with the saber only. Against a cuirass neither the lance nor the saber can accomplish anything.

In the report made by the 11th Uhlan Regiment on the charge at *Koniggratz*, it is emphasized that the lance proved superior to the sabers of the Austrians in spite of the fact that the latter wore loose, flowing overcoats; and that the lance proved a much more terrible weapon than had been anticipated. The engagement at *Saar* (July 9th, 1866) is especially instructive. In this engagement, two escadrons of the 9th Uhlans [armed with the lance], charged two escadrons of Austrian Hussars [armed with the saber], threw them back and pursued them for 5 km., while at the same time keeping up a running hand-to-hand fight. The losses were as follows:

Uhlans: 1 officer, 17 men and — horses;

Hussars: 5 officers, 38 men and 38 horses.*

In the charge made by French Guard Lancers against Oldenburg Dragoons at *Mars-la-Tour*, the total loss of the Prussian cavalry employed was 46 officers and 402 men (out of an effective strength of 2,925 men, i. e., a loss of 15.2 percent.), the loss of the Oldenburg Dragoons alone being 12 officers and 113 men (27.3 percent.).‡ During the charge the troopers of the various German regiments, some armed with the saber, some with the lance, made common cause, in order to break down the resistance offered by isolated French troopers who, separated from their horses, defended themselves with their firearms.

The lance will likewise be superior to the saber in a charge against infantry and against artillery.‡

After the charge at *Koniggratz*, many non-commissioned officers of the 4th Uhlan Regiment armed themselves with the lance, whose worth they had learned to appreciate in action.*

* According to the *History of the 9th Uhlan Regiment*, p. 14. See also the small action at *Bolchen* (August 9th, 1870) in *Cavalry on Service*, by v. PELET-NARBONNE, LEGARD's translation, p. 119.

† KUNZ, *Reiterei*, pp. 139 and 141.

‡ Length of the lance:

Old Austrian lance	2.63 m.
Old French lance	2.84 "
Old Prussian lance.....	3.14 "
Cossack lance.....	3.16 " (Weight, 2.87 kg.)
New French lance.....	2.90 " (Weight, 1.85 kg.)
New German lance (of steel tubing).....	3.52 "
New Italian lance	2.95 " (Weight, 2.55 kg.)

¶ *Geschichte des 4. Uhlanen Regiments*, p. 82.

The employment of the lance requires that troopers and remounts be well developed physically, and that the trooper be thoroughly trained in handling his horse and his weapon.* This may, perhaps, make it necessary in a campaign to arm recruits with the saber only.† The lance considerably increases the load to be carried and causes an unequal distribution of the same. This is a disadvantage that is apt to lead the trooper to lounge in the saddle when fatigued and riding at a walk for long distances, thus causing sore backs. It can not be denied that the lance is an impediment in the field when writing messages, when riding across country, especially through woods, and on roads with overhanging branches of trees; when jumping and climbing; in dismounted action, and on young, unruly and fractious horses. But these disadvantages can not outweigh the other advantages of the lance.

* "The lance, although a terrible weapon in the hands of a man who knows how to use it, is an impediment, in fact a positive detriment, in the hands of one not accustomed to it." HEROS VON BORCKE, *Zwei Jahre im Sattel und am Feinde*, I, p. 43.—General MARMONT is also a warm advocate of the lance as a weapon for cavalry of the Line. In *Esprit des Institutions*, p. 45, he says: "The lance should be the principal arm and the saber an auxiliary arm."

General DRAGOMIROV says: "Military history shows that in a charge made in close order, as well as in hand-to-hand combat, the saber always gains the superiority, provided a *melee* actually occurs."

Colonel WALTER VON WALTROFEN, Austrian Army, voices the same opinion in *Kavallerie im Zukunftskriege*. He says: "The lance has gained importance as a weapon through a very different feeling, through the desire for self-preservation, the desire to keep the enemy at a distance and to avoid fighting him breast to breast."

† The Prussian Landwehr troopers from Brandenburg entered the spring campaign of 1813 armed with lances. After four weeks' instruction in its use, the troopers gained confidence in and regard for it. v. d. MARWITZ, *Posthumous Works*, II, p. 74, says: "The men were tormented with it [the lance] the entire day, first dismounted, then mounted." This writer ascribes absolute superiority to the Lancer and goes so far as to maintain that, in a charge made in close order by a line armed with the saber against a line armed with the lance, it is immaterial whether in the former the men are armed with sabers or with feather-dusters. *Ibid.*, p. 172.

2. ORGANIZATION OF THE CAVALRY.

(a) MINOR CAVALRY UNITS.

The principles that govern in determining the size of an *escadron* have already been given.* The *escadron* must be small enough to allow of its being controlled, when in combat formation, by the voice and the personal example of a single leader; it must be capable of sustaining an action independently and of performing a simple combat task. If twelve files (24 men) is assumed to be the minimum strength allowable for a platoon, we obtain, in the four-platoon *escadron*, which is everywhere, except in Switzerland, recognized as the proper organization, a minimum strength of 96 men. If we add to this about 30 men and horses that are not to be taken into the field, and a like number of men and horses absent on detached service, sick, etc., we arrive at a peace strength of approximately 150 troopers for the *escadron*. To go below this figure would curtail the independence of the *escadron*, in view of the casualties in horses and the numerous details to be made in the field, while, to raise this figure considerably (say to over 170 men) would reduce mobility and make supervision over trooper and horse too difficult.

The question of the organization of a cavalry regiment appears to be less free from objections. In the field, the German and French cavalry regiments have four, the English and Swiss regiments three, and the Russian and Austrian regiments six *escadrons* each.

In time of peace, six-*escadron* regiments are undoubtedly cheaper than four-*escadron* regiments, as fewer regimental staffs are required in the former case.† Detach-

* *Tactics*, I, KRUEGER'S translation, p. 32.

† A German cavalry division has three brigade and six regimental staffs, while an Austrian cavalry division, which has the same number of *escadrons* as the German, has only two brigade and four regimental staffs.

ments can be made with more or less impunity from a six-escadron regiment without thereby causing an appreciable diminution of the fighting power of the remainder. In fact, six-escadron regiments actually offer a temptation to make detachments, as they are unwieldy in difficult country, can not, even under favorable conditions, be controlled by the voice of a single leader, and necessitate the introduction of an intermediate unit between regiment and escadron, the so-called "division," consisting in Russia of two, in Austria of three escadrons.*

Four-escadron regiments are more easily managed, and are capable of deploying quickly in any direction—even from the most unfavorable formation, the column of platoons and the regimental column (mass). They can form line from route column more quickly than the six-escadron regiment (this movement taking four minutes in the former and six minutes in the latter), and their size actually demands that each regiment be kept intact and employed as one unit.

Six-escadron regiments are too strong to be assigned to infantry divisions, yet, split in two, hardly strong enough to fulfill the combat functions of divisional cavalry. When consisting of four escadrons each, regiments of the cavalry divisions can be exchanged, in case of necessity, for those attached to the infantry divisions.

Three-escadron regiments possess great mobility, but they are so weak that the personality of the regimental commander is not properly utilized.

Thus, tactical considerations argue for four-escadron regiments, considerations of economy for six-escadron regiments.

Cavalry can be quickly mobilized and can take the field properly mounted if its field escadrons possess, in time of peace, trained and militarily schooled mounts. The annual levy of the youngest remounts is not available for the peace cadres. Frequently a second levy, embracing the horses eliminated as unfit in the particular year, those temporarily

*In Italy one escadron from each cavalry regiment will presumably be attached to infantry divisions.

sick and others not fit to be taken along into the field, is likewise unavailable. Assuming that one-tenth of the total number of horses in service will have to be replaced annually, it follows from the foregoing that, in order to enable all units to take the field at once at full war strength, one-fifth more horses than required must be kept in readiness in time of peace—whether this be done by raising the peace strength of each escadron by one-fifth or by uniting the extra mounts into a fifth escadron in each regiment. This fifth escadron exchanges its serviceable mounts and equipment for the un-serviceable mounts and equipment of the field escadrons of the regiment and then constitutes the depôt escadron. Each fifth escadron must consist of about 140 to 150 mounts in time of peace.

In Austria, each cavalry regiment has in time of peace a reserve cadre (2 officers, 5 N. C. O., 16 privates and 7 horses), which, during the period of mobilization, is expanded into a depôt escadron of 344 men and 315 horses by the transfer to it of men and horses not fit for field service from other organizations, and by recruits and remounts. As an escadron receives annually a number of remounts equal to 12 percent. of its strength, twenty-five horses are purchased annually in order that more horses may be available for the field escadrons on mobilization. These purchase horses are then trained and, during the continuance of peace, farmed out to private parties. They are annually examined as to their serviceability and must be placed at the disposal of the organization to which they are assigned, within twenty-four hours after the order for mobilization is issued. After six years (in Hungary after five years) these animals become the property of the private persons into whose keeping they have been given. The horses for the Landwehr cavalry are provided for in a similar manner, after having been trained for five months in the organization to which they are assigned.

The brigade, consisting of two regiments, can still be controlled, when deployed in line, by the voice of a single person, the brigade commander.

(b) MAJOR CAVALRY UNITS.

Cavalry is employed as independent cavalry (which, in the form of cavalry divisions or cavalry corps, is attached

to armies) or as divisional cavalry, and, in some states, as corps cavalry. The function of independent cavalry is to defeat the enemy's cavalry, so as to make reconnaissance possible, and to operate against the flanks and rear of the enemy. In addition, it is to assist in bringing about the decision on the field of battle. Divisional cavalry is an auxiliary arm of the infantry and artillery, and, in spite of its inferior numerical strength, it also will be able to take an active part in the fight.

For a discussion of *independent* and *divisional* cavalry, see *Taktik*, IV, p. 191, et seq.

For a discussion of *divisional* and *corps cavalry*, see *Taktik*, III, p. 38, et seq.

For a discussion of the organization of cavalry divisions (from a strategical point of view) see *Taktik*, III, p. 53, et seq.

The Franco-German war furnished valuable lessons in regard to the strength and appropriate composition of cavalry divisions. In general, about 2.8 guns per 1,000 troopers was considered a proper proportion. Of the eight German cavalry divisions used in the Franco-German war, four consisted of three brigades and two horse batteries each, and four of two brigades and one to two horse batteries each. To the demand for great mobility and independence, properly appreciated at that time, must now be added the demand for a high degree of fire power and for an abundant equipment with the means for accomplishing demolitions and for transmitting information.

Under the present highly developed agricultural conditions of Central Europe, the cavalry division, consisting of 3,000 to 4,000 troopers, is the largest cavalry organization that, handled as one unit, can act under the control of a single leader. "The combat is the severest test of governability. The rapid course of a mounted action requires, on principle, not only that the commander be able to take in at a single glance the frontal extension of his organization, but also whatever transpires on adjacent terrain. Otherwise,

COMPOSITION AND STRENGTH OF A CAVALRY DIVISION IN THE VARIOUS ARMIES

[illegible]

control and timely launching of the reserves, the principal means that the commander has of influencing the combat, are impossible. Besides, the very nature of a cavalry combat requires that, immediately after the collision of the leading lines, the reserves be available for instant and direct participation in the fight. With a mass of six regiments deployed for action, the space available will still permit the above conditions to be fulfilled.—To form a cavalry division of fewer regiments, for example of four only, is not advisable, since, in most cases, it is unavoidable to make detachments, whereby the fighting strength of the division is considerably reduced. The division would, if so reduced in strength, scarcely be equal to the problems confronting it in war. These problems are, in any case, however, not easy, and the leader of the division, even if he is talented, requires an extensive preliminary training to solve them successfully. When the division consists of more than six regiments, only eminently talented leaders, and these only when the subordinate leaders and the troops are thoroughly trained, are likely to be successful in directing it in combat.* It is not advantageous to reduce the number of escadrons in a division, because, whenever detachments are made, its fighting strength will be too greatly reduced. The leader must make the numerous detachments required for reconnaissance and the transmission of information,† harmonize with the demand of appearing as strong as possible on the battlefield. The duty of protecting message collecting stations, signal stations and trains can very properly be transferred to cyclist detachments, which can also relieve the cavalry of furnishing the relay service. The wide dissemination of the cyclist sport compels us to take advantage of it, and gives us an opportunity, after we have suffered

* v. VANDY, *Studien über Truppenführung*, IV, p. 9.

† A cavalry division may have to furnish the following: three reconnaissance escadrons, three escadrons for the signal stations and the message collecting stations, and two escadrons as escorts for the trains and columns. In this manner, one-third of the division is frittered away.

heavy casualties in horses, to mount the men that have become dismounted, on requisitioned wheels and to transport them after the cavalry division, in order to use them at least as cyclists. Mounted infantry would ever be a poor makeshift. On the other hand, the assignment of a seventh regiment to each cavalry division, this regiment to take the place of the escadrons that have been detached, is well worth considering.

The peculiar character of mounted actions would appear to make a three-unit organization desirable.* From this follows the organization of a cavalry division into three brigades, each of two regiments. Military history shows that this organization is the best, although it does not, of course, meet all the requirements of a changing situation. The mission of a cavalry force and the numerical strength of the opposing cavalry may make it necessary to augment the strength of the cavalry at one point at the expense of the forces employed at others. This is especially true where the divisional cavalry is brought up. Until the principal cavalry actions have been fought to a decision, the columns in rear must be satisfied with the minimum cavalry force with which they can get along.

When a stronger resistance is encountered, one that the cavalry can overcome but slowly by means of dismounted action and at the cost of disproportionately great sacrifices, it is advisable to attach horse artillery to the cavalry. Artillery fire is best calculated to force the enemy to show his hand. For a mounted action alone, a single battery is sufficient; for bringing a strong artillery force into action, time is usually lacking; and in battle, it is seldom necessary to prepare a cavalry charge by artillery fire, since the cavalry need only make the most of the effect produced by the other arms. When the cavalry division is launched for independent action against flank and rear of the enemy, it will not

* The organization of a cavalry division as deduced from its strategical tasks, according to v. SCHERFF; see *Taktik*, III, p. 55, et seq.

be difficult to reinforce its artillery, when necessary, with a few batteries of the army corps.* As the success of a dismounted fight depends to a great extent upon the strength and activity of the artillery, it is a good plan to assign one battery to each brigade. Nowadays, that we have the rapid fire gun, the number of guns is of less importance than the number of caissons. Three horse batteries, each of four guns (Austria), are best adapted for such assignment to brigades; caissons not required in the battery are combined into a light ammunition column to which are also assigned the seven cavalry ammunition wagons of the division.†

Similar principles are applicable to the assignment of machine gun units (consisting of three platoons, one for each brigade) to cavalry divisions. In Germany wheeled carriages are employed for transporting the machine guns; in all other states pack animals are used for this purpose. Machine guns carried on pack animals possess great mobility, offer a smaller target than those having wheeled carriages, but must first be assembled and set up before they can be used.‡

The necessity of destroying large artificial structures leads to the organization of special cavalry pioneer detachments. In Austria, for example, there is a pioneer platoon in each regiment, in Germany, one pioneer detachment, consisting of 1 officer and 32 men (on wheels), in each division. Great mounted performances can not be expected of the mounted pioneers, but good technical work should be demanded of them; they must be able to reach at a trot or gallop the designated locality where demolition work is to be done. In addition to pioneers, field signal corps detachments are assigned to a cavalry division.

* On the morning of August 16th, 1870, the 5th Cavalry Division was reinforced by the two horse batteries of the corps artillery of the Xth Corps, so that that division, subtracting detachments made, consisted of 35 escadrons and 24 guns. *Gen. St. W.*, I, p. 541.

† A German horse battery consists of 6 guns, 6 caissons and a light ammunition column for 2 horse batteries. This light ammunition column consists of 25 caissons and other vehicles.

‡ *Tactics*, I, KRUZER's translation, p. 261.

The necessity of having pioneers with a cavalry division appeared, for example, during the demolition, in 1870, of the bridge at Saargemünd,* and during Gurko's first passage of the Balkans.†

As trains hamper movements, the Germans do not assign them permanently.‡ It is generally much easier to supply the men of the cavalry operating in front of the army than the troops in rear. Greater difficulty is, however, encountered in supplying the horses with oats.§ In the rarest cases only, can one count upon the country to furnish all that is required in the way of supplies.¶ On its forage wagons and, as an emergency ration, in saddle bags, a cavalry division carries oats for one and one-third or at most for two days. Even in front of the army, the cavalry will not always be able to count upon the supplies of the country, but will frequently have to have recourse to the trains following the troops in rear, if it desires to avoid being hampered, by far-reaching requisitions, in its tactical movements. The formation of light supply trains for the cavalry divisions is still an unsolved problem, but an imperative necessity.

A sanitary detachment, which is to take care of the sanitary service on the battlefield, is formed of two-thirds of the personnel of the ambulances; otherwise, the cavalry has

* KUNZ, *Kavallerie*, p. 40.

† CARDINAL V. WIDDERN, *Russische Kavalleriedivisionen*, I, p. 27. *Militär-Wochenblatt* 1908, No. 124.

‡ Loss of the field train of the 10th Hussars in the engagement at Verno, November 22d, 1870. KUNZ, *Deutsche Reiterei*, p. 219.

§ On the successful raid made in April 1863 by Union cavalry under Stoneman, an eight days' supply of oats and commissaries was carried along on wagons. V. FREYTAG-LOBINGHOVEN, *Studien über Kriegsführung*, II, p. 59.

¶ Par. 475, German F. S. R. states: "So long as the independent cavalry (i. e. a cavalry division) is in front or on the flanks of the army, it will, in most cases, have to depend upon the supplies offered by the theater of war. In order to utilize to the full all that the country affords, it may be advisable to form supply columns of requisitioned wagons. These columns are especially suited for transporting oats, reserve forage and imperishable ration articles. When ordered by the army commander, supply columns consisting of one-horse wagons and principally loaded with oats, may be assigned to the independent cavalry." See *Taktik*, IV, pp. 271 and 300, and *ibid.*, p. 191.

to depend upon the sanitary facilities of the army corps. This suffices, as the losses in a cavalry action are generally apt to be but insignificant.

The seven ammunition wagons attached to the light ammunition column suffice to replenish the first want of ammunition.

Thorough training, machine guns and a good firearm make an assignment of infantry superfluous. In colonial wars mounted infantry may occasionally do good service, but even in the Boer war, as its ability to ride increased, it very naturally did not want to forego the mounted charge. According to all experience, mounted infantry invariably degenerates into inferior cavalry; when mounted, it is helpless against cavalry, and when dismounted, it is hampered in its movements by the led horses. During the second part of the Franco-German war, the German cavalry was assigned the task of covering the siege operations against Paris, toward the south and west, where the country was broken and covered. At this time, the field operations had come to a standstill, while the rising and arming of the inhabitants constantly assumed greater proportions. This made the task of the cavalry a difficult one, and calls for infantry were soon heard from its ranks. The peculiar character of the situation and insufficient equipment of the cavalry with a firearm were responsible for this.*

Although a day's march of a small infantry command does not, in the long run, differ materially from the average day's march of a cavalry division, and it is comparatively easy to push infantry forward, after the cavalry, from one support-point to another, cavalry only, is able to withdraw quickly from unfavorable situations. Infantry can not do this. Thus, there arises for the cavalry a conflict of duties

* For examples from military history, see *Taktik*, III, p. 59, et seq. In regard to British mounted infantry, see *infra*, p. 109, and *Tactics*, I, KRUGER's translation, p. 25, et seq.—Infantry may occasionally be transported on wagons, but, on account of the difficulty of assembling and moving a large number of wagons, this method of transportation is not apt to find frequent application. See *Taktik*, III, pp. 202 and 404.

—to remain with the infantry, or, in pursuing a more important tactical aim, to leave the infantry in the lurch.

Cyclist infantry best meets the requirements that must be fulfilled by infantry attached to a cavalry division. One to two companies of such cyclists might suffice for a cavalry division (see p. 754, *supra*).* It will always remain a drawback, however, that a cyclist can move but a short distance across country, and that he is, to a great extent, dependent upon the nature of the ground and the state of the weather.

Cavalry divisions should have a permanent existence in time of peace, in order that they may be able promptly to do justice to their tasks in war. They should, likewise, possess the composition that they would have in war (though this should be changed at stated periods), and the necessary administrative and executive staffs. Only when this is the case, can leader and troops learn to understand and grow accustomed to each other; only then can training according to uniform principles be accomplished. This is particularly important as the newly organized cavalry divisions will scarcely ever have an opportunity to maneuver as such after the mobilization has been ordered. The division commander can have confidence in his subordinate leaders, in his staff and in his troops only if, in time of peace, he has become personally acquainted with them and their capacity as soldiers.

"The rapid course of a cavalry action requires that leader and troops be thoroughly used to each other. It requires, further, that the leader have the highest degree of technical skill in selecting and using the various formations. It is a remarkable phenomenon that in the Franco-German war the leaders of cavalry divisions rarely decided to lead their divisions *en masse*, as battle units. Almost invariably we find these divisions disintegrated into brigades." (2d Cavalry Division at Coulmiers.) "No combat makes such great demands on leadership as the combat of a cavalry division, and it is our conviction that, in the field of troop-leading, there is not a more difficult problem. It is, therefore, of the utmost importance that the cavalry be given the most diverse and ample opportunities to prepare itself for war; that it do so in the organization in which it is to appear

* See *Tactics*, I, KRUGER's translation, p. 28, and *Taktik*, IV, p. 263.

on the theater of war; and that it be trained by the men who will be its leaders in war."^{*}

In Germany this question has not as yet been settled. Russia has in time of peace twenty-two, France eight, and Austria six cavalry divisions.[†]

The difficulties that stand in the way of the permanent formation of cavalry divisions in time of peace, are partly obviated if the regiments serving in a cavalry division are constantly changed. If this is done, the fear of the creation of two classes of cavalry will be set at rest, and the drawbacks growing out of the isolation of the arm will be met. The friction that might result from the territorial limitation of army corps in regard to personnel and administrative matters, does not constitute an insurmountable obstacle to the permanent formation of cavalry divisions in time of peace.

Cavalry Corps.[‡]

The Napoleonic cavalry performed the duties of a cavalry reserve in addition to those of reconnaissance; it had to be concentrated where needed, in order to direct a blow, *en masse*, at the shaken enemy.[¶] In order to cover the broad front of an army in motion, the cavalry divisions must be widely extended and employed along divergent

^{*} VERDY DU VERNOIS, *Studien über Truppenführung; die Kavalleriedivision*, III, p. 130.

[†] Literature bearing on this subject: v. PELET-NARBONNE, *Über Organisation, Führung, und Erziehung der Kavallerie*, 2d Ed. p. 205.

Militär-Wochenblatt, 1895, Nos. 27, 28, 37, 38, 44, 53 and 60.

Jahrbücher für Armee und Marine, October and November Nos. of 1901. *Mehr Kavallerie*, 1903.

v. BERNHARDI, *Cavalry in Future Wars*, GOLDMAN's translation, p. 161.

[‡] v. BERNHARDI, *Cavalry in Future Wars*, GOLDMAN's translation, p. 165.

[¶] After the battle of Eckmühl (1809), the cavalry corps, consisting of the cavalry divisions of Nansouty and St. Sulpice, started in pursuit with 10 heavy and 7 light regiments.

At Krasnoi (1812), Murat had 35 cavalry regiments and 7 horse batteries at his disposal. These regiments charged, by escadron and by regiment, against the Russian division under Neworokoi, only 7,000 men strong, and inflicted a loss of 2,000 men and 8 guns.

lines. To place the cavalry divisions that are moving over different roads and along diverging lines under the orders of a cavalry corps commander, would be useless and would frequently hamper them. This is not true when several divisions are employed in a common direction and for a common purpose. In this case, the cavalry divisions should be placed under a single commander. The lessons so far learned from military history do not favor a cavalry corps that marches, is supplied and employed as a single unit.*

When army headquarters has not as yet arrived or is a great distance away, several cavalry divisions may be placed under the orders of one commander[†] to take charge of the reconnaissance, to cover the concentration, to defeat the enemy's cavalry,[‡] or to pursue the opponent. On the battlefield, it will often be practicable to launch several cavalry divisions, though they may occupy different positions at the start, in concert against a common objective. What a success the 5th and 6th Cavalry Divisions could have gained on the morning of August 16th, 1870, if they had been under the orders of a common commander who knew what he was about! The dictum, "March dispersed, but fight united," must here also be the guiding principle, for the rapid course of a mounted action makes it impossible to deploy a long route column against an enemy who is ready to charge.

A critical analysis of the employment of the German cavalry at the battle of Vionville shows that decisive results were only to be achieved by launching masses; that,

^{*} See remarks of the PRINCE OF PRUSSIA, later EMPEROR WILLIAM I. in his *Collected Works*, p. 117. In *Remarks on the Draft of a Plan of Mobilization for the year 1830*, the Prince objects to the permanent establishment of a cavalry corps, but recommends an occasional concentration of several divisions for maneuvers as a single unit.—*Aus dem Leben des Generals von Reyher*, IV, p. 61.

[†] For examples, see *Taktik*, III, p. 62.

[‡] In 1805, five French cavalry divisions under Murat, crossed the Black Forest to deceive the Austrians and to screen the enveloping movements made by the French army.

From July 29th, 1870 until the battle of Spicheren, while the II^d Army was being transported by rail, the cavalry divisions of that army (the 5th and 6th) were placed under the orders of a single commander. *Gen. St. W.*, I, pp. 108 and 300.

while a charge made by an escadron or by a regiment did, perhaps occasionally, score a local success here and there, it exerted no appreciable effect on the course of the battle. The charge made by Bredow's brigade did not, as has been demonstrated, cripple the French VIth Corps. The inactivity of Marshal Canrobert was due to entirely different causes. If other cavalry had been launched, in addition to the lone Prussian brigade, a greater success would have been won at this point. A successful charge made by a cavalry regiment may perhaps have a damaging effect on the activity of a hostile division, but it will exert a scarcely appreciable influence on the action of an army. The loss of an infantry brigade through a cavalry charge is a far more serious loss to an army consisting of two or three army corps, than to an army twice that size. Therefore, if the cavalry does not wish to forego its usefulness in battle, it must appear in masses whose size increases with the size of the armies.

Cavalry charging unshaken infantry requires a broad front, so that the hostile fire can not have a concentric effect but will be distributed over a greater space. On the other hand, however, distribution in depth is also necessary, in order to add force to the shock produced by the first line, to strike deep into the hostile position, and to provide reserves, which can turn against other hostile cavalry that might possibly take a hand in the fight. These various demands can be fulfilled by a mass of cavalry only. For this reason and also for the purpose of involving as large a part of the enemy's force as possible, several divisions will have to be combined for common action, if decisive results are to be obtained in battle.

The launching of large cavalry masses, however, is likewise imperatively necessary in front of the army (independent cavalry), in order to drive away the hostile cavalry and to ascertain the measures taken by the enemy. It is especially important to be superior at the decisive point. As all the powers employ their cavalry divisions in front of their

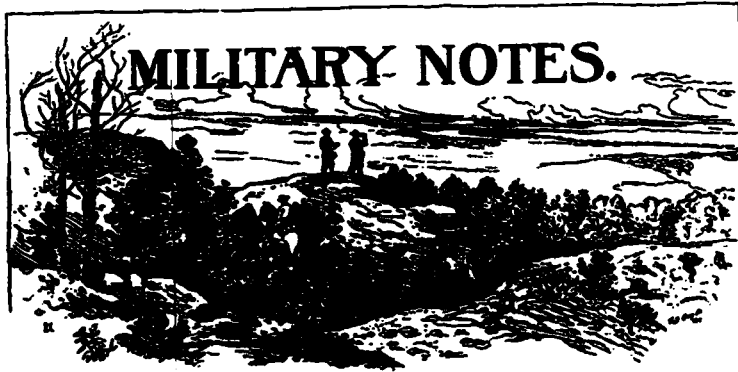
armies with the same offensive intention, each leader will have to seek to combine superior cavalry, *i.e.*, several divisions, at the point where he intends to bring about the decision, and content himself with an inferior cavalry force at the less important points. The French practice of temporarily attaching, for this purpose, the corps cavalry brigades to the cavalry in front of the army does not appear to be effective enough. It is better and more reliable to combine, at the decisive point, several divisions that are marching on different roads, and to place them under the orders of a single leader for united employment as a cavalry corps. Only by having a single leader can we avoid having too much cavalry at one point while there is not enough at another.* The inconveniences formerly experienced in employing cavalry corps disappear if such bodies are not kept in a confined space on the march, in camp and in battle. The charge that the headquarters of a cavalry corps constitutes a hampering intermediate channel between those of the divisions and the general headquarters, is unfounded, provided the leaders are well trained. The several units must be trained to send intelligence not only to the next higher headquarters but also to the highest commander and to the corps following in rear.

The necessity of forming a cavalry corps may make itself felt at various points, at the beginning of a campaign as well as during the course of the same. Instead of forming a cavalry corps directly, it would perhaps be better to meet this necessity by attaching the required executive and administrative staff to the army headquarters. The latter can then, without interfering with the composition of the division staffs, create cavalry corps.† The employment of such cavalry masses makes the assignment of supply trains absolutely necessary.‡

* For example: The launching of excessive forces, owing to the lack of a common leader, during the reconnaissance toward Saargemünd on August 7th, 1870. A further result of this was the tardy arrival of intelligence at the proper headquarters.

† This scheme was proposed by General von Moltke after the campaign of 1866. See MOLTKE'S *Militärische Werke*, II, p. 125.

‡ V. BERNHARDI, *Cavalry in Future Wars*, GOLDMAN'S translation, p. 168.



NOTES ON CASTRAMETATION.

IT has occurred to me, during my service at the camp of maneuver at San Antonio, that a book on *castrametation* to deal with the science of making camps, especially semi-permanent camps, and with the devices and expedients commonly adopted in camp, would be of great benefit to officers and soldiers, to be used as a reference book. It would also have a beneficial effect as to sanitation and comfort.

In laying out a camp commanders of organization should from the first have a clear idea of what is needed. As far as possible the camp should be made complete from the first, and not, as is usually the case, gradually improve, making the use of constant small fatigue details necessary. Such a manual, by providing a book of reference, would make this possible. It should deal with the following subjects:

1. *Staking Out the Camp.*—The camp should be completely staked out before the tents are pitched, one or more stakes marking the position of each tent. The book should

give sizes and dimensions of various camps, as, for instance of the regulation squadron camp; of a camp with the picket lines on the extension of the tents, (which for a long stay is more desirable than the regulation camp) and of various other forms of camp suited to the dimensions of the ground. If necessary the picket lines should be at a distance from the tents. Provision should be made for drill and parade grounds, etc.

2. *Pitching Tents.*—The book should include a manual for pitching tents, of all kinds. For lack of proper instruction the average soldier puts up a tent in the clumsiest and most inadequate manner.

3. *Picket Lines and Horse Shelters.*—A chapter should be devoted to the stretching of picket lines, whether on the ground or on posts, permanent or otherwise. In semi-permanent camps the horses on the picket lines should be sheltered by wooden sheds or by paulins stretched on frames from the sun and rain, in order to keep them in good condition. It is as much a measure of economy to the government to spend money for shelter for horses as for shelter for any other class of government property.

4. *Latrines.*—There should be complete directions for the construction of latrines and of other similar devices with illustrations. In this connection it may be mentioned that the style of latrine prescribed in Field Service regulations is believed to be inadequate to a permanent camp, the excavations being too narrow and too shallow. A wider and deeper excavation would last longer and thus contaminate less ground.

5. *Garbage Incinerators.*—Methods of disposal of garbage by incinerators or otherwise should be described at length, giving illustrations, dimensions, etc. In this connection it may be said that one of the great drawbacks to a semi-permanent camp and one which results in sickness, is, that by means of inadequate excavations for latrines and incinerators, causing frequent duplications, a portion of the territory adjacent to the camp becomes infected, since these deposits underground rot and give forth noxious gasses.

6. *Ditches and Walks.*—The ditching and draining of the tents, of the company streets, of the picket lines, of the latrines, etc., should be fully entered into, giving dimensions, etc. Shallow, broad trenches are preferable to narrow, deep ones, since they fill up less rapidly. In the company streets and along the picket lines, double ditches should be used, the excavated dirt being heaped up between in order to form an elevated, paved pathway for use in wet weather.

7. *Saddle Racks.*—Devices for saddle racks should be described with illustrative plans, etc. The saddles, if possible, should be placed under cover, preferably in a saddle room at the end of a picket line shelter. To put the saddles on rough racks in the company streets, covered with the soldiers' slickers as is usually done, is a poor method of taking care of them, as the slicker is taken off the saddle in wet weather, causing injury to the saddles.

8. *Cook Houses and Mess Tents.*—A uniform type should be decided on for cook houses and for mess tents adjacent thereto and given plans given of temporary mess tables, etc.

9. *Arm Racks and Shelves.*—In order that the arms may be properly taken care of, rough arm racks should be constructed in the tents, also shelves for small articles of equipment. Sketches should be made of devices for this purpose. The tents, if possible, should be floored. An expenditure of fifty cents per man for lumber for this purpose would be found an economy to the government and a desirable sanitary measure. The men should also be given bed sacks filled with straw, and, if possible, cots.

10. *Bath Houses and Wash Stands.*—Bath houses for men and officers should be part of the semi-permanent camp and the various forms of these should be described, giving the amount of material and cost. There should also be provision made in each company for benches, wash bowls, receptacles for water and soap so that the men can wash their hands and faces frequently. Each troop should also have a place for wash tubs for laundry purposes.

11. *Recreation Tent.*—A recreation tent, where the men can find periodicals and obtain writing materials, is necessary.

12. *Guard House.*—A guard house where the prisoners can be secure and comfortably lodged is necessary. Such a guard house can be cheaply but strongly made by use of rough lumber and heavy wire netting.

13. *Pack Train, Wagon Train.*—Proper arrangements should be made for the men and animals of the pack train, the wagon train and the machine gun platoon, with racks for harness, platforms for pack saddles, etc., and these should be described fully with plans and dimensions.

14. *Post Exchange.*—The Post Exchange and company barber shops need special arrangement, which should be mentioned.

15. *Adjutant's Office, Quartermaster's Tents, Commissary Tents, Hospital.*—All these require special arrangements, shelving, etc., to facilitate issues, protect stores and papers from rain, wind and dust.

16. *Winter Camps.*—The book should contain a special chapter on expedients in winter camps.

The camp lived in by the writer at Fort Garland, Colorado, in the winter of 1879-80, the officers' and mens' tents were erected on top of picket walls, seven feet high, the tent thus forming only the roof of the structure, the picket walls of upright logs sunk in the ground, being mud plastered outside, the officers' tents having fire-places.

The stables were built of wicker work on which was piled, top and sides, the partly frozen stable manure, part of it not frozen, thus maintaining the temperature of the stable above the freezing point.

The guardhouse, bath houses, etc., were dugouts.

* * *

The making of a camp comfortable is a matter of expedients. The resourceful officer has his men contented. Experience counts in these things.

A manual of the kind suggested will have a tendency to secure the orderly laying out of camps and result in fewer mistakes, less fatigue work and more comfort to the soldier.

JAMES PARKER,

Colonel Eleventh Cavalry.

REMOUNTS IN FRENCH ARMY.

THE army estimates for fiscal (calendar) year 1912 contain the following items of interest concerning purchase of horses:

OFFICERS' HORSES.

General officers' horses, 124 to be bought at an average price of	\$300
Cuirassiers, 78 at an average price of	390
Dragoons, 187 at an average price of	300
Light cavalry, 219 at an average price of	270
For staff officers, officers at the various schools, and artillery officers, 1066 at average price of	205
Infantry field officers, 217 at an average price of	214
Infantry field officers 470, at an average price of	170
Total for officers' horses (2,361)	\$615,000

HORSES FOR VARIOUS SCHOOLS.

Riding hall horses, 48	\$250
Cross country horses, 65	360

ENLISTED MENS' HORSES.

Cuirassiers, 1,072 horses at average price of	\$250
Dragoons, 2,478 horses at average price of	218
Light cavalry, 2,861 horses at average price of	190
Horses for schools, 147 at average price of	254 to 190
Artillery, saddle, 1,783 horses at average price of	210
Artillery, draft, 3,013 horses at average price of	200
Total for troop horses	2,500,000
Prizes to raisers	30,000
Prizes for races	600
Advertising for purchasing boards	1,500
Fees to civilian veterinarians	5,400
Prizes for encouraging raisers of military mounts	27,500

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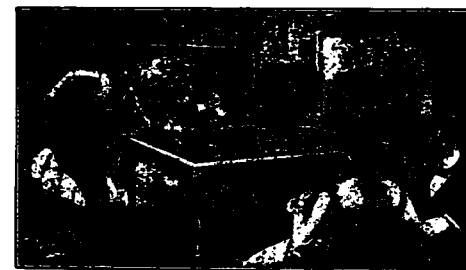
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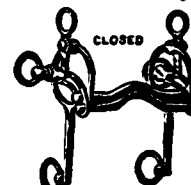
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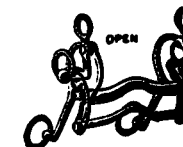
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Cream of Tartar*

No Alum, No Lime Phosphate

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FELT LIGHT EXERCISE SADDLE

ADVANTAGES OF THE PATENT FELT SADDLE:

- Its extreme lightness.
- Cannot give horse sore back.
- If they have a sore back it is the only saddle which can be comfortably worn.
- They place the weight of the rider slightly more forward than the old style of saddle; a great advantage for race riding.
- A tall man can ride with his stirrups extremely short without having his knees right off the saddle, as this saddle is cut more forward than the old style.
- The tree cannot be broken or spread.
- It is exceptionally nice to ride jumping in, also for backing horses for first time as stirrups can be dispensed with.
- They cannot go down on to a horse's withers.
- These saddles can be made in different sizes to suit customers, and can be made about 2 lb. in weight for racing, to 8 lbs. for hunting for which they are very suitable.

Model 8 lbs.
Patent No. 6266

BARTLEY BROS. & HALL, 60 WARREN STREET
NEW YORK CITY

MILITARY NOTES.

771

In examining the above it must be remembered that all these horses are bought when only a little over three years old, and that the first year is spent at a remount annex, where the horses are fed grain and exercised, but not ridden. When four years old they are sent to the regiments and there they are carefully handled and trained for two years before being put in the ranks for full duty.

The remount bureau of the War Department can make exact estimate of the number of each kind of horse required for the following year, and the amount of money needed for its purchases. The law authorizes the replacing of all horses, officers and troops, at the end of eight and one-half years service. Having given the total strength of each mounted arm, it is known beforehand that twelve and one-half per cent. of this strength will be required and that many horses is asked for each year. The prices to be paid for each category of horse being fixed, the total sum of money annually required for mounts is readily calculated.

M.

THE INTERNATIONAL HORSE SHOW AT OLYMPIA.

The Editor:

IN my report on the International Horse Show at Olympia, London, I said that the Germans "exhibited twelve perfectly trained remounts, said to be from the Emperor's stable and ridden by twelve instructors from the Hanover Cavalry School."

Major R. Ostertag, military attaché of the German Embassy, London, informs me that "the horses were all 'remounts,' that is to say troop horses issued to mounted regiments from the State Remount Depots. Not one of them came from the Emperor's stable. The horses were ridden by twelve pupils, not instructors, from the Hanover Cavalry School."

Will you kindly publish this correction in the JOURNAL, in simple justice to the German officers, as the performance

of these chargers was all the more surprising when considered as the work of young horses regularly issued to regiments and ridden by pupils of their riding school.

My excuse for accepting without question the general report must be the very excellence of the horseflesh and the perfection of the riding.

Very sincerely yours,

FRED S. FOLTZ,

Major Fifteenth Cavalry.

THE CHARGING UNIT.

IN the November number of the CAVALRY JOURNAL appeared an article under the above title by "An Officer Abroad." The writer speaks of our present organization as follows: "Our cavalry is organized on the mounted infantry basis," which he believes is "the best in the world for the purpose." The writer doubtless has reasons for his opinions, and of them no criticism is offered; but he has embodied certain statistical errors from which his final deductions are made. These should be corrected.

He states: "As the Russian cavalry regiment is a good example of all foreign ones, I may state that it consists of about 600 men in double rank or a front of about 300 yards, and that with this formation the only question is whether or not it is too big for the colonel to handle properly. From 600 men the number of men in a regiment shrinks to 440 in England and the British cavalrymen are a hard headed, hard riding lot." * * * "Assuming then the correct basis for the cavalry charging unit to be from 400 to 600 and as to the correctness of this assumption I can see no possible question * * *." In this connection the following data from official sources are suggestive as to the value of the deductions which the writer makes:

	GERMANY.	ENGLAND.	AUSTRIA.	FRANCE.	ITALY.	RUSSIA.
Cavalry	25 officers	26 officers	45 officers	44 officers	44 officers	42 officers
Regt.	666 men	670 men	1043 men	787 men	1000 men	987 men
	678 horses	465 horses	910 horses	737 horses	954 horses	1025 horses

The peace and war strengths are practically the same and the number of troops (squadrons) per regiment varies in different countries from four to six, inclusive.

The writer also states that "To adopt a 600 man regiment it would be necessary for us frankly to copy the foreign services." If the writer would look over the following editions of *Poinsett's Cavalry Tactics*: 1841, 1855, 1861 and 1864, he would see plates and descriptions of just such a regiment as he is decrying. He would also find, if he were inclined to look over Major General Geo. B. McClellan's *Instructions for Cavalry*, published in 1862, the same plates and descriptions.

He further states: "To adopt a 900 man regiment would in my mind be less desirable, for it would be an impossibility for any one colonel to handle such a number with a front, even in double rank, of close to 500 yards." That assumes that American cavalry officers are the inferior of Austrians, Russians and Italians. Note the size of the regiments given above.

H. T. A.

THE DOUBLE RANK FORMATION.

To the Editor:

WITH a view of stimulating discussion, I append a note on some alleged disadvantages of the European double rank formation of cavalry as compared with the American single rank formation.

1. It may be said the European formation is always "in mass," since two men are concentrated in the space we

give to one man. If opened on by artillery, either in line, line of columns, or line of column at closed interval, shrapnel would have a wonderful chance. The same is true of musketry fire.

2. It is not as mobile as a single rank formation. It is suited to heavy cavalry charging at slow speed rather than to light cavalry. With horses in the rear rank, stumbling over obstacles they cannot see, it is rarely possible to charge with as much speed as in single rank formation.

3. It is not as well suited for fighting on foot. If the command is under fire and has to dismount quickly, the massed horses present a much better target for the enemy. The horses are taken to the rear with less ease and rapidity. The deployment of skirmishing on foot is more difficult on account of the "mass" nature of the formation.

4. As a charging formation the double rank has no advantage over the American "platoon column." What is called "shock of cavalry" is produced by the leading troopers coming in contact with the enemy, followed immediately by the rear troopers. It is not like the football wedge, where the players are immediately in contact with each other and the blow is the weight of the entire mass. It is rather a succession of blows, the rear rank coming into the openings left by the front rank. In a charge of "line of platoon columns" this same effect is produced, with the added advantage that the rear platoons, if desirable, can swing around and hit in flank.

5. It is distinctly a disadvantage not to be able to divide the regiment into three squadrons. And these squadrons should be composed of more than two troops to obtain desirable efficiency. The regiment often fights alone, and the necessary division into attacking line, support and reserve is obtained quite naturally and easily by our present system. The same thing is the case in dismounted fighting. The regiment often finds it necessary to detach, for the moment, a portion of its force and this is obtained more easily with the present formation. It is also desirable, in time of war as in peace, at times to detach for duty at a distance from the regi-

ment and for periods several days, a portion of the regiment. Our present organization furnishes for this purpose the American squadron or battalion of cavalry, complete as to its commanding officer, adjutant, quartermaster and commissary; a miniature regiment.

6. For the operation of light cavalry, from fifty to seventy-five men are as many as should follow a captain. Double this number are handled and controlled in action with difficulty, even though divided into small platoons commanded by officers.

7. The European double rank formation is distinctly inferior to the American formation in the matter of forming front to a flank or to the rear. The rear rank is liable to contain numerous blank files, practically prohibiting wheeling about by fours. For the same reason one is prohibited from wheeling by fours to the flank, thus forming a column of eights. Therefore, the column, in the European drill regulations, is necessarily a column of platoons. To form front to the rear, from line, the troops are broken into column of platoons which are countermarched and then wheeled into line toward the rear. The column of fours is only employed as a column of route and breaking into column of fours is a slow operation.

8. The expedient of uniting two troops to form a squadron, one troop being in the front rank and the other in the rear, is an objectionable one, since one captain becomes an assistant. In the new formation the major may command a squadron of two troops, in which case the captains lose their commands, or the majors may become merely assistants, having no squadron, half of the captains losing their command. The present system whereby the captain is always the head of the troop and the majors command four troops is a much more natural and desirable one.

The Mexican cavalry can easily take a double rank formation when needed by closing up platoons. The European cavalry are not so easily able to take a single rank formation.

10. The small single rank troop which changes formation quickly and easily is better suited to our broken, wooded

and fenced terrain than the big double rank troop which takes time in changing from the column of route to the fighting formation.

J. P.

PROFESSIONAL NOTES.

WHY not fit the top of the guidon staff with a lance head? With troops of but sixty-five men each it behooves us to make every man count as an active combatant, but there is one man in every troop, the one who is particularly subject to attack but who is almost helpless—that man is the non-commissioned officer who carries the guidon.

Those foreigners who carry the lance are loud in their praises of its merits; regarding it as far superior to the saber, which latter, however, is conveniently carried while the lance is not.

For sentimental as well as practical reasons, the guidon should no doubt be retained, but the present helpless condition of the guidon bearer might easily be remedied by fitting to the tip of the guidon staff a lance blade which would be carried only in active campaign, retaining the brass heart shaped tip now used for garrison service. In the aggregate this would mean the adding of 180 lances (two troops) to the cavalry at practically no expense.

As matters stand the guidon bearer is an easy mark for a trooper armed with a saber.

Replace the ornamental tip with a lance blade and our guidon bearer immediately becomes more formidable than the man with the saber, and this without in the least interfering with his present functions.

It is understood that the Cavalry Equipment Board will recommend that the spear head on the gridiron staff be made of better material so as to make it a formidable weapon.

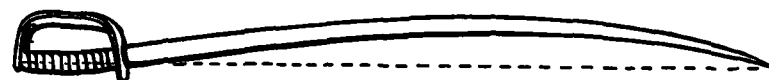
W. C. BROWN.

Lieutenant Colonel, U. S. Cavalry.

A PROPOSED SABER.

The Editor:

On page 141 of the CAVALRY JOURNAL for July, 1911, I notice that Major Alonzo Gray, Fourteenth Cavalry gives us a cut of the model saber for thrusting and cutting. There appears to be one serious defect in that saber. All sabers intended for use as thrusting weapons are, or should be so constructed as to have the prolongation of the axis of the gripe pass through the point. Unless they are so made, accuracy in thrusting cannot be secured. The following, according to my ideas, is more nearly the shape of a model saber. It is not drawn to scale.



N. F. McCLURE,

Major, Fifth Cavalry.

ELIMINATION OF REVOLVERS.

1. It is impracticable to properly train the average regular trooper in three years in his four arms: horse, two shooting weapons and saber.

2. Approximately fifty per cent. of the regular cavalry personnel has served less than one year and a half.

3. On mobilization it would be necessary to make an increase of about thirty-three per cent. of new men and new horses in the regular establishment.

These three statements should give a notion of the present deficiency in training, and especially what would exist in the regular troops on going to war as regards four arms.

4. The organized militia cavalry consisting in peace of sixty-nine troops, with a paper rating of 4,167 men (number of horses not known) is naturally far less effective than the regulars.

5. On mobilization these troops would require 1,650 new men and many more horses; and if sufficient new troops were raised to bring up the militia cavalry contingent to a proper ratio to the infantry organized militia (under the proportion of one to eight—125 sabers to 1,000 bayonets) there would be required 17,778 new men and an equal number of horses.

To impose a burden of four arms on such levies as these could hardly be considered advisable or wise.

6. The advocates of the revolver are unable to show that it has exercised any marked influence on any campaign or even battle; moreover, in the majority of the few instances where it has been successfully used, sabers would have accomplished as much.

7. The same reasoning that advocates the retention of the revolver because it may at times be useful, would likewise add the hand grenade and the lance.

8. No other nation has seen fit to provide two different fire arms for troops on most unstable *platforms*—horses. In truth, this practice is wholly unknown in other countries. In addition to the horse, no nation gives its troopers more than two weapons.

9. Under modern conditions, cavalry must have an excellent long range weapon which for mounted fire would be far more effective than revolver fire, and far less dangerous to the troops themselves engaged in shooting.

10. As the saber is always loaded, and as a weapon for close-in work is absolutely necessary, it can not be eliminated. This is in accordance with the best practice of all up-to-date armies.

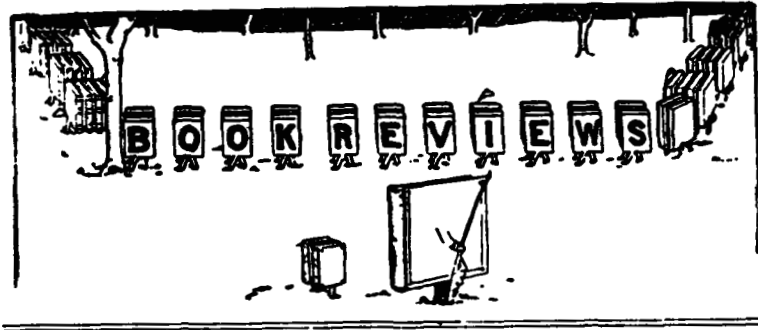
In view of the above, and in the interest of truly mobile well trained cavalry, I have no hesitancy in saying that we are over-armed even in the regular establishment, and doubly so

in the organized militia, and that the least useful weapon should be eliminated.

Next to a modern organization, this would be the most important step in bringing our cavalry up-to-date, and in making it effective. The Inspector General says "Cavalry can not be properly trained in the use of all its weapons, and one fire arm is enough for mounted men." The time now devoted to revolver training should be given to developing skill in swordsmanship, for which prizes should be awarded.

I, therefore, recommend that in the future only officers and certain non-commissioned officers be armed with revolvers and that those non-commissioned officers who are provided with revolvers be not given rifles.

H. T. A.



**Principles
of
Sanitary Tactics.***

A series of studies covering the use of sanitary units with smaller forces, which leads through the tactical use of the sanitary troops with a detached battalion or squadron, a detached regiment and a reinforced brigade.

The work is very comprehensive and fully up-to-date. It is intended to be used as a preparation for the study of "A Study in Troop Leading and Management of the Sanitary Service in War," published last year by the same author jointly with Lieutenant Colonel J. F. Morrison.

So far as the reviewer can learn there is no other work published in English that treats of the subject that is so thoroughly covered by these two sets of studies.

The underlying thought of the author is that modern war is becoming more and more a question of team play. It is not so much the work of a certain number each of cavalry, infantry, artillery and special troops that counts as the joint and fully coördinated action of all of these, each carrying out its own proper function on the whole scheme, that wins victories.

*"THE PRINCIPLES OF SANITARY TACTICS." A Handbook on the Use of Medical Department Detachments and Organizations in Campaign. By Edward Lyman Munson, A. M., M. D., Major Medical Corps, United States Army. U. S. Cavalry Association, Fort Leavenworth, Kansas, 1911. Price, \$2.00.

Thus it is impossible to illustrate the action of the sanitary units without a fairly complete understanding of the situation and intentions of the various combatant units at the time the sanitary problem is presented. To bring out this interdependent relation in a series of studies is the object of the present volume. In each of the thirty-five studies the author has given enough of the tactics proper to show the exact circumstances under which the sanitary troops were assumed to be acting and then gone into the details of the sanitary tactics. Tactics from the standpoint of the line officer is not intended to be taught by the work, the tactical situation of which, therefore, should not be taken as model studies for the part played therein by the combatant arms. As the author says in his preface, the studies are "to illustrate reasonable conditions which tactical sanitary situations can be based."

A line officer (the commander) is the one who decides how the sanitary service is to be used. He gives the orders for the location of sanitary units in action and on the march to where an action may take place. He takes the responsibility for the seizure of private property for sanitary uses and in general for the efficient use of his sanitary troops. To get the best out of these troops he must have a good general understanding of their proper tactical handling. For these reasons, this set of studies will be found as great an aid to the ambitious line officer, who hopes some day for a command, as they will be to the medical officer.

The text is of good size, the print is clear and the volume contains or is accompanied by all the maps and sketches necessary for a full understanding of the studies.

This book is uniform in size and binding with the authors previous work above mentioned and, like it, has the approval of the Surgeon General and is published by consent of the War Department.

X.

**Studies, Military
and
Diplomatic.***

These studies, as stated in the book, were originally submitted to the Massachusetts Historical Society. They are, however, revised and otherwise changed in the book.

The first four deal with the Revolutionary War, the next with the battle of New Orleans. The remaining three Military Studies and the two Diplomatic Studies relate to the Civil War.

The whole work is an able illustration of the worthlessness of many of our so-called histories, at least from the point of view of the professional soldier. The book should help the movement, now well started on our army to study history in the correct way.

The first part of the book will strike the casual reader as iconoclastic, to the student it only makes clear the cracks he already knew to be there.

In the author's dealings with Washington, the statement of facts can not be questioned, but to the soldier some of his conclusions may be questioned though generally sound.

The author does not seem to give full weight to conditions as they existed at the time, "the moving why they did it."

Of Washington's earlier work compared with his last campaign the author says, "He learned through his mistakes." In war this is costly, not only in money but in blood and suffering. Only that proverbial luck of the United States has saved us from near ruin by gaining information this way.

As the author points out while Washington was a great man he was not a trained soldier. His mistakes were serious and doubtless would have proved fatal to our cause but for our luck in having such incompetent commanders on the other side.

The campaigns treated of in this book are clearly tragedies of errors.

Were we any better in 1812-15, the Mexican War, at the opening of the Civil War, or in 1898?

*"STUDIES, MILITARY AND DIPLOMATIC, 1775-1895." By General Charles Francis Adams. The Macmillan Company, Boston and New York. Price, \$2.50, net.

In every case except the first, luck gave us an opponent worse off than ourselves, in the exception an opponent with other troubles to contend with.

The whole work points out the necessity of trained and educated commanders, not merely men wearing a uniform, no matter how long they have worn it. This may not be the lesson intended by the book, but it is there.

In treating of the 1777 Campaign the author evidently fails to appreciate the effect of discipline and training on marches. What trained and disciplined troops have done is no criterion for such troops as our Revolutionary armies.

The author does not touch on the folly of Burgoyne's plan and movements, but accepting that plan he shows the mistakes of Washington and Howe which were bad enough, but it seems that the plan of Burgoyne was worse.

In writing of the Civil War the author has dealt with the subject in a fair, liberal broad-minded manner. These papers, especially Lee's Centennial, should be carefully read. The author's military criticisms here are better than in the earlier period.

The two Diplomatic Studies simply puncture a couple more bubbles and do it well.

This book is recommended to military readers, it can not fail to help one to more correct historical work. As a people we are too prone to blind hero-worship. This is a good antidote.
M.

**German
for
Military Student.***

Here we have at last a book that fills a want long felt by students of German military literature. Its 590 pages contain practically all the information that the student need possess to read with understanding the average German military work.

The author realizing that it is very difficult to fix a definite meaning to words used outside of a given context, has de-

*"GERMAN FOR MILITARY STUDENTS." By F. G. Zimmerman, M. A. Instructor in German at the Royal Military College and late Professor of German at the Staff College, Camberley. Hugh Rees, Ltd. London. Price, 8s. 6d. net.

parted from the beaten path of lexicographers and has arranged the subject matter of his book in a series of eighteen essays. These essays deal with battles, sieges, war preparation, German army organization, training of infantry, cavalry, field artillery, pioneer and railroad troops, clothing and equipment, insignia of rank, armament, marches, transportation of troops, by rail and by sea, shelter, security and information, issue of orders, supply of troops in the field, topography, and articles of war. Each page is faced by a translation, and each essay is followed by a vocabulary containing not only the principal technical words and their meaning, but compounds, phrases and idioms as well, and their meanings.

The introduction contains an analysis of the structure of the German language and valuable hints for its study.

The principal facts of German grammar are given in an appendix.

The index enables the student to find with ease any word, phrase or idiom.

The author deserves a great deal of credit not only for his painstaking work, but for the admirable manner in which he has arranged his subject matter.

The book is bound in cloth, printed in clear type, and is of convenient size ($7\frac{3}{4}$ "x5"x1").

While this work does not cover every military word and expression that the student is likely to meet in his reading—a matter quite out of the question within the limits of one book—it is of inestimable value to any one not completely master of military German. The book is well worth its price and well worth serious study.

KRUEGER.



BRANCH ASSOCIATIONS.

At a recent meeting of the West Point Branch of the U. S. Cavalry Association it was decided that:

"There existed a necessity for forming a vigorous, harmonious and efficient working organization of all the cavalry officers in the service, in order to insure uniformity of effort in our attempts to bring about needed reforms and to secure to our arm of the service, the consideration and the benefits which union will effect. That there is much that we should endeavor to accomplish is patent to all and it only remains to devise the scheme which is to assure us the necessary and desired result. To this end it is recommended:

"First.—That a meeting of the Executive Council of the U. S. Cavalry Association be called at the earliest possible date to consider and decide upon the propositions herein advanced.

"Second.—That steps be taken to form wide-awake Branch Associations in each regiment and in Washington D. C. Branches that will be virile, efficient units working with the Association and the other Branches toward a common end, and not listless bodies pursuing a *laissez faire* policy.

"Third.—That each branch be notified of the existence of each other branch through the Executive Council.

"Fourth.—That these Branch Associations have meetings once each month for the discussion of matters relating to the needs of our arm and for the formation of plans to bring about necessary reforms, or for the securing action of a legislative or administrative character.

"Fifth.— That when one of these branches originates a scheme that, in its opinion, demands prompt, vigorous and concerted action, it communicates its ideas to not only the Executive Council, and to each Branch Association, for its consideration and opinion, and each branch to meet and consider the subject, forwarding its action to the Executive Council. This will avoid delay and, with the kind of organizations outlined above, will guarantee harmonious and hence powerful endeavor.

"Sixth.— That we attempt to combat the opinion, now so prevalent in some quarters, that we already have a larger force of cavalry than the size of our army warrants. The fact is easily demonstrable that we have not as much cavalry as we should have but if we remain supine, that fact is sure to be lost sight of.

"Seventh.— That we take steps to induce the cavalry officers on duty with militia to organize Branch Associations in each state where there are militia cavalry organizations, and to use every opportunity to bring our needs, our aims and our importance before the public.

"Eighth.— That we bring to this work a spirit free from all idea of injuring or attempting to prejudice the interests of any other arm of the service, but firm in its resolve to labor and labor without ceasing in the endeavor to improve our efficiency and secure our welfare in all particulars.

"Ninth.— That while, in case of a great war, we have enough regiments sufficient for the reconnaissance service as divisional cavalry with the infantry divisions, we would have none for a fighting force of independent cavalry such as would be urgently needed and for which hastily raised and untrained cavalry is useless.

"That every effort should be made to secure a permanent Chief of Staff with rank commensurate with the importance of his position and whose prominent duty should be to secure for the cavalry service the recognition it deserves in any general reorganization scheme, and especially that a sufficient force of cavalry should be provided for any field army for maintaining the due and proper proportion of cavalry as prescribed in the Field Service Regulations.

"Tenth.— That we emphasize the fact so that it will be forced upon the consciousness of all of our cavalry officers, that if we do not start working for the increased efficiency of our arm and for our common welfare, we will surely suffer ere long even more than we have in the past few years."

The Executive Council of the Cavalry Association, having duly considered the above recommendations, fully concur in the same and for the purpose of carrying out these ideas have appointed a committee with instructions to take up the matter at an early date and to urge the formation of such branches at all cavalry garrisons, and especially at all regimental posts where there are or should be plenty of energetic workers in this line.

When the amendments to our Constitution regarding Branch Associations were adopted at our last annual meeting, copies of Constitution as amended, were sent out to all cavalry garrisons and the question of forming Branch Associations was urged upon our members. As a result but three in the regular cavalry service and three in different states having cavalry of the organized militia were organized. The three of the regular service are those at Washinton, at West Point and at Fort Leavenworth, the latter having been in existence prior to the adoption of these amendments.

The sub-committee of the Executive Council will take up this matter and strive to work along the lines indicated in the recommendations from the West Point Branch.

THE BARR-STROUDE RANGE FINDER.

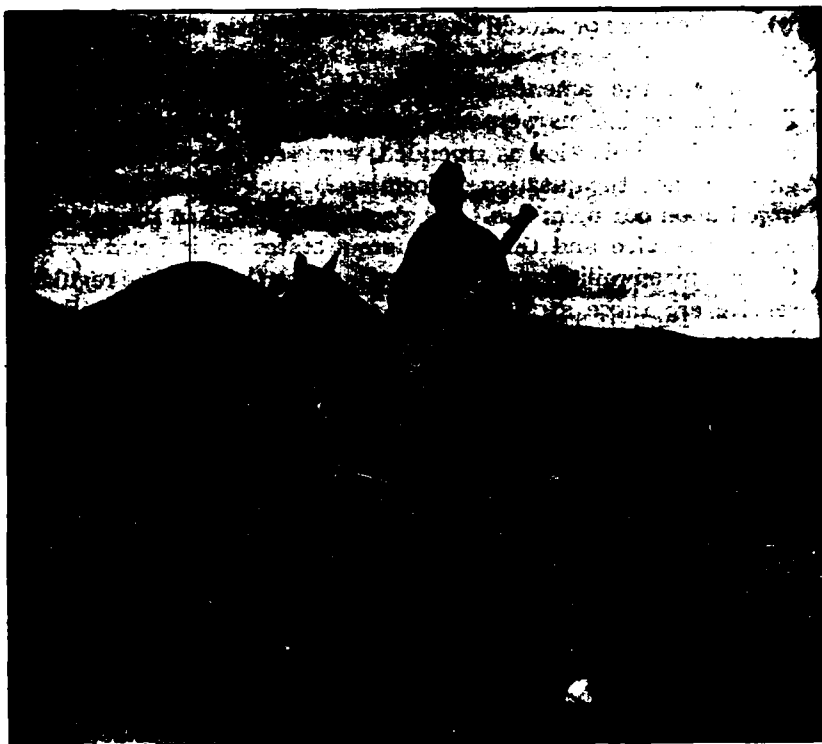
The Editor:

Considerable interest has been aroused regarding this instrument among our readers by the article in the November, 1911, number of the CAVALRY JOURNAL which appeared under the above title and was by Lieutenant Colonel W. C. Brown.

The importance of having a light, portable and fairly accurate range finder for the mobile forces has been so great

that many have been invented and tried out but found lacking in one respect or another.

From the description given of this range finder and the report of its working as given in the above mentioned article, it has been suggested that further trial should be made with it and that the opinion of others who have seen it tried it should be obtained. With this end in view, a few of those who were known to have seen and worked with this instrument were requested to give their ideas as to the value of the same for use with the field forces.

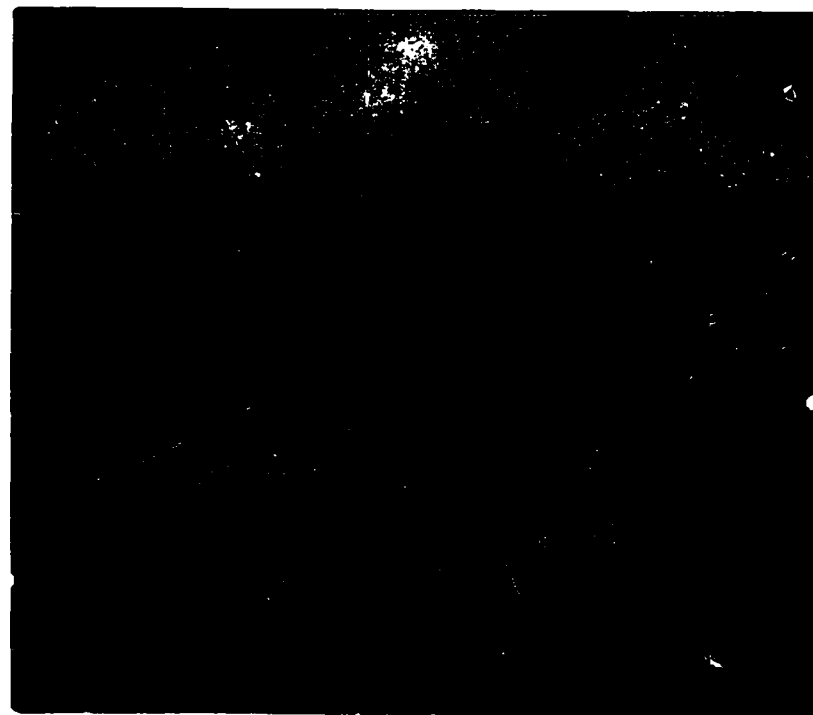


Reports from but two of such officers have been received and those are hereto appended. Also, some additional cuts showing the method of using and transporting this range finder are reproduced.

Lieutenant Colonel W. C. Brown, cavalry, has a Barr-Stroude Range Finder at this post and all officers here invited to examine and try the same.

With less than five minutes' instruction one can use it intelligently and effectively.

This range finder is not absolutely accurate as to the number of yards in a given distance, but is close enough for all practical purposes and is by far the best range finder I



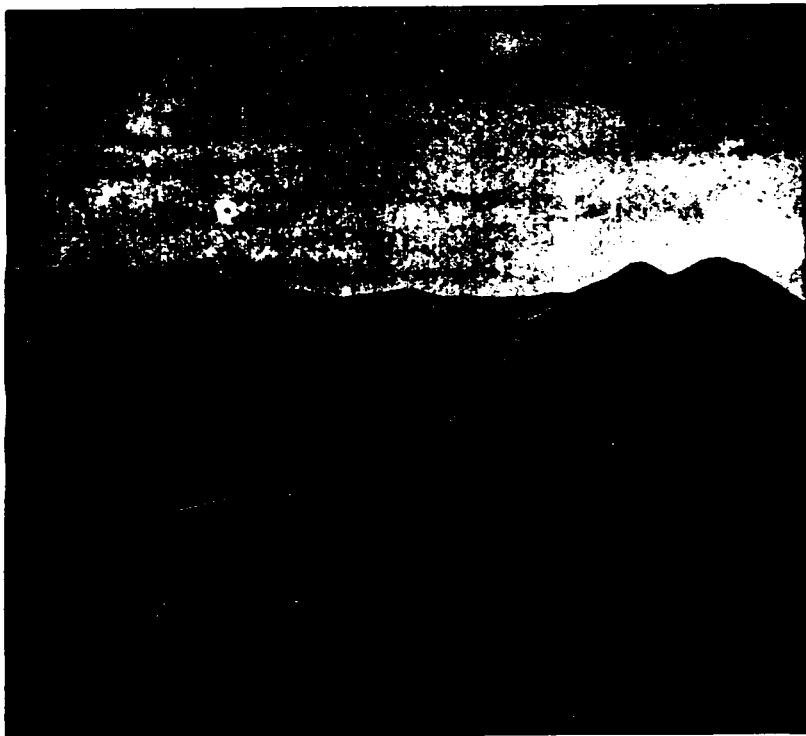
have ever seen. In peace times it would be of great assistance to the company officers in teaching the men to estimate distances by the eyes, as the distances to different objects could be given at once and fairly accurately, I believe, that with some practice with the range finder one could give the distances accurately.

Very respectfully,

D. A. FREDERICK,

Colonel Infantry, Unassigned.

Replying to your favor of 12th inst., it was my privilege to run the line and direct the estimation of ranges by the field officers and captains, representative of the several regiments at the camp at San Antonio, of which Colonel Brown writes in a recent Cavalry JOURNAL. I also had the opportunity thro' courtesy of the same officer to inspect and use the



Barr-Stroude Range Finder on tripod mount and to read some of the literature on its construction and use. In my opinion it is far superior to any range finder which we have ever tried.

While its accuracy is largely a function of the skill and experience of the observer, even in the hands of inexperienced men, the error is very much less than the average error of inexperienced guessers of distance.

Its ease of operation by a single observer, the lack of necessity of measuring a base line, the rapidity of its work, the

fact that it can be used from cover and in a prone position commends it most favorably. The one adverse criticism that suggested itself to me was the possibility of its getting out of adjustment, its accuracy being dependent of course on the adjustment of the refracting and reflecting parts. However, I am sure that if put in the hands of a careful, experienced man and given the same care that a good soldier gives his rifle, the chances of sufficient derangement to seriously impair its efficiency are remote, and even then the percentage of error at various ranges could be determined by actual measurement and with due allowances made therefor, the accuracy of observation would still be much greater than any guess work estimation.

I am very favorably impressed with the utility of the Barr-Stroude Range Finder.

Yours very truly,

H. A. GREENE,

Colonel 10th Infantry.

THE ELIMINATION OF THE REVOLVER.

The following extract from the *British Cavalry Journal* for October, 1911, would seem to indicate that the impression has gotten abroad that the officers of our cavalry service are, as a rule, in favor of eliminating the revolver from the armament of our troopers.

"The JOURNAL of the United States Cavalry Association for July provides interesting reading. It is worthy of note that the majority of American Cavalry officers favor the abolition of the pistol for the men in the ranks, officers and sergeants to retain it."

This impression has undoubtedly been gained from the single article that appeared in the July, 1911, number of the CAVALRY JOURNAL under the title of "The Importance of Now Deciding Upon the Arms to be Carried by Cavalry." In this Military Note it is stated that: "The more progressive ele-

ments of the cavalry are keen to eliminate the revolver, save for officers and non-commissioned officers, leaving in the ranks a first-class rifle or carbine, and a saber that can be effectively used for cutting as well as for thrusting."

Is this statement and the inference drawn from it by the Editor of the *British Cavalry Journal* correct?

Knowing full well the sentiments of the members of the Fort Leavenworth Branch of the U. S. Cavalry Association as well as of other officers of our cavalry service on this important subject, it was expected that something would be forthcoming from them on this matter for this number of the JOURNAL.

In the March, 1911, number of the CAVALRY JOURNAL page 994, will be found a report of a vote taken on this question by the cavalry officers present at a meeting of the local branch of the U. S. Cavalry Association, at which over twenty cavalry officers were present which is as follows:

"Every officer present was decidedly of the opinion that the revolver should be retained as a part of the trooper's equipment, irrespective of any change that might be made in the other arms."

Again, in 1907, the then Editor of the CAVALRY JOURNAL obtained a postal card vote from 530 of our cavalry officers, there being at that time 758 cavalry officers in our service, which vote was largely in favor of the retention of the revolver, but one of a larger caliber, the .45 caliber being preferred.

This subject is open for discussion and the whole matter of the armament of the trooper should be an important one for consideration in all of our Branch Associations.

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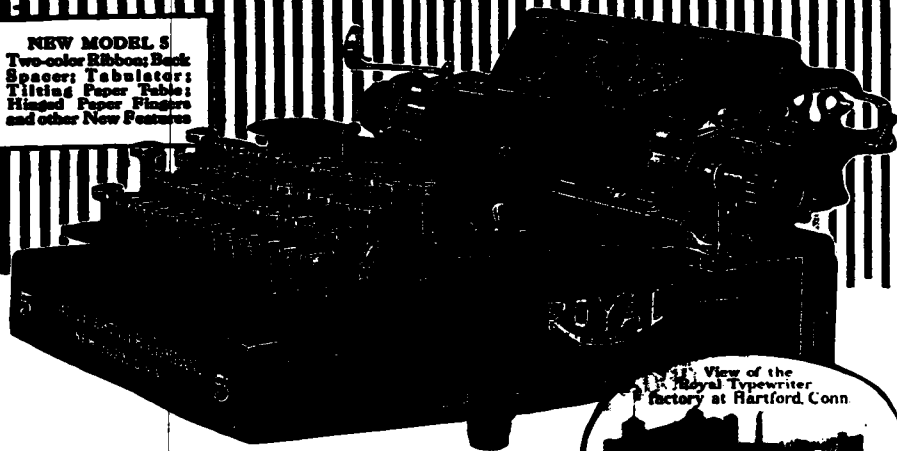


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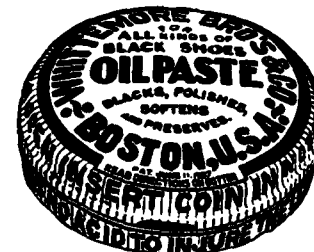
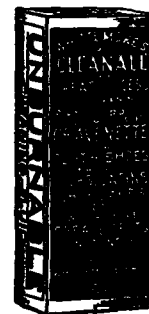
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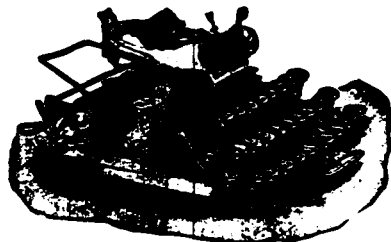
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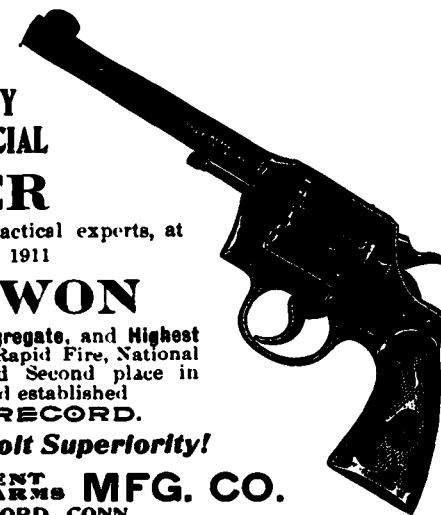
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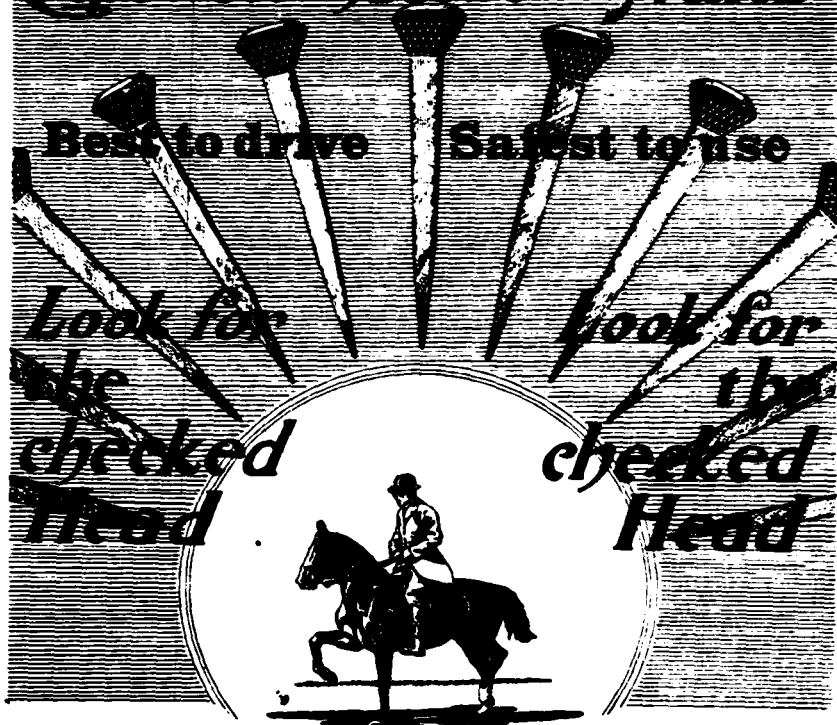
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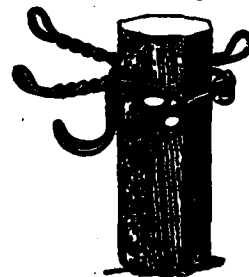
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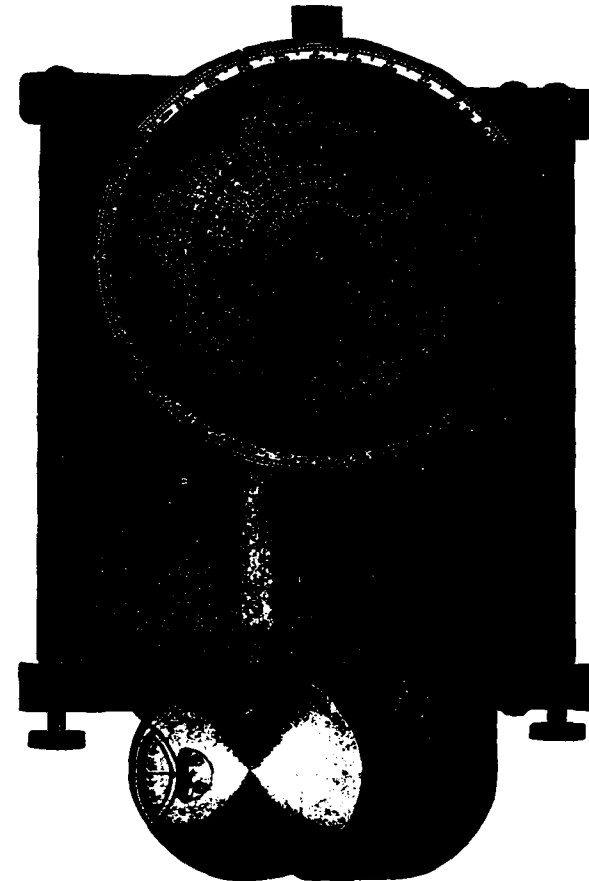
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CONTENTS FOR MARCH, 1912.

	PAGE
THE REORGANIZATION OF THE CAVALRY—Major General GEO. B. DAVIS	797
SINGLE OR DOUBLE RANK FOR CAVALRY—Brigadier General F. K. WARD	806
CAVALRY ORGANIZATION—Major HENRY T. ALLEN	814
ONE LIST FOR LINE OFFICERS—Lieutenant Colonel E. R. STUART	817
GRANT'S MOVEMENT ACROSS THE JAMES—Captain GEO. VAN HORN MOSELEY	820
DAILY DIARY OF EQUITATION WORK AT THE MOUNTED SERVICE SCHOOLS	832
THE BEST COLOR FOR HORSES IN THE TROPICS—Captain C. C. SMITH	848
THE HYGIENE AND TREATMENT OF HORSES AT THE MANEUVER DIVISION—Veterinarian OLAF SCHWARZHOPF	853
SHELBY'S EXPEDITION TO MEXICO—Captain H. A. WHITE	862
REPRINTS AND TRANSLATIONS:	
AIRSHIPS AND CAVALRY IN THE RECONNAISSANCE SERVICE	873
CAVALRY TACTICS—Colonel BALCK—Translated by Lieutenant KRUEGER	877
MILITARY NOTES:	
SINGLE OR DOUBLE RANK—Major ALONZO GRAY	940
DOUBLE OR SINGLE RANK—Major HENRY T. ALLEN	944
OUR CAVALRY DRILL REGULATIONS	947
FORAGE AND FEEDING—Lieutenant W. G. LANGWELL	949
FIGHTING ON FOOT	951
THE ELLIS SELF SCORING TARGET—Captain AUBREY LIPPINCOTT	953
LEST WE FORGET	955
BOOK REVIEWS	957
EDITOR'S TABLE	962

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Vol. XXII.

MARCH, 1912.

No. 89.

THE REORGANIZATION OF THE CAVALRY.

BY MAJOR GENERAL GEORGE B. DAVIS, U. S. ARMY.

I HAVE read with great interest the able and thoughtful papers on the Reorganization of the Cavalry in the September number of the JOURNAL: after some reflection and a somewhat casual study of the views so strongly and lucidly presented, it seemed to me that, out of my service and experience as an officer of the regular and volunteer cavalry, I might possibly be able to throw some light upon the subject, even though a portion of that service was rendered nearly half a century ago.

Very great weight is attributed, by nearly all of the participants in the discussion, to their presence with their commands of the maximum number of enlisted men allowed by law. This proposition is so fundamental as to lie quite outside the scope of ordinary discussion; it is equally true that this form of absenteeism, less frequent, perhaps, in the volunteer, than in the regular cavalry, constitutes, always and everywhere, a menace that should be promptly abated. I am sure that there is but one opinion in this matter, but the remedy fortunately is administrative and within the authority of every post commander to apply; moreover the situation is one which,

however serious, calls for no measure of legislative relief. Those whose good fortune it was to serve under the late General Merritt will remember how satisfactory that service was in this particular regard. Each troop at drill carried its full strength, less the guard and say three or four men in the kitchen stables and quarters; as these men were changed at stated intervals, usually once a week, their military instruction did not suffer, and the company commander felt that he was drilling—not a set of regulation samples but a sure enough troop of cavalry. With this the matter of full troops, in time of peace, may, for the time, be dismissed from further consideration.

The corresponding diminution of effectives in time of war is a subject less easy to dispose of. The contributors to the discussion in the September number, almost without exception, speak of the serious consequences of the reduction in strength and efficiency of a cavalry command when on a war footing due, for the most part, to the absence of men due to the fact that they are dismounted. Losses of men in war are due to two principal causes: (a) sickness and wounds; and (b) the loss of horses due to overwork, underfeeding and in a less degree, to other casualties of war. Now the reductions in effective strength attributable to wounds and disease are, as a rule, not very serious. I can conceive of an exceptional case in which a cavalry command in security operations, or in an unfortunate encounter with infantry, may be badly handled by the enemy to such an extent as to involve severe and unusual losses. But these occasions are by no means frequent and, in the ordinary employment of cavalry the lists of killed and wounded are not alarmingly long.

Not so, however, with the steady loss of horses, day by day, due to a number of causes, some of which will be made the subject of a somewhat brief and perhaps inconclusive discussion. The serious character of the situation is due to the fact that with each horse that falls out of ranks, or otherwise perishes by the wayside, there goes an able bodied rider, whose loss though possibly temporary, is none the less serious for the man is seasoned to war, reasonably well trained, immune to most of the maladies of camp, and willing to render service, but prevented from doing so by the loss of his mount. It was

not by any means an unusual circumstance in the Cavalry Corps of the Army of the Potomac for regiments to lose from five to fifty men a day after the campaign has been under way for a month or more. I have myself seen the color squadron of my regiment reduced to nine enlisted men, four of whom formed the regimental color guard. This case is unusual and the loss of horses was excessive, but could not have been avoided in view of the service in which the Cavalry Corps was engaged, at about the midsummer of 1864, and it was approximated upon more than one occasion in that and other commands. The horses simply "played out" and disappeared from view, no further notice being taken of them; the men gradually drifted into the dismounted camp at Giesboro, opposite the city of Washington where they remounted, re-equipped with saddlery, and in the fullness of time, rejoined their commands in the Valley of Virginia. The dismounting of the rider also marks the instant when the Government finds it necessary to "charge off" to profit and loss (generally the latter) a very considerable investment in saddlery and equipment which "went with the horse," and which the rider in the absence of any means of transportation, was compelled to abandon.

The mechanism of this incident of becoming dismounted is interesting and for that reason is worthy of a moments consideration. The greatest losses occur at a time when it is most seriously felt and at a time when it is most difficult to apply a remedy; that is on a "raid", or in the prosecution of an independent operation in which the mounted command is, for a considerable period of time beyond the support of the other arms. In such a case there is no "rear" in the ordinary sense of that term, to which the dismounted men can be directed; they are therefore compelled to follow the rapidly marching column, keeping in such touch with it as they can; in this they are stimulated, to some extent by the advance of the enemy. In their helpless, disorganized condition they are not available for duty of any kind save, perhaps, as wagon guards when ammunition and supply trains accompany the column.

The losses to which I have alluded, and which seem to be inevitable in time of war, are due to several causes; over-

work, insufficient feeding, bad horsemanship, and an original want of fitness for hard work as saddle animals; these will be discussed in order. In the operations of a large army, composed of troops of all arms, it is by no means an easy matter to furnish a constant and regular supply, even of food, to the army generally. It is much more difficult to furnish a living ration to the public animals—especially the cavalry horses. Systematic efforts are put forth to get a forage ration to the front and, during the greater part of the time, from eight to twelve pounds of grain are forthcoming, with occasional barren intervals, when, for several days at a stretch the poor cavalry mounts go breakfastless to work and supperless to bed. In horsefeeding irregularity is fatal and when irregularities become so frequent that the horse gets nothing, or next to nothing to eat, things are nearing their inevitable end.

The supply of short forage is even more uncertain during the period of active operations, especially when we consider the amount of work which is required of a mounted command under war conditions; the question of furnishing long forage under the same conditions is still more unsatisfactory. In winter quarters and during halts for refitting and recuperation the fourteen pound allowance of hay is generally forthcoming but, so soon as the command cut loose for an independent operation, the hay supply instantly ceases. It will be said that the deficiency should be made up by grazing. That is an easy question to ask and not a particularly difficult one to answer. The horses furnished for remount service in the Army of the Potomac were, as a rule, stable fed, and *regularly* fed, but quite unused to grazing. They had been destined from birth and even before birth, along several lines of wagon hauling for-bears to team use, many of them had never been backed, even by a boy for the purpose of being ridden to water. For such a life regular habits, with rather heavy feeding from a manger three times a day with plenty of bedding were regarded as essential. While it is true that some of the horses so brought forth *might become* useful saddle animals, and it is surprising how many Northern bought horses *did* actually become good cavalry horses, in spite of their unpromising antecedents, the fact remains that grazing, free exercise in the pasture and the

moderate use of grain were not the daily incidents of their upbringing. The inevitable result was that the new mounts, when they reached the front, were soft, flabby, tender on their feet, often too heavy, and, more frequently than not, too sluggish and unweildy for saddle purposes, cursed with tender backs which were soon to become the seat of galls, blisters and saddle boils; all this led to one end, the horse subjected to hard field service succumbed to the inevitable; he became too weak for the work required of him, his blistered back could no longer support the weight of a saddle, his legs simply ceased to work and he fell out of the column to return no more.

Grazing during the progress of active operations is far from being an easy practicable method of feeding than would seem reasonable to an officer who is only familiar with the frontier service of the cavalry arm, and whose early service was rendered in the region of the bunch and buffalo grasses on our western frontier. If Indian hostilities were on, it was always safe to do some grazing during the day and, in addition, to allow a portion of the heard to graze during a considerable part of the night. The Indian was a wary and resourceful enemy, always on the alert, and only ready to take advantage of any slip in the herding arrangements of his pursuers. But he was generally on the run and it was only upon rare and specially favorable occasions that he felt it safe to try and do something with the herds.

In the operations much larger and less homogeneous commands during the progress of the Civil War, the grazing situation was not always, or altogether controlled by regimental, or other subordinate commanders. The enemy encompassed him about at all times when an independent operation was in progress—that is when the cavalry command was working at some distance from, and unsupported by the infantry of the main body. These operations had an immediate and important object and purpose—the troops were out to harass and defeat the enemy—not to establish a convalescent camp for decayed and overworked horses, or to get for them the moderate advantages that ensue upon moderate walking exercise between meals. The command was likely to attack, or to be attacked

at any instant, and no mounted command is less fitted for instance employment than one in which the horses were grazing possibly a mile or more from the camp of the main body. They could be and sometimes were grazed in a way by removing the bits as the horses stood in regimental lines; this was beneficial as far as it went, at times it was the only resource in the way of food that was available, but it was not a substitute for grain, or even for grazing in the sense in which that term is used on the frontier; and such casual and uncertain feeding was no more grazing than it would be for a wheel mule to eat up the wagon master's hat.

I have attempted to give some idea of the predicament in which many mounted commands in the Eastern armies found themselves during the progress of the Civil War; and I am certain that the substantial incidents of the active service of cavalry have not materially changed since the volunteer cavalry regiments were mustered out nearly half a century ago. I will now attempt to show what was done in the direction of applying a remedy in the Cavalry Corps of the Army of the Potomac, an organization with which I was fairly familiar. In the early days, before General Hooker was permitted to see dead cavalymen in any considerable numbers, the effort was made to apply to the cavalry arm something resembling the admirable organization established by the late General Henry J. Hunt for the artillery of that army. General Pleasanton a cavalry officer of considerable ability was appointed chief of cavalry. This did not mean that he was its commander, although he afterwards became so, nor was he restricted to the duty of advising the commander of the army, for he occasionally exercised the functions of active command. His name will be longest remembered for having worked out, in opposition to the Confederate General Stuart, the modern "screening system" of employing cavalry in campaign. Perhaps the credit of this is due in about equal parts to Pleasanton and Stuart with a reasonable share of the credit to Colonel Mosby, the tireless searcher for information whose brilliant operations the Union armies were never permitted, for a moment, to forget.

Dismounted cavalymen were numerous in 1863 and still more during the energetic command of General Sheridan in the following year. The dismounted men drifted back to the rear and, as convenient opportunities presented, were sent to the remount camp at Giesboro, Md., where a separate encampment was established for each brigade of the Cavalry Corps. In each of these brigade cantonments provision was made for each of the regiments composing the brigade. These brigade camps were commanded by field officers, most of whom had been disabled by wounds in the performance of active duty. At Giesboro Point, a short distance away, were the great horse and mule corrals where the horses purchased for the remount service were received and almost immediately issued to the remount camps. In the brief period of their sojourn at the Giesboro establishment the raw mounts were equipped, given such training as time permitted and, when a detachment of reasonable size had been accumulated, were put *en route* to rejoin their commands at the front; several thousand dismounted men passed through the camp in 1863 and a considerably larger number in 1864.

The arrangement which I have attempted to describe was fairly successful in its operation and, considering the time, would seem to be worthy of future consideration. So long as horses give out in the active operations of war, from causes whose existence is known, and which we may or may not be able to foresee and provide against, the question of remounts will be one of the very first importance, upon which the success of the mounted branch of the military establishment, in any war upon which we are likely to be engaged, will certainly depend.

I may be permitted, perhaps, to say a word in respect to reorganization, premising what I have to say with the remark that our regimental organization was conceded from the first to be an unusually large one, without a model in any regiment then existing in any European army. The cause is not far to seek. In 1833 when the First regiment of Cavalry was organized, a mounted force was sorely needed to protect the wave of emigration, which had then passed the Mississippi River. Save to authorize the addition of a regiment of dragoons to

the establishment, Congress gave the matter no further legislative concern, leaving the details of organization to the executive discretion. As it was not easy to secure legislation adding to the organizations composing the army, or increasing its numerical strength, full advantage was taken of the occasion with a view to get as large a regiment as possible, and with little regard to the strength or composition of similar regiments in Europe. Such briefly stated is the reason why cavalry regiments in the United States Army have been what they are. Our cavalry officers gradually became accustomed to the large regiments and, as they became reduced from twelve hundred men to something like six hundred as men were dismounted in the course of active campaign, the regiment was found to be more manageable, and there was a feeling that the men and horses who remained with the colors were in some way better and more reliable than those who had become dismounted; a proposition not without a basis of truth. Progressive officers thus gradually became satisfied with the larger unit of organization. In the changes which are now suggested I do not glean from the discussion that the advantages of the new arrangement are more than comparative, or involve serious dissatisfaction with the existing organization. We would like something better, much more in harmony with the changed condition, but, if we cannot get it we will cleave what we have.

It is unquestionably true that a twelve company regiment is too large to be handled efficiently by one commander, especially if he regards the command as a single unit, and not as an organization composed of three constituent units. It must be borne in mind, also, that though the troops with the colors are reduced in number by the emergencies of an active campaign, the missing men are very much alive and, sooner or later, will return to duty at the front. The twelve-company regiment is clearly too large, especially on a war footing, and the movement in favor of smaller and more easily handled regiments is one that makes for economy and efficiency. I find much to be said in favor of the idea of the depot company, an instrumentality of which we have long stood in need, and which will contribute materially to the efficiency of the cavalry service. The need of such an agency is so obvious, and its

utilities are so numerous, that I am unable to see why it has not been suggested before.

The ten troop proposition (one to be a depot company) with, I believe a machine gun detachment has much to commend it; more than this it is an evolution out of our conditions and service needs. That it does, or does not conform to current European practice is a matter of absolutely no importance. The progress made by our cavalry, not only in its daily service, but in the solution of problems of the greatest importance in the tactical employment of that arm, has not been surpassed or even approached by that of any European army. Why follow them then in matters in respect to which we have the right to set the pace. If the regiment should be increased, increase it; if it ought to be reduced then reduce it, but in adding or reducing let us look to our own experience and our own tactical and administrative needs and not to those of European armies, for there is no common ground upon which both can safely or reasonably stand.

SINGLE OR DOUBLE RANK FOR CAVALRY.

BY BRIGADIER GENERAL F. K. WARD, U. S. ARMY.

DURING the discussion which has been going on for some time about re-organization of our cavalry, the statement has been made that it might be found advisable to return to a double rank movement system. Before making such a radical change the matter should be well considered from every point of view. We had a double rank system many years ago and changed to a single rank system. The latter is the simpler and easier of the two, especially for the men in the ranks. But effectiveness is of course the first consideration and I think it was on that ground that the suggestion for a return to a double rank system was based. I believe that greater effectiveness can be attained with a single than with a double rank system. A single rank movement system does not mean necessarily a single rank line of battle.

The question is one that can be positively settled only on the battlefield. The final test is there and the requirements there are of the first importance, are paramount to everything else. But we cannot have the question settled there. Battles are few and far between. And for a conclusive decision as to the relative merits of two systems, all other things must be equal with the opposing forces, a condition that will seldom or never obtain in battle. All that we can do, therefore, is to study the question, endeavoring to overlook nothing, and take our chances on the correctness of our judgment resulting from that study. All the great powers in Europe, I believe, hold to a double rank system. That is a practical expression of a judgment based on long experience in large armies where they have more cavalry and consequently more opportunities for trial than we have. Such a judgment commands our respect and we should be very cautious in rejecting it. But it would be a mistake to accept it as infallible: By so doing we bar all progress, all improvement.

SINGLE OR DOUBLE RANK FOR CAVALRY. 807

We hear a great deal about the days of cavalry on the battlefield being all past. Such statements result from an incomplete view of the matter. But whether they are or are not true as regarded the general battlefield is of no consequence in our present inquiry. A heavy line of cavalry is never needed for action mounted against foot troops or artillery: Open order is more effective: Successive lines in open order may be, doubtless are needed, but never two or even one rank in close order. It is not to action against foot troops or artillery that we should go for light in our present inquiry. Large armies will always have out bodies of cavalry sometimes as large as a division for purposes of security and information, and there will be engagements between these cavalry forces which, by reason of their importance and the numbers engaged, may properly be called battles. In these battles occasions will occur when recourse must be had to action mounted against an opponent also mounted.

For action mounted by cavalry against cavalry mounted, a line of battle in close order is needed and one rank does not make a heavy enough line. A careful consideration of this action is necessary to a correct decision as to whether or not we should return to a double rank movement system. And in this consideration the opposing forces must be considered equal in numbers, equally well instructed, equal man for man and horse for horse. The relative merits of the two systems cannot be judged on any other basis.

To place the matter clearly before the mind it will be well to consider three cases:

1. A single rank against a single rank.
2. A single rank against a double rank.
3. A double rank against a line composed of two or more ranks

And it must be assumed that in each of these cases the actual collision, the shock, will take place. We sometimes hear it said that the actual shock will never take place; that one of the lines will give way before that point is reached. Any cavalry which starts out with that belief might about as well stay at home; it can accomplish very little. It will go

into action beaten before it gets on the field and any commander who relies upon it for security and information will be leaning upon a broken reed.

The first case, that of a single rank against a single rank, needs but a few words. The two lines are equal in numbers and weight and the final result must be in favor of that side which makes the most efficient use of its supports and reserves.

The second case, a single rank against a double rank, calls for more careful consideration although there can be little doubt as to the final result. The immediate result of the collision of the two lines is the important thing to consider in this case. If neither line had a rear rank, the immediate result of the collision would be that both lines would be brought to a halt, the two lines intermingled and many horses down in each line, for the two lines are equal horse for horse and the instruction being equal the charge will be equally well delivered by each side. Now what effect will the rear rank of the one side have on this result? It can add nothing to the momentum of its front rank at the instant of the collision for it will be two yards behind it at that instant. Previous to the shock some of the rear rank men may move up into the front rank to fill openings occurring there but with well instructed men there will be no occasion for that at very many points. A single rank fairly well closed makes a formidable obstacle. It cannot be cleared or pushed aside. It may be knocked down but the horses doing it will have little or no go left in them for a while, even those that are not down themselves. There seems no ground for any other conclusion than this. While the single rank line may be pierced in some places by individual men or at most by a few individuals, the two lines will be brought to a halt and that immediately after the collision the men remaining in the rear rank, being too close to avoid doing so, must plunge headlong into the mass with more immediate damage to friend than foe. However, the double rank force outnumbers the other two to one and must be victorious in the melee following the shock. To be sure the single rank force with an equal front will be able to have the greater strength in its supports and reserves, but they will not be where they are needed at the time they are needed which will

be immediately after the shock and throughout the line all at the same instant. It may even have a greater front and still have more men than the other side in its supports and reserves, in which case its unopposed flanks could come round in a flank and rear attack. But even then it seems hardly likely to be successful. Its lines are too light.

Whether or not the two lines will brought to a halt by the shock in such a case as this needs most careful consideration. Right there is the cruz of the whole matter and, as will be evident when we come to a consideration of the next case, there hangs the decision as to whether or not we should go back to a double rank or hold to a single rank movement system.

We now come to our third and last case, that of a double rank against a line composed of two or more ranks. But first it is necessary to make clear what is meant by a two rank line as distinguished from a double rank. Speaking by our present drill regulations, suppose every troop, regardless of its strength to be divided into two platoons only and that a line of platoon columns with closed intervals is formed. We then have exactly what is meant by the term a two rank line. The two lines would ordinarily be separated by platoon distance and they are separately organized and officered though not as separate lines. With full troops divided as required by our drill regulations, a line of platoon columns is a four rank line.

Let us consider first a double rank against a two rank line. In this case we may take it that the supports and reserves are equal in numbers and that they will be equally well handled. They may properly be excluded from consideration. They pair each other so to speak. The final result will be determined by the two lines alone. Throughout the advance to the attack, the rear rank of the double rank line must keep closed to the prescribed distance of two or three yards. On the other side when the rapid gait is taken up during the advance, the platoon commanders in the second rank should take, each from his leading platoon, such a distance (say about seventy or seventy-five yards) that when the shock takes place they can halt their platoons just short of the engaged mass. They would then get there before the disentanglement is completed,

in perfect order, and in condition to take the most effective part possible in the melee to follow. Now compare the condition in the two opposing forces. In the double rank line the entire force is in complete disorder with many horses down. On the other side the condition is just as bad in one, but the other rank, one half the total force is in perfect order and condition. Can there be any doubt as to the result? It certainly looks as if success must rest with the two rank line; as if that were the stronger line of battle.

The adoption of a two rank line of battle would not amount to a sending in of the first rank as a sort of forlorn hope to bear the brunt of the action. The leading rank would really go into the shock in better plight than the front rank of the other side. It would be relieved of all thought of its rear rank plunging in on top of it and would know that its second rank, uninjured by the shock, would be on the ground to its assistance just when needed. And if proper practice has been given in the drill ground to the march in line at rapid gaits in the squadron and the regiment, a force will go into the shock in well defined lines; not in a confused mass, not with one rank occupying a depth of ten or fifteen yards.

Now as to a double rank against a three or four rank line. The supports and reserves cannot be excluded from consideration in this case and we must remember that the aggregates of the opposing forces are equal. Suppose the commander of the double rank force puts half his strength in his attacking line and the other half in his supports and reserves, a division at least as likely as any other. Now if the other commander decides for a four rank attacking line with a front equal to that of his opponent he must dispense entirely with supports and reserves. By so doing he would leave his flanks and rear unprotected and expose himself to almost certain defeat. If he puts half his strength in support and reserve, his four rank attacking line will have but half the front of that of his opponent whose overlapping flanks will be free to whip around in a flank and rear attack, since the supports and reserves of the two sides are again equal and must be considered as balancing each other. And the effect of flank and rear attacks is out of all proportion to the strength of the forces making them. By

a similar course of reasoning it would appear that any division of the available force into an attacking line, supports and reserves, with a four or a three rank formation, would give less probability of success than with either a double rank or a two rank formation. With three ranks the defects would be the same in kind though less in degree perhaps.

For hundreds of years there has been going on a reduction in the number of ranks in formations for combat. By universal judgment the reduction seems to have stopped at two ranks. More than two ranks gives rise to several defects or difficulties. One of them has already been referred to, the liability to flank and rear attacks. Another is that with many ranks a part of the force is blanketed, cannot get any part in the combat at a critical time. In a line of any considerable length the men in rear cannot spread out for that purpose and for a time can only stand back and look on. Doubtless that obtains very little with three ranks but with four or more it must be perceptible. The strength required for more than a double rank or for more than two ranks, can be more effective in the support and reserve. Another objection to a deeper line than is necessary is that if fire action is encountered there are unnecessary casualties, a waste of strength and of life.

Practically, at the present time, we have but one question before us: Which is the stronger, a double rank or a two rank line such as described? If the latter is the stronger we do not want a double rank movement system for that does not lend itself to the formation of a two rank line. A single rank system does and that alone is a sufficient reason for holding to such a system. To make our present drill regulations serve the purpose it would only be necessary to make one or two changes namely: Prescribe that a troop, regardless of its strength, shall always be divided into two platoons, and only two; and that the two rank line shall be the habitual line formation for the troop, the squadron, and the regiment.

For open order purposes and for dispositions for dismounted action, a single rank movement system will be found in no respect inferior to a double rank system and in some important respects I believe it is a superior. The rally could be executed quicker and in better order in two ranks than in a

double rank. The men would never forget which platoon they belonged in and the two platoons could be formed simultaneously in the usual and proper position with reference to each other and without interference among the men in getting into ranks. When in open order in line of squads or line of platoons, a double rank formation would never be wanted in the squads or in the platoons. It is not necessary to multiply examples.

The preceeding short discussion is not one of drill regulations merely. It is one of cavalry tactics pure and simple, of the tactics for a most important time, for the battlefield. The conclusion stated are merely an expression of my own individual belief. If enough has been said to direct attention to the subject, cause it to be thoroughly studied and a correct decision to be reached regardless it, my object will be completely accomplished.

This inquiry is about one of the two most important tactical measures. Essentially it is with regard to the best formation to be assumed for the attack. The other measure to which I refer is with regard to the best method for delivering the blow after the formation has been completed. In the CAVALRY JOURNAL for March, 1899, Volume 12, page 50, there appeared an article by me on the last named subject under the title "*Guide Center and Leading.*" The best tactics for the two purposes named or the summit, the crown of all cavalry tactics. The adoption of bad tactics for those purposes might, very likely would, render abortive all previous tactics however good they may have been. In making this reference I repeat what I said just above, that my only object is to direct attention to the subject with a view to its receiving the attention its importance makes due.

A few words here on cavalry organization will not be out of place. Tactics and organization are very closely related and the size of the first or base unit, the troop we call it now, is a very important matter.

In moving mounted troops in line it is absolutely necessary to divide the line into sections with intervals of a few yards between sections to allow for the unavoidable irregularities in marching. These sections should be no smaller than

is necessary to accomplish their purpose, this in order not to weaken the line unnecessarily. By our drill regulations a troop in single rank, if of the maximum strength, has a front of ninety-seven. I do not believe that many mounted men, no matter how well instructed, could move in line in one rank at a rapid gait and preserve good order. The experience in large armies seems to be in confirmation of that belief. About 1890 the drill book in use in the English Army gave sixty-four as the maximum front for a squadron which in their system corresponds exactly to the troops in ours. As theirs was a double rank system, that fixed the maximum strength of their squadron at somewhere from one hundred and forty to one hundred and fifty enlisted, allowing for the file closer and those men who never turned out in ranks. I have never heard of larger squadrons than that in any service. These facts indicate that their experience fixes the maximum front possible for the base unit at about sixty-four, that being taken as the exact figure probably because with that number the subdivisions necessary for tactical purposes work out best.

From what has just been said it follows that if we are going to adopt a single rank line of battle, our troop is too large. But it is hardly possible that any one will advocate a single rank. For a two rank or a double rank line tactics very clearly and definitely fixes the maximum strength for the base unit at from one hundred and forty to one hundred and fifty enlisted. It so happens that this is also a good size for the smallest administrative unit; but if it were not, the tactical requirement would still have to govern.

The base tactical unit was formerly called a squadron and I believe that is still the name used in all armies but ours. The troop was originally an administrative and not a tactical unit. If we again make our base unit of the same size as in other armies, we should again designate it a squadron. That would be the means of avoiding considerable uncertainty and confusion under circumstances that may arise.

CAVALRY ORGANIZATION.*

BY MAJOR HENRY T. ALLEN, GENERAL STAFF, U. S. ARMY.

THE article, *Cavalry Organization*, in the January 1912, number of the CAVALRY JOURNAL by Lieut. Col. Dickman merits more than usual attention by reason of the zeal and deep interest shown therein.

1. The writer seems to follow in the footsteps of various others in treating the squadron of other countries as analogous to our squadron. The word squadron has its basic idea a square and dates from the time when hollow squares were in vogue. The four sides of the square were the four platoons of the squadron and the commander thereof was then as now captain.

Other countries have no squadrons in the sense in which we use the word. Our troop with its three to four platoons commanded by a captain is a squadron in the sense in which that term is used in other countries. The word troop is an unfortunate designation for cavalry purposes and was borrowed by us from the English who translated the words *peleton* and *zug* by troop. It is believed that we have already correctly translated those words by platoon.

2. "The tables cited do not show that our regiment is too strong numerically to be handled by one man." The assertion to which the writer refers was that our present regiment brought up to Field Service Regulation strength and kept in single rank was too large to be properly handled by one man as a *regimental entity*. That conclusion is sound. It is believed that the strength provided in Field Service Regulations leaves the troops too small for an economical administration both as regards men detached from the combatant force and as regards the purely financial phase of the question.

*Pages 609 and 610 of the January, 1912, CAVALRY JOURNAL.

If the writer proposes to have our squadron (battalion) considered as a European squadron (troop), then its extravagance becomes more marked. If a troop be as large as a captain can properly command then for mobility, convenience, and cover, it should be in double rank. It is *not* "feasible to put 700 American horses on the same ground occupied by an equal number of European chargers." When the former are maneuvered in single rank with squadron intervals and distances and the later are maneuvered in double rank without the squadron distances and intervals.

4. "The tendency in a charge is to loss of cohesion" and therefore the double rank has been recognized by practically all cavalry experts as the proper formation for shock. The various elements, whether they be in platoon or troop fronts (and in large commands in regimental fronts) would furnish the successive shock elements. If we had no larger commands than regiments it would be advisable to consider the second line after the manner of a brigade formation. Experience has clearly demonstrated that the compact organization is pre-eminently fit for speedily seizing and holding important positions, and for finding cover while awaiting an opportune moment for attack.

5. The writer states: "In the European squadron, we find, as a general rule, one officer to twenty-five to thirty men; in the American squadron, one officer to seventeen to eighteen men. From this it is evident that if our authorized 13,110 enlisted men of cavalry were to be organized according to the Austrian, German or Russian models, here would be a large reduction in the total number of officers required. Such reduction, or an increase in the cavalry without promotion of officers, would hardly have a good effect on the spirit of the arm."

Nowhere within the knowledge of the writer of this comment has there been any intent or desire to effect an organization that entails a reduction of officers. (See pp. 26-27 Cavalry Notes.) Certainly the War Department has not considered such a measure nor is it believed that Congress has contemplated that phase of the question. The proportion of

cavalry under the 100,000 army statutory limitation rests with the President. This arm was recently increased by adding five men for each troop for the United States proper and ten men per troop for the insular holdings—a total of 1,200 troopers.

6. In the organization outlined in *Cavalry Notes*, only a general idea was to be conveyed of a modern organization. The size of the troops and the number were not set down as conclusive. Under the proposed organization it was intended that sufficient enlisted strength be provided to meet the requirements of the officer personnel now existing. The additional increment of troopers would not be great and the savings in construction of buildings, streets, sewers, heat and lighting would be enormous. At recent inspection of several cavalry posts the maximum strength that was turned out for experimental drills was 66 per cent. That fact alone must be suggestive as to the policy of numerous small units to the regiments.

Experiments with a brigade will clear up a number of points that are now obscured by our almost general limitation to be a single regiment as the largest unit.

ONE LIST FOR LINE OFFICERS.

BY LIEUTENANT COLONEL E. R. STUART, PROFESSOR U. S. M. A.

UNDER this caption in the November issue of the CAVALRY JOURNAL are to be found certain statements which at least may be considered open to discussion. The following are quoted:

"The officers of these special services (Staff and Coast Artillery) are working and thinking continually along a special line. In times their ideas get a permanent bent in that direction and they can see or care for nothing else.

"Yet an engineer always looks for a chance to use his special trade. In a war game or maneuver an engineer officer who has been given an offensive mission and ample means to carry it out will nevertheless usually promptly begin to look for 'a position.' In other words his previous training as an engineer in the construction of field fortifications has given his mind a permanent bent that usually unfits him for the command of a mobile force."

It is suggested that the whole of the paragraph on page 559 of that number be read.

Whose is the Napoleonic gift to decide what is an offensive mission? Unless specifically confined by orders, a commander is given a *mission* to carry out according to his own best judgment, and merely because the author of the article in question has differed from some engineer officer as to whether in certain circumstances the best plan was to act on the offensive or on the defensive, he should not issue an ukase condemning Lee, Meade, McPherson, Wright, Humphreys, and many other illustrious officers as unfit "for the command of a mobile force." Inferentially, the writer condemns "looking for a position." Has any battle been fought in which one force was not in "a position," selected with a view to taking advantage of a clear field of fire, secure flanks, screened maneuvering space, and as many as possible of the other advantageous features of the defensive? If so, it will serve as an example of what *not* to do in war.

A careful study of a possible theater of operations will serve to show what are the positions facing in your direction in one of which the enemy is sure to be found if you act on the aggressive, and what are the advantageous positions facing in the direction of the enemy, in one of which you will elect to fight if the enemy is able through any combination of circumstances to force you to act on the defensive. Nothing is more illuminating than the study of these positions, and nothing will serve so accurately to forecast the trend of events. Whatever the theory applicable to the case, the tide of battle will sometimes turn against the force operating on the offensive, and a commander who at that critical stage has first to turn to a study of "a position" has taken a frightful liberty with the organization which is unfortunate enough to be commanded by him. Lee was not above "looking for positions" but it is to be remembered that Lee, being an engineer officer, was not "fit for the command of a mobile force."

Quoting now from Pope's well known address to his army:

"I have come to you from the West, where we have always seen the backs of our enemies; from an army whose business it has been to seek the adversary and to beat him when he was found; whose policy has been attack and not defense.

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"Meantime I desire you to dismiss from your minds certain phrases, which I am sorry to find so much in vogue amongst you. I hear constantly of 'taking strong positions and holding them,' of 'lines of retreat,' and of 'bases of supplies.' Let us discard such ideas. The strongest position a soldier should desire to occupy is one from which he can most easily advance against the enemy. * * * W. R. 18. p. 473.

Brave words these and coming from an engineer officer should be particularly appreciated by the writer of the above mentioned article, but they serve to show that the offensive cannot be maintained through the use of the pen alone. Nor in war can the date of a battle be predicted by dividing the total distance separating hostile forces by double the daily march of infantry.

No one will deny that the defensive has disadvantages, but on the whole the advantages outweigh the disadvantages, as is proven by the fact that an inferior force can maintain front against a considerable preponderance of strength by a skillful

utilization of the advantages of the defensive against an equally skillful utilization by the stronger force of the advantages of the offensive. It is true that the defensive cannot lead to decisive results, but it is also true that the inferior force is not entitled to expect decisive results in its favor. A lightweight pitted against a heavyweight is lucky if he escapes a knockout, which he is more likely to do if he doesn't undertake to rush matters.

All of which goes to show that the defensive has its proper sphere in war, and there are times when a commander or subordinate is justified in acting on the defensive. The decisive results attending the offensive apply only to a force as a whole. Success by aggressive action of a fraction of a force is only partial at best, and may expose the aggressive fraction to disastrous defeat. Offensive missions for fractional parts of a force should be viewed with suspicion.

To sum up, the really valuable commander is he who has no deleterious "permanent bents" either for the offensive or defensive, but is capable of unbiased judgment resting upon a correct appreciation of the role of engineering as well as all other auxiliary arms, and having reached such judgment, capable of acting upon it either boldly on the offensive or conservatively on the defensive, as circumstances warrant. Of these the Engineer Corps has furnished its full share, just as it has furnished Pope with his "strongest position a soldier should desire to occupy is one from which he can most easily advance against the enemy," and McClellan of whose shortcomings that seemed like timidity the writer complains.

Relative to McClellan, let us remember that the nucleus of the army he organized had been with McDowell at Manassas on an "offensive mission with ample means to carry it out;" let us study his strength reports and find out how long his men had been with the colors; and let us remember the conditions of manufacturing at that time and the probable chaotic condition of his supply arrangements. Then perhaps we may not judge too harshly his lack of aggressiveness, even though we may not forgive all his shortcomings as a commander in the Peninsular Campaign. McClellan did not lead his army to victory. Somebody else might have led it to disastrous defeat.

GRANT'S MOVEMENTS ACROSS THE JAMES.

BY CAPTAIN GEO. VAN HORN MOSELEY, GENERAL STAFF, U. S. ARMY.

GRANT'S Overland Campaign with the Army of the Potomac was only part of his great general plan for the advance of all the Union armies somewhat toward a common center, with a view of defeating all opposing forces and closing in the net on whatever organized resistance might then remain.

On the extreme right Banks was to move on Mobile. Then came Sherman who was to advance into the heart of Georgia with Johnston's Army as his objective. Sigel, who was covering the Valley, was to move forward two columns. Meade, with the Army of the Potomac, was to move against Lee and follow him wherever he might go. Butler with the Army of the James, was to operate against Richmond from the south side of the James River. With the exception of Banks, all columns were to move forward together, thereby pressing and threatening the Confederates at all points simultaneously, and preventing them from reinforcing one another. Banks and Sigel failed in their part of this grand campaign, but otherwise it worked out practically as ordered.

Grant's first intention seems to have been to direct operations from the west. But after his conference with the President and the military authorities at Washington he realized that his place as Commanding General of all the armies was in the East; not in a hot-bed of intrigue like the capitol, but in the field. He therefore decided to accompany the Army of the Potomac.

We read so often that the part played by the Army of the Potomac in its overland campaign against Lee ended with its defeat at Cold Harbor, and that there followed a week of indecision on Grant's part, that we are likely to forget that even during those terrible days of battle, when only discouraging news was being received at his headquarters, Grant was work-

ing out the details of a forward movement which would not only place the Army of the Potomac across the Chickahominy and James Rivers, but would furnish history with one of the greatest military achievements ever recorded. The plans for this movement were communicated to Washington on June 5th, the battle having ended on the 3d, but the army was already busy in preparation for its march and the advance of its base.



GENERAL U. S. GRANT.

Military men have long appreciated the commanding genius displayed by Grant in the conception and execution of his advance of the Army of the Potomac across the Chickahominy and James, but the magnitude and importance of this movement have never been generally understood. There are several reasons for this. First, the average reader believes that the genius of a general is shown only in battle resulting in victory. Again, Grant's reports of his operation were very

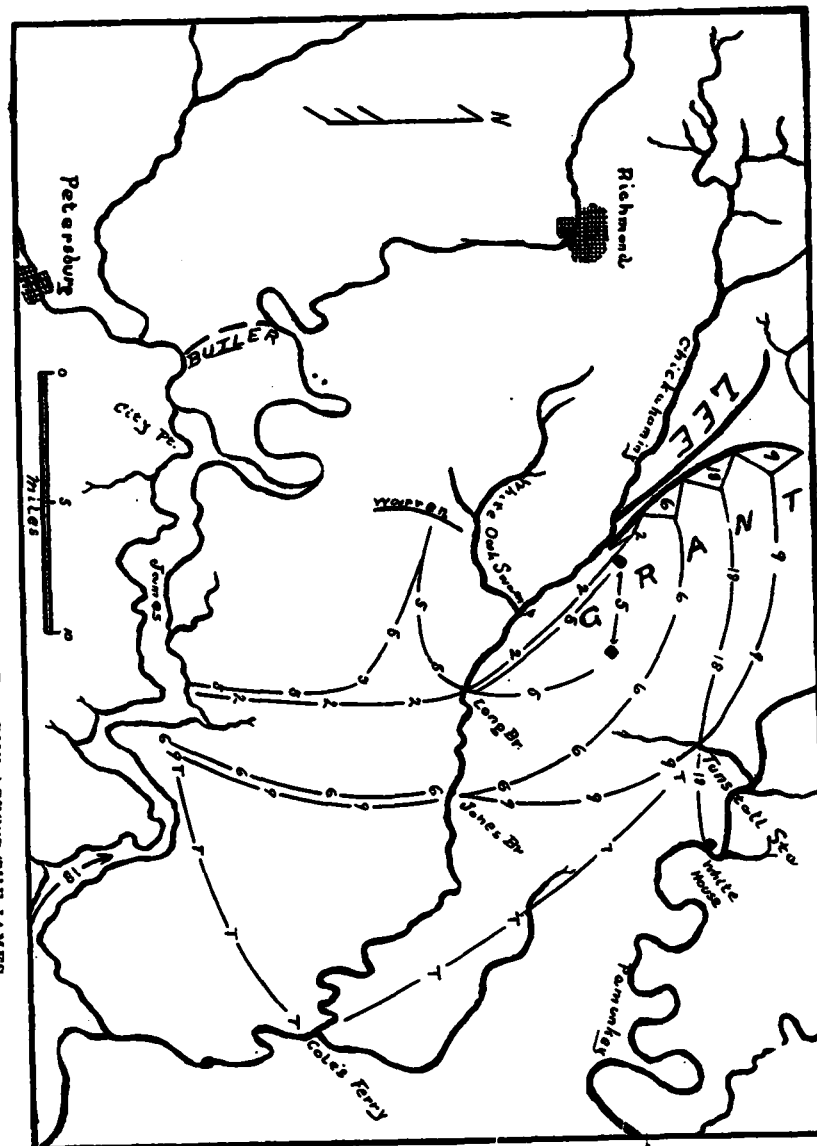
modestly told, as were Meade's and those of Humphreys, Meade's Chief of Staff. Most of the subordinate commanders made only brief reports of their marches from Cold Harbor to Petersburg, not realizing the magnitude of the whole movement of which their operations formed a part. And, finally, the whole movement was followed by the assaults on Petersburg, so there was no time for the writing of detailed reports.

The battle of Cold Harbor ended on the afternoon of June 3, 1864, when Meade sent out an order suspending further offensive operations. The corps commanders were directed to intrench their positions with a view of moving against the Confederate position by regular approaches. The army was to hold substantially the ground it occupied at the close of the battle, taking advantage of any favorable circumstance that might present itself until the cavalry could be sent west to destroy the Virginia Central Railway, Lee's route of supply north of Richmond; and until Grant could perfect all his arrangements for the movement of the army across the James.

Grant wisely determined that in the event of Lee's electing to hold Richmond, his investment of that city should be on ground of his own choosing where he would have the maximum of tactical and strategical advantages. It is unfair to say that Grant's overland campaign ended with the defeat at Cold Harbor because he continued his advance by a most brilliantly conceived and executed flank march instead of directly through Lee's position. While Grant had been unable to actually defeat Lee seriously in any one battle, he had accomplished the same results by the constant wear and tear on the personnel, materiel and moral of Lee's army.

On the morning of June 4th, the Army of the Potomac was thus disposed; the refused right, swinging to the right beyond Bethesda Church, was held by Burnside with the Ninth Corps; then came Warren with the Fifth Corps; then Birney's Division of Hancock's Corps, the second; then followed Smith with the Eighteenth Corps; then Wright with the Sixth Corps; then Hancock with the second Corps, less Birney's Division. One cavalry division covered the right of the army, and another covered the left. A third was placed behind the right center, in reserve.

SKETCH MAP SHOWING MOVEMENT OF GRANT'S ARMY ACROSS THE JAMES.
The numbered broken lines are the routes taken by each corps. The line marked with a "T" is the route followed by the Army Train.



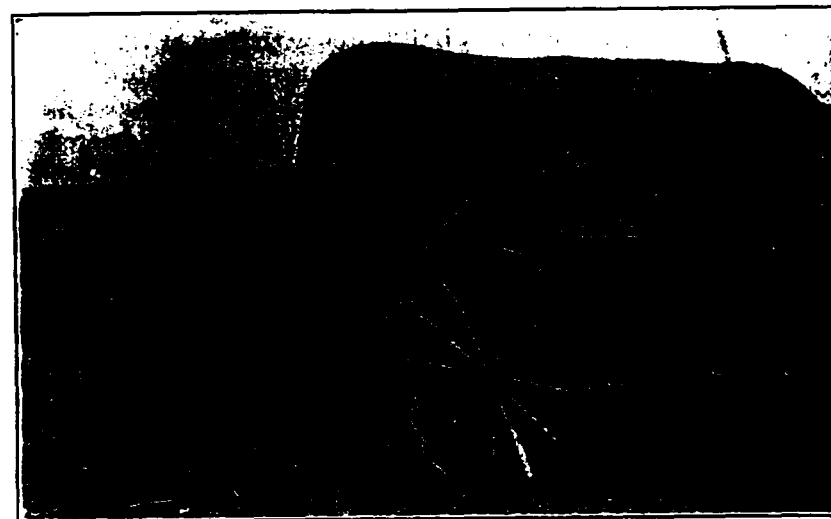
The actual march of the army did not commence until the night of the 12th. In the meantime the right was drawn in and the left was extended to the Chickahominy; two attacks by Early on the Union right were repulsed; Sheridan was dispatched with two cavalry divisions to destroy the Virginia Central Railroad, and Warren with the Fifth Corps was placed on the left and left rear of the army ready to make his critical and important move in the proposed flank march. These changes in the position in the line were made at night, and the difficulties of the movements were greatly increased by the character of the terrain along the Chickahominy. The roads were poor and narrow, the country heavily timbered and covered with underbrush. The men would often fall, and the marching columns would soon become more or less disorganized, since in the darkness the officers could not be distinguished nor those who disobeyed them.

There were enough difficulties confronting the operations proposed by Grant to have deterred the ordinary man. The entire army of five corps numbering about one hundred and fifteen thousand men had to be disengaged from its locked embrace with a powerful enemy; it had to be withdrawn without bringing on a serious battle; the various columns had to be marched to the rear and by the flank, then swung in a great change of direction and formed into flank columns; and after being properly covered these columns had to cross the treacherous Chickahominy and the broad James. Not a single bridge was standing on the Chickahominy at the points where Grant's columns would cross, and there was no bridge over the James. In addition, the Army base at White House had to be advanced to the James, and fifty miles of trains marched from White House across the Chickahominy and the James to a new base. All this had to be accomplished in the immediate presence of a veteran army led by one of the greatest and most successful generals who had ever commanded in the field.

Grant withdrew and advanced his army by pivoting it on one corps which crossed the Chickahominy and took up a defensive position covering all lines by which Lee might advance from the direction of Richmond and across White Oak

Swamp. An interior intrenched line had been constructed on the Cold Harbor battlefield which was to be held temporarily, to perfectly cover the withdrawal in case Lee discovered the movement and attacked during the early stages of its execution.

After dark on the evening of June 12th, Warren, with the Fifth Corps, which had been placed on the left of the army the army for the purpose, preceded by Wilson's cavalry, crossed the Chickahominy on a pontoon bridge built at the site of Long Bridge. After crossing, Warren turned toward



GENERAL GRANT'S BAGGAGE WAGON.

Richmond and advanced into a position covering all approaches by which Lee might advance. As long as Warren held this position, all the ground in his rear was covered, and the march of the columns across it to the James would be unmolested. Literally, these columns would be pivoting on him. At the same time Hancock and Wright withdrew into the interior intrenched line on the battlefield. Smith with the Eighteenth Corps and the right-of-way withdrew and marched to White House, where his corps embarked and moved by

water down the Pamunkey and up the James, reporting back to Butler to whose army it belonged. All the cavalry, artillery and trains of the Eighteenth Corps joined the trains of the army at Tunstall's Station, and marched with them overland.

When the roads were clear of Warren's troops Hancock with the Second Corps followed Warren across the Chickahominy and marched straight to the James River in rear of Warren's position.

Burnside with the Ninth Corps, from the extreme right of the line, also withdrew after dark, and marched by way of Tunstall's Station to the side of Jones's Bridge, its point of crossing. Wright with the Sixth Corps withdrew at the same time as Hancock, and marching by a route about midway between those followed by Burnside and Hancock, directed his column on Jones's Bridge. Burnside and Wright were to cross the Chickahominy at the same point, and the column reaching the place of crossing first was to have the right-of-way. As it happened, the Sixth Corps was the first to cross on the bridges constructed by the Engineer Corps at the site of Jones's Bridge, the Ninth Corps having been delayed in its march by the army trains blocking part of the road assigned to it.

The trains assembled in the vicinity of Tunstall's Station, and, guarded by a division of the Ninth Corps and a brigade of cavalry, they moved to Cole's Ferry which was their designated point of crossing the Chickahominy.

BRIDGING THE CHICKAHOMINY.

Upon the arrival of Wilson and Warren at the site where Long Bridge had formerly stood, it was found that there were two distinct streams to be crossed by the pontoons. Against the north bank lay the main channel, but beyond this was a low island, about two hundred feet wide, and still beyond a smaller branch of the Chickahominy. The river was filled with sunken piles and other timber, and this debris of the old bridge had to be cleared away and the abutments cut down. As a result, it took two hours and a half to complete the bridge. It was dismantled in forty-five minutes after the tail of Hancock's corps had cleared it.

When the head of the Sixth Corps arrived within supporting distance of the site of Jones's Bridge, the engineers began their work. Here also there were two streams to be bridged. Three complete bridges were built, one with the wooden pontoon, one with the canvas pontoon and a permanent bridge.

It developed later that the bridging material sent with the trains was not nearly sufficient to bridge the Chickahominy at Cole's Ferry, and all the pontoon bridging material with the marching columns had to be assembled at that point. The pontoon bridging material used at Jones's Bridge upon being taken up was sent direct to Cole's Ferry. The bridging material that had been used at Long Bridge had followed Hancock's column to Charles City Court House, and it had to be sent back from that place to Cole's Ferry where the trains were still waiting to cross.

The width of the river at Cole's Ferry was such that all the bridging material thus collected could not span it without extensive timber and corduroy approaches. Finally, when all the pontoons had been built into the bridge, working from both ends, it did not meet in the center by about thirty feet. The bridge was then detached from the north shore, connected at the center, and the approaches on the north shore, extended by the construction of additional crib and corduroy work. The total length of this bridge was twelve hundred feet, and of the timber and corduroy approaches about four hundred and fifty feet.

The method employed in dismantling this famous bridge is particularly interesting. All the wagon transportation pertaining to the pontoon material was marched to the James River. The bridge itself was broken up into rafts, a suitable guard of enlisted men was detailed for each, and these rafts were then towed by steamer down the Chickahominy and up the James, where they rejoined their wagon transportation.

This delay of the trains at Cole's Ferry had an important bearing on the march of the army across the James and its advance against Petersburg, as we shall see later.

CROSSING THE JAMES.

Grant's instructions to Butler, dated June 11th, directed that officer to commence at once the collection of all means within his reach for crossing the army upon its arrival at the James River. Butler was directed to have a pontoon bridge laid if there was a place below City Point where it could be done. In obedience to these instructions barges, landing material and water transportation had been assembled in the vicinity of Wind Mill Point on the James. Butler fully expected that his chief of engineers, General Weitzel, would have a bridge ready by ten o'clock on the morning of the fourteenth, as General Benham with the bridging material from Fort Monroe was expected to arrive in the vicinity of Wind Mill Point during the night of the thirteenth. Due to negligence on the part of the officer sent up the James in charge of this bridging material, it did not arrive until the afternoon of the fourteenth. Hancock had arrived with his corps during the previous evening.

Being anxious to expedite the movement of troops across the James, Grant, at nine thirty on the morning of the fourteenth, informed Meade that there was water transportation available for immediate use in crossing troops. Meade was instructed to leave one corps on the north bank until the artillery and wagons were all over. Hancock thereupon began crossing his corps, and at six thirty on the morning of June 15th all of his infantry was over the James except one regiment which remained behind for fatigue.

Now to return to the bridge. The approaches on both banks were completed by ten o'clock on the morning of June 14th. This involved the building of considerable corduroy and crib work on both banks, together with a pier one hundred and fifty feet long on the north bank. The bridging material finally arrived on the afternoon of the 14th, and the throwing of the bridge began at once.

The battalion of the United States Engineers did the greater part of the work. This famous bridge contained one hundred and one wooden pontoons, with a total length of twenty-two hundred feet. The depth of the channel was from twelve to fifteen fathoms, and the tidal current was strong, rising and falling about four feet. In the channel the pontoons

were anchored to vessels moored above and below for the purpose. The bridge was built from both ends by successive pontoons and rafts. It was commenced about four o'clock in the afternoon and completed by eleven o'clock at night on the 14th, and was constructed so as permit the center section, a raft of one hundred feet in length, to be withdrawn for the passage of vessels. The greater part of the infantry and artillery, and all the wagon trains of the army, passed this bridge safely and without interruption, except such as resulted from a vessel above slipping her anchor thereby carrying away a part of the bridge, which, however, was promptly restored.

Meade's order for the passage of the army directed Burnside to cross first with the Ninth Corps by the pontoon bridge. The infantry of the Fifth Corps was to ferry across, using the water transportation which had been used for the same purpose by Hancock in crossing the second Corps. The artillery and horses of the Fifth Corps were to use the pontoon bridge. Wilson's cavalry and the Sixth Corps were to remain on the north bank to cover the crossing of the army and the trains, and when all were over Wilson was to be drawn in and across the river, followed by the Sixth Corps.

Grant's idea was to hold the cavalry and the Sixth Corps on the north bank, and push everything else across the river; but due to the non-arrival of the army trains, which were stopped for want of bridging material at Cole's Ferry on the Chickahominy, Grant directed Meade to modify his order so as to have Burnside, Wright and Warren sent over their trains and surplus artillery with suitable guards, stating that he did not feel justified in crossing more troops until the army trains drew nearer. Subject to this delay the army completed its crossing practically as ordered.

It was not until the afternoon of the seventeenth that Wilson began crossing his cavalry followed by the Sixth Corps, part of which embarked and proceeded up the James reporting to Butler.

Part of Wilson's cavalry was later recrossed to cover the movement of the general cattle herd to the south side of the river.

HANCOCK'S DIFFICULTIES.

Meade's order to Hancock, dated late in the evening of the 14th, informed that officer that Butler had been ordered by Grant to send sixty thousand rations to Wind Mill Point for supplying the Second Corps. The same order directed Hancock to move his corps by the most direct route to Petersburg, just as soon as the rations had been received and issued. Hancock informed Meade that he was not out of rations, his corps being supplied for three days. If Meade ever received this information he did not act upon it.

The infantry of Hancock's Corps was ready to begin the march to Petersburg at seven o'clock on the morning of the 15th, but the rations from Butler had not arrived. It is interesting to read the contradictory messages that passed between Meade and Hancock concerning the arrival or non-arrival of the rations; but it finally became necessary to order the Second Corps to march without waiting for them.

Hancock's message for the column to move was sent across the river by signal telegraph, but it miscarried. Colonel Morgan, his Chief of Staff, carried the order also, but the ferry taking him across the James grounded, and he was delayed half an hour. In consequence the column did not move until half past ten in the morning, a delay of about four hours. The march of the Second Corps on Petersburg was further delayed owing to the inaccuracies of the map furnished, so that it was about dark when Hancock joined Smith before the city.

Had the incident in connection with the rations not occurred, Hancock would have arrived before Petersburg with probably two hours of daylight remaining to him. He would have attacked without delay, for he was not a man to hesitate a moment with such an opportunity before him, and Petersburg which was at that time insufficiently garrisoned, would undoubtedly have fallen.

If Grant had directed Meade to rush one corps on to Petersburg, Meade would certainly have had it there; but the moment the Commander-in-Chief took it upon himself to interfere with details and concern himself about the rations of a single corps of one of his armies, which after all did not need rations,

he put obstacles in the way of accomplishing the final result, and by delaying Hancock's arrival at Petersburg several hours, he saved that city to the Confederates.

During the whole movement Grant completely mystified his opponent, and it was not until ten o'clock on the night of the 17th that Lee could be persuaded that the Army of the Potomac was moving against Petersburg and not against Richmond on the north bank of the James. This mis-conception of the actual military situation seems particularly strange on Lee's part, as Grant's movement was so clearly interpreted by Beauregard who commanded at Petersburg and by several of Lee's own immediate staff officers.

As military writers gather more and more information concerning this grand maneuver it will become better understood and more generally appreciated; and as this evidence is unfolded the strength of Grant's character and his genius as a commander will be more fully revealed.

DAILY DIARY OF EQUITATION WORK AT THE MOUNTED SERVICE SCHOOL.

DECEMBER, 1911, AND JANUARY, 1912.

TRAINING CLASS.

Schedule December 1st to 23d— $\frac{3}{4}$ hours per day.

1. In hall: Work out at trot and canter. Review at will,* half turn in reverse, individual small circles, increase and decrease of gaits and halts from slow trot. Emphasized holding distances in column at slow trot and movements by the flank.
2. Same as 1st.
3. In hall: Same as 1st, with half turn in reverse executed in column at slow trot, and individual circles at walk.
5. In hall: Review work at will, particularly on small circles with haunches held so as to track the forehand. Half turn in reverse in column, slow trot.
6. In hall: Review at will. Advance: explanation and exhibition of "Haunches Right" (left). Each colt required to do a few steps at a walk of haunches right on right hand and haunches left on left hand.
7. In hall: Gallop at will on both hands. Individually,† haunches right and left as for the 6th, but requiring more steps.

*"Review at will" means that the student officer works out his colt at will, putting him through all completed exercises and paying particular attention to the correction of faults as indicated by the instructor. Good work by the colt is immediately rewarded by relaxing the collection and patting. When the work is poor the student begins again at the walk and practices such exercises as the instructor advises are good for the particular fault or weakness of his colt.

†Where the exercises are given "individually" each student officer prepares his colt "at will" for the particular exercise and when ready executes the same at a prescribed place and before the instructor who indicates the fault, gives the correction and which the student again works out "at will". A satisfactory performance is eventually demanded of the colt. If necessary the instructor rides the colt in order to demonstrate the means by which the required results are obtained.

8. In hall: Review at will. Haunches right and left as for 6th and 7th, except that colts were required individually to execute a few steps at the slow trot.
9. Outside: Road work at walk and trot.
11. Outside: Road work at walk and trot.
12. In hall: Work out. Drill in column at slow trot, movements by the flank and obliques. First rider at canter twice around the hall passing column once and joining on rear. Review at will. Balanced trot with collection, small circle, half halt increase and decrease of gait haunches right and left.
13. In hall: Work out at canter. Review at will at slow trot. Haunches right and left at slow trot individually. Advance, "On two tracks right (left) oblique," executed at a walk.
14. In hall: Work out at trot, same as 13th, except that more was demanded of the colt in the exercises on two tracks right (left) oblique.
15. In hall: Work out at trot, taking canter on both hands on the track with true lead by changing hands at the trot through the hall. Swinging by fives by the flank at the trot down the length of the hall, and again moving by the flank so as to keep on same hand at the end of the hall, preserving dress, interval and cadence.
16. In hall: Work out at trot. By the flank by fours at trot as for fives on 15th. Haunches right on right hand and haunches left on left hand at slow trot. On two tracks right (left) oblique at walk. Canter in column on tracks and on circles.
18. In hall: Small circles individually at slow trot, making use of the corners. Haunches right and left and oblique as for the 16th. Canter in column on circles. First rider twice around hall at canter and close on rear of column.
19. In hall: Work out at trot. Small circles individually in the corners on left hand, followed by canter in column on left hand, same to right. Review at will at slow trot.
20. In hall: Drill in column at slow trot. Canter on both hands. Circles to right (left) about from column at the walk. Advance: "Haunches right" on left hand and "Haunches left" on right hand at a walk, individually.
21. In hall: Same as 20th.

22. In hall: Work out at trot and canter. By the flank by fours down center of hall at trot. Work with haunches as for 20th.
23. In hall: Work out on both hands at trot. Drill in column, by the flank and half turns in reverse at slow trot. Circles right (left) about at walk.

Schedule January 3d to 14th— $\frac{3}{4}$ hours per day.

3. In hall: Longed 15 minutes. Work out at trot on both hands. Drill in "Haunches Right" (left) at a walk.
4. In hall: Longed 10 minutes. Work out at trot. Review of work of suppling the haunches at slow trot, individually.
5. In hall: Longed thoroughly. Work out at trot to both hands.
6. In hall: Work out at trot to both hands.
8. In hall: Longed 5 minutes. Work out at trot on right and left hand at will. Drill by threes by the flank down center of hall. "On Forehand Half Turn in Reverse," "On right into line." Review of work in suppling haunches. Individually, "On Two Tracks Right (left) Oblique."
9. In hall: Longed 10 minutes. Drill in slow trot, first trooper front to rear, last trooper rear to front, trot; on right (left) into line; half turn in reverse; troopers circle to the left (two circles). At will 10 minutes. In column, change hands through half the hall at slow trot, swing haunches right (left) and come on the track on "two tracks."
11. In hall: Work out on both hands at a trot. Drill slow trot, half turns in reverse, troopers circle right (left), spirals and serpentine.
12. In hall: Longed 15 minutes. Work out at jog trot on both hands.
13. In hall: Work out at slow trot, and same as on the 11th.

Schedule January 15th to 31st, one hour per day.

15. In hall: Work out on both hands. Individually, all the previous haunch exercises. Drill in column at slow trot.
16. In hall: Drill at slow trot. Gallop at will on both hands. Individually, haunches right (left) and on "two tracks" right (left) oblique. From head of the column take the center paths the column once and close on rear.

17. In hall: Work out at gallop on both hands. At will 15 minutes. Drill in column, haunches right (left) and on two tracks right (left) oblique.
18. Work out at trot. Gallop on both hands. At will 15 minutes. Drill in two track exercises and circles.
19. In hall: At will 15 minutes. Individual work, asking greater collection and approaching the "school trot."
20. In hall: Work out at trot 15 minutes at will. General exercises.
22. In hall: Work out at trot. Canter on both hands. Work at will 20 minutes. Individually, vertical and lateral flexions. Drill in column in the exercises and demanding greater collection.
23. In hall: On the track in column, first trooper front to rear, slow trot, last trooper rear to front, canter; from head of the column leading trooper canter twice around and close on rear of column. Work at will, 20 minutes. Drill—troopers circle to the left (right) two circles; haunches right (left); on "two tracks" right (left) oblique; on right (left) into line.
24. In hall: Work out at trot. Work at will 20 minutes. In column, first rider from slow trot to canter, and make circle in each end of the hall and close on rear of column. Drill in column in haunch exercises.
25. In hall: Work out at trot. Short extended trot on each hand. Work at will 20 minutes. Individually, on one long side of the hall, trot, slow trot, school trot, trot and halt. From head of column take canter, and on long side of hall extend to gallop and then come to canter on circle at the end of the hall.
26. Out doors: Road work, walk in pairs.
27. In hall: Work out at trot and canter. Drill by platoons. Canter in column on circles.
29. In hall: Work out at trot. Work at will 20 minutes. Individually, haunches right on left hand and haunches left on right hand, swinging haunches to right, straighten and swing to the left down center of hall, at school trot. At will, canter and make small circles at each end of the hall, on both hands. Drill in column.
30. In hall: Work out at trot. At will, canter, making small circles in the end of the hall. Work at will 20 minutes. Individually, haunches right on left hand and haunches left on right hand, lateral flexions left on right hand, and lateral flexion right on left hand. Short drill.

31. In hall, at trot: Canter at will, making small circles at the four changing points (points from which the head of the column leaves the track in changing hands and marked with signs on the knee guard). Work at will 20 minutes. Individually, lateral flexions at school trot. Developing the canter from the school trot.

The extreme cold during the first half of January very seriously affected the routine of the work with this class.

For "*Half turns in reverse*" see Pages 37 and 38, "*Notes on Equitation and Horse Training.*"

Only such exercises as have been given in printed form to the student officers are reprinted with this diary.

HAUNCHES RIGHT (LEFT)

Purpose:

This is an intermeddiate lesson preparatory to "Shoulder in."

In the lesson "half turn in reverse," the colt has learned to yield one leg by being placed in a position where resistance is almost impossible. Haunches right (left) has the same object in view, that is, teaching the colt to yield to the leg, but goes further and also demands more discipline. A secondary object of this exercise is the suppling of the hocks and shoulders. This is the first distinct lesson in "two track" work.

Execution:

The colt moves on a straight line but is set at an oblique to his original direction and so that the front and hind feet travel on two parallel tracks. The colt is straight from poll to croup. The front feet cross each other as do the hind. The displacement of the haunches is *very slight at first*, the outside feet stepping more in front than across. The angle at which the colt is set with regard to his original direction is rarely more at any stage than 45°. The first lessons are given at a walk and the gait is never faster than the "slow" or "collected" trot. The lesson is well executed when the balance, cadence and lightness of the mouth are maintained, the feet cross smoothly, and there is no bending in neck or body from poll

to croup. The rider's weight is thrown slightly towards the direction in which the colt moves.

The Aids:

Being on the right hand the rider's left leg is applied at the rear edge of the girth (or slightly further back if necessary) with an alternating pressure, in unison with the left hind leg, until the haunches are moved to the desired distance from the track. This leg is also responsible for driving the colt forward. The rider's right leg applied at the girth measures the degree of displacement by stopping the haunches. It prevents the colt from running from the opposite leg, from losing the cadence, and his forehand from leaving the track. It also assists in maintaining the collection and holding the colt up to the bit. The reins are used to maintain the direction and to keep the neck straight. The right rein leads and is "opened" only so much as is necessary to give the direction, the left rein is "closed" and prevents the neck from bending.

Faults:

1. Legs knocking together—the angle is too great and the joints not yet supple enough to make the cross step.
2. Haunches slew away too much from the displacing leg—stop with other leg.
3. Forehand drives too fast—opposite leg and reins.
4. Losing collection—straighten out on the track, collect the colt and try the lesson again.
5. Bending neck or body—keep straight by use of reins and legs.

Being on the right hand to execute "Haunches Left"—the forehand is moved inward as if going in an oblique, the movement is stopped by a slight "half-halt" and the sidewise movement begun with the aids as prescribed.

Being on the right hand at the command "On two tracks Right Oblique" the colt moves out on the oblique about 45°, the body remaining parallel to the track on which he was moving, the aides being practically the same as for the haunches

right (left), except that the reins must now give the direction alone, as the wall furnishes no guide for either the forehand or the haunches.

Haunches Right (Left) is next given on the circle but the displacement of the haunches to the inside or outside is still less than when working on straight lines.

The lesson should never be given for long distances and never at fast gaits.

HAUNCHES IN (OUT).

Purpose:

To secure greater suppleness and agility in the horse by flexing the muscles on one side and correspondingly contracting those on the other, to enforce obedience to the aids, and to further his general physical development.

Execution:

This is a lesson in "two track" work. The bend in the horse is more decided than in any lesson heretofore attempted. The horse is practically bent around the inside leg (the bend being principally in the ribs and loins) in such a manner that the forehand moves approximately parallel to the wall while the haunches are displaced to the inside. The forefeet stride straight to the front, the displacement of the haunches is slight in the first lessons but is gradually increased until the hind feet move on an independent track which is also parallel to the wall. When the bend is slight the hind feet stride nearly straight to the front. As the bend increases the outside hind crosses the inner hind. The poll should be flexed to the inside rein. The exercise should be executed only at the collected walk and balanced trot.

Aids:

Being on the right hand to execute "Haunches In."

The left rein demands a very slight flexion, keeps the left shoulder from falling out, and is the principal rein aid in making half halts. The right rein leads, takes care of the elevation and maintains a flexion.

The right leg is firmly placed at the girth and acts in the manner of a post around which the horse's body is bent. It guards the forehand from falling in, drives the horse forward, and also assists in preventing too great a displacement of the haunches.

The left leg used in unison with the horse's right foreleg, is placed in rear of the girth and displaces the haunches to the desired degree. It also assists in driving the horse forward.

To straighten the horse use the inside leg and outside rein.

Faults:

1. The outer shoulder "falls out"—guard more carefully with outside rein close to withers.
2. The horse will not bend in the body, but only slews the haunches around and crosses his feet—stronger use of inside leg and rein. If this does not suffice go back to flexions and haunches right (left).
3. The horse loses the cadence, checks up, and gets behind the bit—decrease the displacement and drive forward with both legs. Or if necessary straighten the horse, drive him well into the bridle, and begin the lesson again.

Haunches out:

The execution and aids are the same as "haunches in," except that the hind feet now stride along the track and the forehand is brought inside.

Being on the right hand to execute "haunches out."

Obtain a lateral flexion to the left rein, open the right rein and lead the forehand off the track to the right. The rider's left leg is firmly placed at the girth, the right leg in rear of the girth.

To straighten the horse, release the aids so as to bring the forehand back on the track.

SCHOOLED CLASS.

Schedule December 1st to 23d— $\frac{3}{4}$ hours per day.

1. In hall: Five minutes at will, walk and trot, both hands. On track, walk, trot, gallop, both hands. Frequent short rests. Walk, trot, gallop, trot, slow trot, halt,—legs closed, heels down, upper part of body back. Circles, by flank, at halt, dismounting—with and without stirrups, keeping horse in place. Horses nervous and stirred up.
2. In hall: Review same as 1st.
4. In hall: More collection, deeper seat, longer stirrups, legs farther back, and heels more depressed being insisted upon. Warming up for five minutes at walk and trot, both hands. On track in two sections, walk, trot, canter, circles, by the flank, first trooper from front to rear, both to inside and to outside between column and wall. Walk from canter. Work on straight lines.
5. First platoon in hall: Review same as fourth. Second platoon outside. Rode in woods on track at walk, trot and gallop. Took three log jumps in woods at very slow pace. Each rider after passing over, halted, faced around and kept his horse standing about fifty yards beyond the hurdle until the last individual jump had been made over that particular hurdle.
6. Review same as 5th.
7. Second platoon in hall: Review same as 4th. First platoon went on hunt with fox hounds in the vicinity of Morris Hill and to the north.
8. In hall: Five minutes individual work on track, at walk and trot on both hands. On track in two sections, right and left about, individual circles, by the flank, first trooper from front to rear, executed at trot. Walk, trot and canter on track, both hands. At halt, dismounting and mounting with stirrups both sides, horses held in place. Suppling exercises, (leaning back, looking to right and left rear by twisting body at waist, rising knees from flaps, etc.).
9. In hall: Review, same as 8th.
11. Outside: Walk, trot and gallop on track in woods. Took four small jumps about three feet high. All horses were halted just beyond first jump after clearing same and kept standing until the entire class had passed over and joined on far side. The remaining three jumps

- were taken in succession at a slow gallop, horses being brought to trot between jumps and kept about fifty yards in rear of the preceding rider.
12. In hall: Five minutes for individual work out on track on both hands. On both hands collected walk, slow trot, trot out. Canter, slow trot, walk. At trot, first trooper from front to rear. Individual canter from head of column around track to rear of column. Advance, "haunches right" (left), on track at walk (haunches being set on side toward interior of hall).
 13. In hall. Review, same as 12th.
 14. In hall: Review, same as 12th.
 15. In hall: Review, same as 12th. Advance, by threes from column through hall and back to column at opposite end of hall. In column at a given point, the first trooper turns to right, second to left, third to right, and likewise throughout, the odd numbers being formed into one column with extended distances, and even number into another; columns pass around so as to reform a single column by both changing direction at the same point.
Haunches right (left) to inside at a slow trot.
Haunches right (left) to outside at a slow walk.
 16. In hall. Review, same as 15th.
 18. In hall: Walk, trot, slow trot and gallop both hands. First trooper from front to rear at trot. First trooper leave column by an oblique, halt near column, horse kept in place, parallel to wall, join rear of column when it passes. By threes by flank through hall, circles, abouts, changes of gait. In column odd numbers to right, even numbers to left and form normal column. Haunches right (left), both to inside and to outside. Half turns in reverse.
 19. In hall: Review, same as 18th. Advance, individually halting from a collected walk and moving out at a trot. Work at haunches right and left has been discontinued; also work by threes has been discontinued. A whip is being carried on each horse.
 20. In hall: Review, same as 19th.
 21. In hall: Review, same as 19th.
 22. In hall: Review, same as 19th.
 23. In hall one hour: Workout for five minutes individually. On track in two platoons; walk, slow trot, trot out, canter slow trot, walk. Large spirals, col-

umn by flanks, individual about, slow trot from halt, halt from slow trot. On two tracks, right (left) oblique. Individual about at canter. At halt, without stirrups, dismount to left, vault and mount.

Schedule January 1st to 14th— $\frac{3}{4}$ hours per day.

3. In hall: Work out at will at walk and trot on both hands for five minutes. Trot and gallop on both hands on track. Individual troopers taking halt on inside track from the trot and then joining the rear of column as it passes. Halt turns in reverse; individual circles, serpentines, gallop twice around track and joining rear of column. Work by threes in halting, progressively taking slow trot, trot, extended trot and the reverse. Few minutes cooling out walk. Thermometer 5° above zero.
4. In hall: Review of the 3d.
5. In hall: Review of the 3d.
6. In hall: Walk and trot on track on both hands, while at trot executed by the flanks, individual abouts, spirals, and serpentines. Taking gallop on large circles on both hands. Platoon galloping on large circle, individuals leave that circle and take large circle at opposite end of hall.
Column at trot, first trooper from front to rear. Column at trot, first trooper pass around track at gallop and join rear of column. Changing of gaits. Frequent short rests with horses' heads lowered and necks extended. Explained purpose of and how to execute "Haunches In" (out). Thermometer 12° below zero.
8. In hall: Work out on both hands at walk and trot for five minutes. At trot and gallop on large circles, spirals, serpentines, obliques, individual circles, by the flank, changes of direction and individuals riding on a straight line. Individual gallop around track from head to rear of column. Individual halting on inner track. Explanation of backing.
9. In hall: Review, same as 8th.
10. In hall: Review, same as 9th. Advance, executing abouts and from the inner track to oblique back to the track by "On two tracks right (left) oblique."
11. In hall: Review, same as 10th. Thermometer 9° below zero.

12. In hall: Review, same as 10th. Thermometer 20° below zero.
13. In hall: Review, same as 10th. Advance abouts at the gallop. Explanation and execution of "On the forehand to the Right" (left) at a halt.

Schedule January 15th to 31st—one hour per day.

15. In hall: Work out at walk and trot on both hands at will. Serpentine and spirals. Gallop on large circles and on track. By flanks at trot and gallop. Last trooper halting on inside track and joining head of column as it passes. Riding on straight lines at trot and gallop. Advance, "Haunches In" (out). Putting horses through chute for jumping practice with low jumps in same and the horse loose.
16. In hall: Same as 15th, except no jumping.
17. In hall: Same as 16th.
18. In hall: Work out, circles, serpentines, etc., same as usual. At school trot "Haunches in (out)." On forehand to the right or left while at a halt. Backing. Practicing taking the gallop while riding on a straight line down center of hall. Horses without riders put through jumping chute with 3 ft. jump.
19. In hall: Same as 18th except that no jumping was done.
20. In hall: Same as 19th.
22. In hall: Same as 18th. Special attention to riding on a straight line with the application of the proper aids to hold the horse on the line, and to taking the gallop on executing right or left about.
23. In hall: Same as 22d, except that no jumping was done.
24. In hall, one half hour: At walk, trot and gallop over small and large circles, by flanks, straight lines, backing, turning on forehand to right or left. Took one 3 ft. 8 in. jump with rider. Outside one half hour, on road at walk and trot.
25. In hall and outside same as the 24th, except that horses were put through jumping chute without riders.
26. In hall one hour: Same as 24th.
27. In hall: Same as 25th. Advance, "Haunches In (out)" through center of hall. Jumped 3 ft. rail with riders.
29. In hall: Work out, large circles, serpentines, etc., as usual. Individual small circles in corners of hall with lateral flexions to the inside. Oblique on two tracks,

haunches, in (out), backing, turning on forehand, riding at trot and gallop, individually on straight lines, half turns in reverse, work by threes and the extended gallop.

30. In hall: Same as the 20th.
31. In hall: Quiet work out at the trot. Most of the hour spent in having the individual riders practice coming to the halt from the walk and again promptly take the walk. This to teach the proper application of the aids, to maintain the lightness, responsiveness, collection and suppleness of the horse. Exercise in light fingering of the reins.

JUMPING CLASS.

Schedule December 1st to 31st— $\frac{3}{4}$ hours per day.

1. In hall: Work out at will; individually taking gallop leads on diagonals of hall; jumping, small wicker in center at a walk, halt at wall, turn to left taking 3 ft. wicker jump on track at a gallop, no wings.
2. In hall: (Suppling exercises for riders and horses, with and without stirrups and reins; gallop leads on diagonals). Outside: In column well strung out winding through woods at trot and gallop; on the road in pairs at walk.
4. In hall: Same as 2d (also jumping three wicker jumps, $1\frac{1}{2}$ to 3 ft., about 20 ft. apart without stirrups or reins).
5. Outside: Winding through woods at trot and extended gallop; over double in and out of logs at a trot.
6. Outside: Up and down steep banks and over ditches at walk and quiet trot.
7. In hall: Same as 1st.
8. In hall: Work out at will; long gallop in column of two's, closed and extended distances.
9. No work by class: Horses led by grooms dismounted for one half hour.
11. Outside: Winding through woods at all gaits taking low jumps.
12. Outside: Through woods and hill pasture well strung out in column at gallop, taking five jumps, about 3 ft.
13. In hall: Work out at will, trot and gallop; galloping individually and in pairs.
14. In hall: Repeated work in hall for 2d and 4th as shown in brackets.

15. Outside: Over Republican jumps strung out in column at gallop; five horses ridden three miles in seven minutes over five jumps 3 ft. to $3\frac{1}{2}$ ft. high, others one mile in $2\frac{1}{2}$ minutes, over three jumps.
16. Outside: Class divided into three parts under leaders given different routes and to concentrate at designated points in one hour, distances $5\frac{1}{2}$ to $6\frac{1}{2}$ miles.
18. Repeated work of 4th.
19. In hall: Trot and gallop, individual and in column; jumping over small wicker jump in center at a walk, halt at wall, turn to right taking 3 ft. wicker jump on track at gallop; halt at end of hall, turn about and over two 3 ft. wicker jumps on track about 100 ft. apart, at gallop, no wings.
20. Same as 19th.
21. In hall: Trot and gallop, individually and in column, jumping 3 ft. wicker jump in center of hall, no wings, approaching at slow trot, jumping at gallop.
22. Same as 21st; also taking jump at slow trot.
23. In hall: Senoir instructor in charge; suppling exercises for horses and riders; jumping wickers, single jump at walk, in and out jump at trot, no wings.

Schedule January 3d to 14th— $\frac{3}{4}$ hours per day.

3. In hall: Suppling exercises for horses; jumping two 3 ft. wicker jumps on track on opposite sides of hall, taking jumps at slow gallop, trot in between. Began accustoming horses and riders to use of whip.
4. Same as third.
5. In hall: Suppling exercises for horses and risers; jumping same, except $1\frac{1}{2}$ ft. wicker in front of one jump, galloping in between jumps.
6. In hall: Suppling exercises for horses and riders; jumping 3 ft. wicker in center of hall at trot, no wings, 3 ft. 8 in. bar on track at gallop.
8. In hall: Suppling exercises; jumping 3 ft. wicker and 3 ft. to 3 ft. 8 in. bars on track on same side of hall, at slow trot and gallop.
9. In hall: Suppling exercises; jumps 3 ft. to 3 ft. 8 in. bars at slow trot and gallop.
10. In hall: Suppling exercises; jumps 3 ft. wickers in center 3 ft. to 3 ft. 8 in. bars in corner of hall, taken at slow trot and gallop twice over.

11. In hall: Suppling exercises for horses and riders; eight jumps $1\frac{1}{2}$ ft. to $2\frac{1}{2}$ ft. scattered over hall, being taken from movements by flank by platoon, by fours and by serpentine of column. two horses' lengths between troopers, all at slow trot, no wings.
12. In hall: Suppling exercises for horses and riders; four jumps in corners $1\frac{1}{2}$ ft. to $2\frac{1}{2}$ ft., No. 1's of sets of fours taking jumps at slow trot from circles tangent to jumps then changing jumps till all were taken; No. 2's same, etc., no wings.
13. In hall: Suppling exercises; jumping two jumps about 25 ft. apart 2 ft. to 3 ft. high, at a gallop, four men on track at same time, twice around. Hereafter riders report to instructor on completion of course for comments on performance instead of being advised while jumping.

Schedule January 15th to 31st—one hour per day.

15. In hall: Suppling exercises; jumping horses through chute, without riders, jumps $1\frac{1}{2}$ ft. to 3 ft. high, 2 to 5 ft. broad.
16. In hall: Trotting and galloping at will and in pairs; gaiting, jumps 2 ft. wicker and brush, 3 ft. 8 in. bars, 3 ft. chicken coop, 4 ft. wicker, all on track, over twice at gallop.
17. In hall: Gaiting; suppling exercises and jumping without stirrups or reins; jumps $1\frac{1}{2}$ ft. wicker, 2 ft. brush, and 3 ft. wicker, 20 ft. apart, over twice.
18. In hall: Suppling exercises; jumping over in and out, turn back and jump in, halt, then jump out at side, straight across hall and halt at wall, turn and move down track at walk, take top bar off jump, double back and take jump, jumps 2 ft. to 3 ft. high. Commonly known as pig pen jump.
19. Same as 18th.
20. Same as 17th.
22. In hall: Suppling exercises for horses; over two jumps 3 ft. high 14 ft. apart.
23. In hall: Work out 15 minutes. Outside: Forty-five minutes, walk, trot, and short gallop on flat.
24. In hall: Thirty minutes suppling exercises and over one jump 3 ft. 8 in. Outside: Thirty minutes walk and trot on road.
25. Same as 22d.

26. In hall: Same as 11th.
27. In hall: Suppling exercises for horses and riders, with and without stirrups and reins.
29. In hall: Suppling exercises; horses jumping through chute without riders, jumps up to 4 ft. high and 6 ft. wide.
30. In hall: Jumping four jumps on track at gallop 3 ft. to 4 ft. high, twice over; suppling exercises.
31. In hall: Without stirrups, suppling exercises; jumping three jumps 1 ft. to 3 ft. high about thirty feet apart, no stirrups.

NOTE: In addition to those previously noted the following suppling exercises for the horses have been used; abouts on the center movements by threes; at halt turns on forehand; gallop leads from trot; halting; backing. Whips are not yet used as an aid or carried while jumping.

THE BEST COLOR FOR HORSES IN THE TROPICS.

 BY CAPTAIN C. C. SMITH, FOURTEENTH CAVALRY.

HAVING read Colonel Woodruff's article on "The Best Color for Horses in the Tropics," and General Anderson's note at the end of that article, in the JOURNAL for September, 1911, I desire to submit the following:

Nature, in its always perfect arrangements, adjusts itself, when thrown out of its usual course, as in the case of the domestication of the horse. It certainly planned that there should be a *best color* for the domestic horse in the tropics, just as it planned that in his wild state, for obvious reasons, he should have protective coloration, protection against wild beasts, and against cold and heat and gave him a shaggy or a short coat of hair to meet the temperature of the cold or the warm climate he lives in.

The question then is what is the best color for horses in the tropics? By tropics I refer to the Philippine Islands. Let us speculate on the following facts, and from them form some deductions:

For the reason that the domestic horse needs no protective coloration, he being cared for by man, he needs no solid color, as does the dun Tarpan, or wild horse of the Russian steppes; the Zebra, Quagga, and Dauw of the African deserts, with their dun and black stripes; the Kulan of Tibet, which Brehm, foremost of naturalists, says is of a yellowish brown color; the Onager of Syria, Arabia and Persia, which in color is of a beautiful white with silver lustre merging into a pale sorrel tint on the upper part of the head, the sides of the neck and body and the hips; and the Nubian wild ass whose color is of a reddish cream tinge.

As the members of the equine tribe just mentioned, and the horse himself are natives of high dry countries, and have not shaggy hair, it is fair to presume that they need no protection from cold, but that their coloration has certain functions. What are these functions? I think all will agree that one function is protection from predaceous animals, since these colors blend harmoniously with the countries over which they roam, making it difficult for the hunting, predaceous beast to see his equine prey. The dun color of the Tarpan blends admirably with the vegetation of the steppes; and the stripes of the Zebra blend by day with the color of the African deserts, and by night with light conditions. If he were all black, on a starlight night, he would appear as a black object; if all white, as a white one; but his stripes have so marked him that, in the dark he is difficult to see. In fact, Galton says he may be so near by that you might hear the breathing of one and yet positively be unable to see him.

From the foregoing we are not yet quite ready to say that coloration is for protection from the sun's rays, but Hayes says that in addition to protection against his enemies, coloration also serves as a means for one tribe to recognize other members of that tribe. He states: "The desire in the horse tribe for class segregation is an inherent instinct, and the proof of this is that any herd of wild animals will evince suspicion, enmity, or alarm at the first approach of even one of their own species which is not garbed like unto themselves. The stripes of the Nubian wild ass, and of the Somaliland wild ass are recognition marks, and the slight differences between the respective stripes of Burchell's Zebra, Chapman's Zebra and Grevy's Zebra serve a similar purpose."

Now we may say that we have found two reasons for coloration in the wild horse: Protection against wild animals, and for purposes of recognition. If we have two good reasons for coloration, why not a third, and if there is a third, why should this not be for protection from the sun's rays? I think this can be shown.

We know without argument that all animals which have not been domesticated have their own particular colors and markings, and for the reasons already given. But there is an

additional reason, that of protection against the sun's rays. That is why the Tamarau of Mindoro, and the Babiroussa (Malayan wild hog) is black; and the Muntjac (Malayan wild deer) and the monkey of the Philippines is brown. I take these four animals, for they are the best representatives of the wild beasts of the Philippines, which, in his article, I presume Colonel Woodruff means by the term "tropics."

Of these four animals the first two named live, more or less, in the open sunlight, so have scant hair; and the last two live mostly in the jungle and have thicker coats, on account of the cooler and damper temperature. But the former are black, and the latter brown. All this, from the fact that there are no predaceous beasts in the Philippines, save the python, which is rare; and the crocodile whose haunts are limited; and there is only one species of each of the aforementioned animals, thus making recognition marks unnecessary. This shows plainly that nature colors the animals in the tropics (Philippines) solely for protection from the sun's rays.

The black tamarau, and the carabao also and hog bears out what Colonel Woodruff says of the elephant, hippo and rhino; and the brown deer and monkey what he says of the bush-buck.

We have now come to that part of our argument where we must take the color of the horse for the tropics fit in either, with the color of the tamarau, carabao and hog (black); or with the color of the muntjac and monkey (brown); and having decided on this, we must conclude what is the proper color for horses in the tropics.

I think it can be safely stated that the horse in the tropics, will receive sufficient care from his friend man to keep him enough in the shade to approximate the conditions under which the deer and monkey live with respect to lights and shades; rather than the conditions under which the tamarau, carabao, and hog live, respecting the sun and shade. This at once should give us brown as the proper color, but as the life of the horse in the tropics approximates the conditions under which the deer and monkey live in one respect only, the necessity for more or less shade, we must go back to the horse tribe to decide finally on the color.

Before deciding which is the best color for the horse in the tropics let us call attention to the fact that the Negro is black, and the Malay is brown for the analagous reason that the deer is brown and the tamarau black—the African living more in dark, damp forests like the deer, and the Malay more in the open like the tamarau.

It would seem that dun, yellowish brown dun, and "reddish cream" (sorrel) are the natural colors of several branches of the wild equine tribes; and that only domestication and consequent environment has produced variegated colors among horses. Arguing from this; the fact that the horse is a native of high, dry and presumably hot countries; that dark horses bleach in the sun to a brown color; that the deer and monkey of the Philippines represent approximately the right color for haired animals in the Philippines; that the little hair which is sometimes seen on the carabao is brown or sorrel; and finally the fact that the Filipino with his black hair and brown skin coincides, perhaps not accidentally, with the colors of the four animals of the Islands by which I have endeavored to work out the theory, I would say a brownish or some shade of dun would be the best color for horses in the tropics, and sorrel next. I say sorrel next simply because it is said to be the most natural color of the horse as developed in Arabia which is a hot country.

THE HYGIENE AND TREATMENT OF THE HORSES OF THE MANEUVER DIVISION, SAN ANTONIO, TEXAS.

BY OLAF SCHWARZKOPF, VETERINARIAN THIRD CAVALRY.

THE mobilization of approximately 12,000 men and 6,000 horses at San Antonio, Texas, in 1911, constituting a complete Infantry Division and an independent cavalry brigade, has invited a comparison between the conditions observed at this encampment and those of the camps established at the outbreak of the Spanish-American War in 1898.

The officers of the Medical Department, always alert and good advertisers of their work and the results of their work, were the first to draw such a comparison. They pointed back to the typhoid infected camps of 1898, and then showed, that this disease and others can be excluded from a military camp by a comprehensive enforcement of modern sanitary methods and by the application of preventative inoculation. The result was an "excellent" health record among our soldiers, even under the unfavorable climatic conditions prevailing during the early part of this camp. It must be admitted that this achievement is most noteworthy as an object lesson for future camps of a similar character. Other branches of the service have since made further comparisons or instituted field experiments in their respective spheres of work all interesting and valuable as recording improvement in many ways.

Nothing has been stated as yet, about the progress made in the hygienic care of horses, well or sick, of the Maneuver Division, nor has any comparison been made between the recent encampment at San Antonio and that at Chicamauga Park in 1898, where likewise a large number of animals had been concentrated. Judging from the information at my disposal, the record of the Chicamauga Camp was a bad one in this re-

spect. Not that any mistakes or neglects have been recorded about the individual care of horses as to feeding, watering, grooming, saddling, or the care of the picket lines. On the contrary, this is said to have been very good, mainly from the fact, that the previous experience of the "old army" in the Indian campaigns had forced upon our officers and men the conviction that the horse is the most precious weapon of the cavalryman; that it needed constant attention and that its care entailed much labor, but that such are well spent for mutual protection in a future campaign. In spite of this very good care of horses at Chicamauga, glanders, the most dreaded disease of horses, was allowed to enter and develop among the picket lines of that camp. At first doubts were entertained by some officers, whether the disease was real glanders or not, and when this question was finally settled in the affirmative by post mortem evidence, a ruthless carnage by the bullet began claiming several hundreds of horses as victims. Nevertheless, the disease was never fully eradicated at that camp, and was afterwards carried to civil communities of several southern and eastern states by the release of horses of the militia or by the sale of superfluous army horses. There was no proper veterinary attendance at that camp, certainly no attempt was made to establish a systematic veterinary service, a fact which sufficiently accounts for the failure of this part of the hygienic care of horses at that encampment.

In good contrast to this adverse record stands the good health maintained among the horses of the Maneuver Division. It could have been made "excellent" as was the health of our men had there existed in our army a Veterinary Corps, that could have stepped into the camp ready to assume work, as ready as were the Medical Department and the Supply Departments. As this was not the case, a veterinary service had to be improvised, causing loss of time and opportunity to prevent the introduction of the so-called shipping fever (infectious pleuro pneumonia) by remounts which had not been inoculated against the disease, resulting in the death of seventeen horses before proper precaution could be adopted to stop it. However, this was the only serious disease that threatened the horses of the camp, and this for a short time only.

At the assembling of the Maneuver Division, about March 12, 1911, Major General Wm. H. Carter promptly directed the establishment of a Division Field Veterinary Hospital, with a capacity for one hundred horses, and several quarantine corrals. The plans for such a hospital were quickly drawn, but it took four days to get the lumber and hammer together a frame for a shed, and it took nine more days to secure the necessary paulins to cover the frame. It was a stationary wooden shed, of use only as a base hospital, because it could not have been moved had the Division been ordered to the border. When the building was up and ready for the reception of sick horses, it was found that veterinary medicines and instruments for such a hospital and for the large number of animals in camp had not been considered beforehand, and an emergency supply had to be borrowed from the Post at Fort Sam Houston in order to commence treatment for which there was immediate need. Medicines and supplies for 500 horses for three months finally arrived on April 2d, but these had been selected at random and without the least knowledge of the needs of veterinary treatment in the field service. Yet, crude as the Division Veterinary Hospital was in design, equipment and in facilities for certain necessary work, mediocre as were further the services of some of the six civilian veterinarians, who had been employed specially for duty at this hospital, this infant institution acted at once as a buffer against the dissemination of shipping fever and strangles among the picket lines of the various commands, and this at a time when the climatic conditions were most favorable for a spread of this kind of diseases. This one result obtained was soon recognized by those officers who took an interest in the general working and improvements instituted at this camp, and the Division Veterinary Hospital was thereafter looked upon as a necessary, useful and economic feature of the camp, that could save to the government thousands of dollars worth of horses and greatly assist in preserving the health and serviceability of all animals in the camp. During the eight working months of this hospital, 562 horses and mules were treated therein, and it cannot but be instructive to give the following summary of the kind of diseases and injuries encount-

ered at this camp, as extracted from the record book of the hospital:

DISEASES TREATED.

Shipping fever.....	135 cases.
Strangles.....	32 cases.
Colics.....	20 cases.
Pneumonia.....	6 cases.
Tetanus.....	4 cases.
Purpura Haem.....	4 cases.
	<hr/>
	201 cases.

INJURIES TREATED.

Hoof lameness.....	98 cases.
Nail pricks.....	79 cases.
Sprains.....	65 cases.
Rope burns.....	45 cases.
Sore backs and shoulders.....	23 cases.
Lameness from spavin, ringbone, sidebone.....	21 cases.
Kicks and bites.....	16 cases.
Abnormal teeth.....	4 cases.
	<hr/>
	361 cases.
	<hr/>
Total.....	562 cases.

The mortality at the hospital was as follows:

17 horses died of shipping fever.

2 mules died of pneumonia.

5 horses died of colic.

6 mules died of colic.

8 horses and mules were destroyed by action of Inspector

General. (A. R.)

Total 29 animals; percentage of mortality 5 1/6%.

Two or three other animals died unrecorded at the picket lines in the early stages of the camp, but it is safe to estimate, that the grand total of loss by death among the 6,000 animals did not exceed one half of one per cent. There were no records kept of the hundreds of cases of diseases and injuries treated at the picket lines by the veterinarians of the mounted regiments. This is an opportunity to state that no Veterinary records

are kept and collected in our army, so that we have remained innocent of the knowledge of the class of diseases and injuries that cause losses among our horses from death or which render them temporarily or permanently unserviceable. Most of our Veterinarians in the regular service keep such records at their posts, but they remain uncollected and unsummarized, because there are no veterinarians designated to compile them into a report, which would be so instructive for the army at large.

The next progress made at the Maneuver Division was the precaution taken to prevent the infection of horses with glanders. *No case of this disease appeared at this camp*, notwithstanding the fact that glanders is stationary in and around the city of San Antonio. Again this was due to the action of the General Commanding, who directed that all horses entering the camp, mainly horses hired temporarily from the city by the officers of the National Guards, should be carefully examined at the Division Veterinary Hospital; that suspects be rejected, and that the passed horses should be kept under vigilant observation while at the picket lines. This examination was also performed by the civilian veterinarians at the hospital, and in addition the General instructed an available veterinarian of the regular service to supervise this measure and to see to it that the sanitary methods introduced at this camp to prevent and check communicable diseases among the horses and mules were promptly and intelligently carried out, and to report to him any infringement of the same. It is only just to state that such a report became never necessary, because the officers responsible for horses and mules, often unacquainted with a proper care of animals in the field, accepted cheerfully any and all advice given to them, anxiously asked for further information along this line, and promptly carried out any recommendation made.

Little need to be said about the routine care of the horses of the mounted regiments. On arrival, they quietly took possession of the place allotted to them in the camp, pitched tents and stretched picket lines, and then went about their business in the manner learned in our regular marches and maneuvers. Their horses were in good condition, free from diseases and they appeared perfectly content with the life at the picket lines.

There was the usual hustle of men about the horses, picket lines and saddle racks, all so pleasing to the eye of the old soldier. To observe the thousands of serviceable horses of the two cavalry regiments and the two Field Artillery Regiments camping together in a limited space, was certainly an impressive sight.

All would have remained well for our horses, had not one phase of the Kriegsspiel been overlooked in Washington: The heavens that make storms, that drop the mercury in the thermometer, and force the finger of the barometer towards the nautical term "threatening." The regiments from the north and east had been told that Texas possesses a balmy, subtropical climate, so most of the men arrived in summer clothing and the canvas horse covers had been left at home by several regiments. But the months of March and April were exceptional as to meteorological disturbances in Texas, not remembered by the proverbial oldest inhabitant and the discomfort occasioned to men and horses by the chilly air, incessant cold rain, and by the thoroughly soaked soil which formed seas of mud here and there, was about as trying as many old campaigners had experienced.

Of course our horses suffered on the picket lines. The men had shelter, the horses had none. The absence of the blanket-lined horse covers as regularly issued, was a great mistake, because these would have acted at least as warm clothing and rain cover combined. As a result, shivering horses and mules could be seen everywhere, many horses were coughing and the farriers and wagon masters reported cases of thrush, greased heels, and most of the other ailments that come from inclement weather and from the muddy ground on the picket lines.

Then the counting of the veterinarians began. For the needs of the 12,000 men, there were fourteen chaplains and swarms of surgeons, perhaps all needed in a future war. But there were only three Veterinarians with the four mounted regiments when there should have been eight as allowed by law, and when European armies would have provided from twenty-five to thirty veterinary officers as a proportionate number to attend to 6,000 animals. This insufficiency in the number of veterinarians caused by vacancies and detail, was

very evident. Yet, some officers, interested in the reorganization of the cavalry regiments, proposed almost at the same time to reduce the two veterinarians in the regiment to one. It seems impossible, that experienced military men should have overlooked the lesson learned at Chickamagua Park in 1898, nor could they have forgotten the need of veterinarians in the Philippine campaign, when glanders, surra and epizootic lymphangitis decimated the cavalry. Who originated such a recommendation is not known, but perhaps a wish to overcome expense in the direction of the least individual resistance may explain much. The result would be disaster from an inexcusable loss of horses in the next war.

Neither was there an abatement in the need of veterinary attendance, when the inclement spring weather had spent its force and the hot and dry summer had set in to stay. Eye diseases, caused by the exposure of horses to the glare of the sun and dust, and several forms of skin diseases indigenous to Texas, attacked the unacclimated animals. While there was no great harm done by them, the large sick list annoyed the officers, kept the veterinarians busy, and called for extra work and the ingenuity of enlisted men to improvise shelter for the horses, made of mesquite brush, to break the intensity of the rays of the sun.

It was about this time that the Humane Society of San Antonio appeared on the scene. They waited on the Commanding General, submitted their complaint of "cruelty to animals" from absence of shelter, and made suggestions. Instead of objecting to the interference of these "good and well meaning people," as had previously been done by officers under similar circumstances, their claim was wisely concurred in, and money was promptly secured for the building of wooden sheds for all animals in camp. Again this seems to be a new record of the Maneuver Division in the care of animals at a stationary camp, and one which every officer should approve, not only as humane but in the interest of economy.

Much good resulted for our horses from the comprehensive sanitary methods employed in this camp by the Medical Department. The war declared against the fly nuisance by burning the refuse matter around the kitchens, latrines and on the picket lines, was entirely successful. The method of burn-

ing the incollectable parts of hay and manure right on the ground of the picket lines after previously saturating them with crude oil, killed not only the larvae of the flies and kept the ground free from smell, but actually resulted in many instances in converting the mud into solid soil.

As far as the general care of sick animals is concerned, quite an improvement against former times was noticeable. The new method of treating suppurative injuries with bacterin was tried in camp and found to be a great advance. Three hundred doses of bacterin were supplied by the veterinary laboratory of the Mounted Service School at Fort Riley. In the recollection of the writer, covering a period of twenty-seven years, this was the first instance in which a systematic veterinary service has been inaugurated in a larger part of our army assembled in camp. It was entirely due to the unceasing supervision of the Commanding General over all matters pertaining to the care, comfort and safeguarding of horses. As the author of our military text-book on hippology he has shown, that he cannot only teach theoretical lessons, but can well apply them in practice. He was easily approachable to the veterinarians, quickly approved proper recommendations and encouraged initiative. Those of us who were so fortunate to serve at this camp, cannot help but carry with them new inspirations for their work, and gain renewed hope, that the good results obtained by the veterinary measures introduced at this camp, must finally convince the War Department, that a properly officered, equipped and up to date Veterinary Corps for our army will not only be an economical measure but one of justice to the veterinarians of our service as well.

VETERINARY SERVICE RECOMMENDED FOR A DIVISION COMPLETE.

The Field Service Regulations, United States Army, 1910, do not provide for an organized veterinary service for our mobile army or parts of it. Neither exists such in peace organization, as the forty-two veterinarians of Cavalry and Field Artillery provided by law, have no professional supervision, advice or direction. The Quartermaster General is authorized by law to engage as many civilian contract veterinarians as may be

needed for his department or other departments and corps. The Field Service Regulations provide for six contract veterinarians for a complete Division.

While the veterinary service at the Maneuver Division performed a large amount of work, it was still inadequate by reason of the insufficient number of veterinarians with the cavalry and artillery regiments, and from the inferior quality of the contract veterinarians engaged.

The following veterinary organization for a complete division, is recommended for mobilization. Under the present law it can only be arranged by detail of veterinarians of cavalry and Field Artillery for the most responsible positions.

1. Division Headquarters. One acting chief veterinarian to be selected from the Cavalry and Field Artillery; should have over fifteen years of service, to have general supervision of the veterinary service of the mounted organizations, the Field Veterinary Hospital and the measures taken to prevent communicable diseases among the animals in camp; to keep himself thoroughly informed of the health, serviceability and marching power of riding horses and draft animals; to keep a general record of diseases and death of animals in camp. (Information along this line was frequently asked of veterinarians in camp.)

2. Service with the mounted regiments. One additional veterinarian to be detailed for service with the third squadron of each regiment of cavalry. (It is not probable that two veterinarians can properly attend to over 1,200 horses in field service even in the most superficial manner. Several complaints about the shortage of veterinarians were made in camp.)

3. Field Veterinary Hospital. Building to be a *movable* structure with capacity for 100 horses. Recommended that the frame consists of piping, united by joints, to be covered by paulins provided with hooks. If made to be ready for issue, such a structure can be mounted within a few hours; it can be divided into sections for fifty horses or twenty-five horses, as needed for advance, and can be carried by ordinary transportation.

Personnel:—One veterinarian in charge to be detailed from the Cavalry or Field Artillery regiments; should have over ten years of service; to supervise treatment and sanitation at the Field Veterinary Hospital, and be responsible for the administration, the supply and issue of medicines and proper records of the hospital. Six civilian contract veterinarians, assistants, as provided for in the Field Service Regulations, 1910.

4. Field Shoeing Shop. For horses of the Division Headquarters, Infantry regiments, Battalion of Engineers, Signal Corps companies, and Quartermaster transportation animals.

Personnel:—One veterinarian in charge, to be detailed from the Cavalry or Field Artillery regiments; to be responsible for the administration, proper supply of shoes and tools, good workmanship, humane treatment of animals at the shop, and record of animals shod. Twelve horseshoers; six as iron workers and six as shoers.

Building:—A movable structure with a capacity for six forges and six to eight horses. Recommended to be of the same structure as the Field Veterinary Hospital. This field shoeing shop does not include the blacksmith of the Quartermaster's Department for repair of wagons, etc.

SHELBY'S EXPEDITION TO MEXICO.

AN UNWRITTEN LEAF OF THE CIVIL WAR.

A REVIEW OF AN OUT OF PRINT BOOK.*

THOSE who desire to know what can be done by one man in time of stress will be rewarded by reading John N. Edwards's books about Shelby. His first book is called "Shelby and His Men," and is a very interesting history of that famous Trans-Mississippi organization. His other book bears the above title and a brief of this volume is given here. Both of these books are of great interest to cavalymen.

*During the Maneuver Division's stay in Texas last summer, on several occasions a tall distinguished looking old gentleman was seen bringing deserters into camp. On one of these occasions he brought a man to the Eleventh Cavalry and while waiting for the routine papers to be made out he entered into conversation with the Regimental Commander, Colonel James Parker. From his appearance Colonel Parker's first words were correct: "You are not new to this business of soldiering?" "No," he replied, "I was at it for some time some years ago. I was with Shelby and went with him to Mexico. He stayed for dinner on the Colonel's invitation and his talk of Shelby's trip through Mexico proved so entertaining that he said he would send down a history of that march for the perusal of the officers of the Eleventh Cavalry.

The author, John N. Edwards, was for years an editorial writer on the *Kansas City Times*. He died some time in the early nineties. While the style is very flowery yet there are so many lessons of war contained in the volume and the power of one man's personality is so vividly portrayed, that men of action should spend a few hours reading over this unwritten leaf. There is much information that will be found nowhere else. "Shelby and His Men" will be found in most well stocked libraries but the Expedition to Mexico has become a rare book. I was able to find only one copy at Lowdermills and I believe there is not another copy for sale in the City of Washington. The book is now out of print.

The old gentleman who was responsible for the interest taken in Shelby's trip was one of the men who went with that restless man to Mexico. His name is John Kritzer, and is far from absent in the pages of Edwards's anecdote. Kritzer is today still an active man and holds the position of City Marshal of Taylor, Texas.

Shelby's division of Missourians was the flower of the Trans-Mississippi Department. He had formed and fashioned that division upon an ideal of his own. He had a maxim, borrowed from Napoleon without knowing it, which was, "Young men for war." Hence all that long list of boy heroes who died from Pocahontas, Arkansas to Newtonia, Missouri. As Pocahontas was nearly the first battle fought west of the Mississippi, so Newtonia was the last. Newtonia was a prairie fight, stern, unforgiving, bloody beyond all comparison for the stakes at issue, fought far into the night, and won by him who had won so many battles before that he had forgotten to count them. General Blunt, for years afterwards a happy citizen of Kansas, often gave testimony that Shelby's fighting at Newtonia, surpassed any he had ever seen. But the war was drawing to a close and the retreat after Newtonia was a necessity.

After the ill-starred expedition into Missouri in '64 the Trans-Mississippi farce went to sleep. It numbered about fifty thousand soldiers, rank and file, and had French muskets, French cannon, French ammunition, French medicines and French gold. General E. Kirby Smith was the Commander-in-Chief of this Department and had under him as lieutenants Generals John B. Magruder and Simon P. Buckner. At the time of Lee's surrender the Trans-Mississippi army was scattered throughout Texas, Arkansas and Louisiana. At the news of the surrender it began to concentrate by intuition. A conference was ordered for the leaders at Marshall, Texas. Smith came up from Shreveport, Shelby came from Fulton, Arkansas. Hither came also Hawthorne, Buckner, Preston, Walker and Reynolds. Magruder remained at Galveston watching a Federal fleet beating in from the gulf.

The soldiers had held a meeting pleading against surrender. Jefferson Davis was a fugitive, bound westward. Texas was filled to overflowing with all kinds of supplies and ammunition. The soldiers still believed the struggle could be maintained. So the Marshall conference was to provide against the necessity of surrender. Strange things happened at this conference. Old heads came to young ones; the infantry yielded its preference to the cavalry; the Major-General asked advice of the

Brigadier. There was no rank beyond that of daring and genius. Shelby was the first speaker and in few words said substantially the following:

"We should concentrate everything upon the Brazos River. Fugitives from Lee and Johnson will join us by thousands; Mr. Davis is on his way here. Our intercourse with the French is perfect. Fifty thousand men have ere now overthrown a dynasty and founded a kingdom. Every step to the Rio Grande must be fought over and when the last blow has been struck that can be struck, we will march into Mexico and re-instate Juarez or espouse Maximilian. General Preston should go at once to Marshal Bazaine (in Mexico) and learn from him whether it is peace or war. Surrender is a word neither myself nor my Division understands."

Smith with his own consent was replaced by Buckner. The conference broke up. Preston started for Mexico and Bazaine, Shelby to his troops on the prairies about Kaufman. But before reaching them news came to him that Smith had resumed command and surrender was the order. Shelby resolved at once to seize Shreveport and the government, and carry out the plan of the conference. But in his march from Kaufman to Corsicana he was delayed by one of the worst storms that ever inundated even Texas. And when he reached the latter place many surrenders had taken place at Shreveport and the war was over. Shelby's undaunted spirit still wanted to make the attempt but the danger that might arise to those already surrendered prevented any such action.

So one bright morning when the sun once more appeared, when the waters had subsided and the green and undulating grasses wafted soft odors, Shelby's Missouri Cavalry Division came forth from its bivouac for the last time. A call ran down its ranks for volunteers for Mexico. One thousand bronzed soldiers rode to the front and ranged themselves two and two behind their leader. Good-byes and partings followed and the long march to Mexico City was begun.

At this time Texas was a vast arsenal. Magnificent batteries of French artillery stood abandoned on the prairies. Those who had surrendered them took the horses but left the guns. Imported muskets were in all the towns and of fixed

ammunition there was no limit. Ten beautiful Napoleon guns were brought into camp and confiscated. Each gun had six magnificent horses and six hundred rounds of shell and canister. An election was held and Shelby was made Colonel. Men who had been majors came down to corporals and many who had been lieutenants went up to majors. As for ammunition, for each carbine, and every soldier had one, there were forty rounds and three hundred more in the wagons. Each man had four Colt's pistols with ten thousand rounds apiece and a heavy regulation saber. In the wagons there were powder, lead and bullet moulds and six thousand new Enfields, just landed from England with the Queen's arms still on them. Wagons were plentiful and so in addition to all the above flour and bacon were carried. The quantities were limited entirely by the anticipated demand, and for the first time in its history, the Confederacy was lavish of its commissary stores.

But the march through Texas was somewhat delayed by the wonderful work of Shelby preserving peace in the State. Refugees and renegades began to lift up their heads everywhere as soon as the war was over. Stores and lives and property at Houston, Tyler, Waxahatchie were saved by the prompt action of Shelby's detachments. And so great was his work in this direction that his march through the State became an ovation. Women and children rose up to call him blessed. It seems strange that so youthful a commander could have instilled into his force such rigid ideas of discipline. Certainly old Cromwell's Ironsides with their God fearing ideas and their psalm singing evenings could have been no greater blessing to the people of the State of Texas than were Shelby and his men at this particular time.

In time Austin was reached. Governor Murray still remained at the capital of his State. He had been dying for a year with consumption. He knew death was near to him, yet he put on his old gray uniform and mounted his old tried war horse and rode away dying into Mexico. Later in Monterey the red in his cheeks had burned itself out. The Crimson had turned to ashen gray. He was dead with his uniform around him.

Scattered all over the State were fugitives struggling to reach Shelby. Of these the following names will give an idea of the general character of such fugitives. They were of the idea that the whole power of the United States Government was bent upon their capture. Talking not long ago with General Powell Clayton, he said: "At that time many had an idea that the Government would deal harshly with the leaders of the rebellion. Of course no one at the North had such ideas." This may explain somewhat the number and character of the men that had fled to Texas at that time. Kirby Smith was there and so were the following: Magruder, Reynolds, (Governor of Missouri), Parsons, Standish, Conroy, General Lyon of Kentucky, Flournoy, Terrell, Clark, Snead of Texas, John B. Clark, Prevost, Governor Allen, Commodore Maury, General Bee, Watkins, Broadwell, Wilks, and a host of others, equally determined on fight and flight and equally out at the elbows. Of money they had scarcely fifty dollars to the man.

San Antonio, in the full drift of the tide which flowed in from Mexico was first an island and afterwards an oasis. To the soldiers of Shelby's expedition it was a paradise. Mingo, the unparalleled host of Mingo's Hotel (now called the Menger) was the guardian angel. Here everything that European markets could afford was found in abundance. But the streets soon became dangerous with desperadoes. But on Shelby's arrival discipline arrayed itself. His patrols paraded the streets and sentinels stood at the corners. All during his stay in that city it was protected and peace reigned.

Soon the march was taken up for Eagle Pass. Some days after leaving San Antonio Shelby was informed by his rear guard that a federal force of 3,000 men with a six gun battery was marching to overtake the column. Shelby halted and sent back the following note to the federal Commander, Colonel Johnson: "Colonel:—My scouts inform me that you have about three thousand men and that you are looking for me. I have only one thousand men and yet I should like to make your acquaintance. I will probably march from my present camp about ten miles further today, halting on the high road between San Antonio and Eagle Pass. Should you desire to pay me a visit you will find me at home until day after tomorrow.—SHELBY."

Johnson received the messenger and dismissed him with promises to be present. But he never came. After all he, may have been right. The war was over and the lives of several hundred men were in his keeping. Shelby waited for him as he said he would but on finding Johnson indisposed to risk the gage he reluctantly moved on. On nearing Eagle Pass he charged a band of renegades and cut throats that had robbed some stores. He killed most of them, and turned over the stores to the families of confederate soldiers. When three days out from Eagle Pass, Smith expressed a desire to proceed to that place and not wait for the march of the column. Shelby gave him an escort and with Smith went Magruder, Prevost, Wilcox, Bee and a score of others who had business with certain French and Mexican officers at Piedras Negras and other places.

Piedras Negras was held by 2,000 Mexican soldiers, followers of Juarez. The commander was Governor Biesca, of the State of Coahuila, half soldier and half civilian, and a man of elegant and polished manners. Shelby held a long interview with him. To understand thoroughly what followed some little unwritten history of the war must be given. Some time before Abraham Lincoln was assassinated he had caused a notice to be delivered to certain of the Confederate Commanders. This notice came to Shelby through General Frank P. Blair. It was to this effect:

"The struggle will soon be over. Overwhelmed by the immense resources of the United States, the Southern Government is on the eve of utter collapse. There will be a million of men disbanded who have been inured to the license and the passions of war, and who may be troublesome if nothing more. An open road will be left through Texas for all who may wish to enter Mexico. The Confederates can take with them a portion or all of the arms and war munitions now held by them, and when the days of their enlistment are over such Federal soldiers as may desire shall also be permitted to join the Confederates across the Rio Grande, uniting afterwards in an effort to drive out the French and re-establish Juarez and the Republic."

Such guarantees had Shelby received and while on the march from Corsicana to Eagle Pass a multitude of messages overtook him from Federal regiments and brigades begging him to await their arrival, a period made dependent upon their disbandment. Governor Biesca exhibited to Shelby his authority as Governor of Coahuila and as Commander-in-Chief of Coahuila, Tamaulipas and Neuva Leon, and offered Shelby the military control of these three states, retaining himself only the civil. He required of him but one thing, free and energetic support of Juarez. He suggested also that Shelby should remain for several months at Piedras Negras recruiting his regiment up to a division and when he felt himself sufficiently strong he should move against Monterey, held by General Jeanningros of the Third French Zouaves and some 2,000 soldiers of the Foreign Legion.

This picture as painted by the Mexican was a most attractive one and one far from being a dream. Had the men decided to accept the Mexican's offer no one can tell but that Mexican history might have been greatly changed. But Shelby put the proposition to his men. After long and earnest council the men decided in favor of their friends, the French. After the conference closed, Shelby said: "Poor fellows, it is principle with them." Biesca, when informed of the decision was greatly amazed and disappointed but at once made an offer to purchase the arms. This was finally arranged and levys were made by the Mexican Governor which raised \$16,000. One reason for this sale, if not the only reason, was that the country between Piedras Negras and Monterey was almost a wilderness, a kind of debatable ground; the robbers had raided it, the liberals had plundered it and the French had desolated it. As Shelby was to pass over it he could not carry with him his teams, his wagons, his artillery and his supply trains. Besides he had no money to buy food and as it had been decided to abandon Juarez it was no longer necessary to retain the war material.

On the march south to Monterey an ambush was laid by the Lipan Indians at the Salinas (Sabinas). Of the 700 who attempted the ambush 200 lay dead and unburied in the chaparral when Shelby was finished with the matter. But unfor-

tunately twenty-seven of Shelby's men were killed and thirty-seven were wounded. These latter needed attention. They could not be abandoned, so the march on was necessarily slow. The column was constantly subjected to ambush and quite a number of Mexican guerrillas came to the last of their days in a skirmish two days out from Lampasas from a pistol charge by some of Shelby's men.

From Lampasas the march kept up till within one or two miles of Monterey. Here was General Jeanningros with a number of soldiers of the Foreign Legion. Some say he had 2,000, others say 5,000. The fact of the sale of the guns and ammunition to the Mexicans filled Jeanningros with the intention of hanging the Americans when they came into his power. When Shelby reached his place so near the city he sent the following letter to Jeanningros:

"General Jeanningros, Commander of Monterey: General:

"I have the honor to report that I am within one mile of your fortifications with my command. Preferring exile to surrender I have left my own country to seek service in that held by His Imperial Majesty, Emperor Maximilian. Shall it be peace or war between us? If the former, and with your permission, I shall enter your lines at once, claiming at your hands that courtesy due from one soldier to another. If the latter, I propose to attack you immediately,

"Very Respectfully Yours,

"JO. O. SHELBY."

Jeanningros, used all his life to surprises, was attracted by the soldierly daring and supreme nerve of this letter. He replied to the bearer, "Tell your General to march in immediately. He is the only soldier that has yet come out of Yankee-dom." His reception was a frank and open as his speech. That night he gave a banquet to the officers and among those present were Magruder, Polk, Reynolds, Hindman, Clark, Kirby Smith, Shelby and many others.

During the stay in Monterey Shelby obtained permission from Jeanningros to proceed to the Pacific. It was his idea to get a port on that coast as a base of operations and draw recruits from California and so get an army that would be capable

of keeping Maximilian on the throne of Mexico after France withdrew her forces. So the force started for the Pacific by way of Saltillo. It moved on to Parras where Shelby intended to rest a few days. But he got into a row with the French Colonel there, who was drunk when Shelby came in. Shelby called him a coward to his face and a duel was arranged. The Frenchman, chivalrous though drunk, chose pistols as Shelby's right hand and arm were not in a condition for a sword contest, due to wounds not yet fully healed. But the duel never took place. That evening Jeanningros came in to Parras on a tour of inspection and the matter ended by the Colonel apologizing to Shelby. Later, during the Mexican trouble, Shelby rode 162 miles in twenty-six hours to save this Colonel's life. I am not giving this distance and time as authoritative, but the figures are exactly as the author gives them.

The Colonel at Parras had an order from Bazaine that the Americans should not be allowed to proceed to the Pacific but should be sent at once to Mexico City; if they refused to return to their own country. There was nothing left but to obey. The command then turned southward and passed through Encarnacion to Matehuala. At the latter place 500 French under Major Pierron were being besieged by about 2,000 Mexicans. Shelby made his dispositions and charged the Mexicans, routing them and winning the undying gratitude of the French. From Matehuala he moved on south through San Miguel and on to San Luis Potosi.

General Felix Douay held San Potosi, the great granary of Mexico. It was a brother of this Douay who, surrendered and abandoned at Weissembourg, marched alone and on foot toward the enemy until a Prussian bullet found his heart. Older and calmer, and perhaps wiser than his brother, General Felix Douay was the strong right arm of Bazaine and of Maximilian. After assigning quarters to Shelby's men he had a direct talk with him. Douay immediately conceived the scheme of using Shelby's force to clear the country from San Luis Potosi to Tampico, a job from which few had ever returned alive, due to the swamps and malaria. But Douay believed Shelby could clear the section which at that time was kept in turmoil by a noted bandit, Figueroa. He kept Shelby

at San Luis Potosi till he could communicate with Bazaine in Mexico City. The messenger returned with orders to send the Americans immediately on to Mexico City.

Douay gave the men rations and wine and wished them God speed. He clearly saw that the auspicious moments during which an American force could be recruited that would keep Maximilian on the throne were fast slipping away. But being a soldier he obeyed and offered no suggestions to the Austrian Emperor. Shelby pushed on to Quaretero, on into the glorious land between that city and the Mexican Capitol, no longer beset by guerrillas for the French were everywhere. Finally the City of Mexico was reached.

An interview was arranged with Maximilian. Shelby spoke as follows: "My plan is to take immediate service in your empire, recruit a corps of 40,000 Americans, supercede as far as possible the native troops in your army, consolidate the government against the time of the French withdrawal, encourage immigration in every possible manner, develop the resources of the country and hold it until the people become reconciled to the change, with a strong and well organized army." There were present at this interview, Bazaine, Count de Noue (son-in-law of General Harney), Magruder and Commodore Maury. But Maximilian declined. He was not willing to trust the Americans in an organization so large and so complete. Moreover he had ideas that negotiations with Seward could still be effected and so by this refusal set out upon the road that led to his death and for his wife to the insane asylum.

The band now began to break up. A few moved toward the Pacific where what was left of them took passage for San Francisco, China, Japan, and the Sandwich Islands. A few started off for the fabled island in the Pacific that contained Captain Kidd's treasure. Those that ever returned from this trip later took service in the Imperial Army in Sonora. Some fifty took service in the Third Zouaves, selecting that regiment because the men in that organization did not remove their hats to salute. Most of the rest moved to the American colony of Carlotta, near Cordova and took up various lines of activity. Some started saw-mills, some raising cotton. Hindman mas-

tered Spanish in three months and started practicing law. General Stevens, Chief Engineer of Lee's Staff, was made chief engineer of the Mexican Imperial Railway. Reynolds was made superintendent of railroads. Shelby became a freight contractor and established a line of wagons from Paso de Maco to the Capitol. And so they passed out of military history. Shelby afterwards returned to the United States and became an U. S. marshal in western Missouri living to a good age.

The rest of this volume is devoted to a history of Maximilian and his Queen, Carlotta. There is no better history of this sad story, and one closes the book with tears over the sad fate of the mad Empress, who still lives in the insane hospital and dreams of the time when the young Austrian came a'wooing and of the salons and waters of Miramar.

All cavalymen should read this book if ever opportunity offers. The character of Shelby is one from which a man of action can draw inspiration. For after all, action is the main thing, others are incidentals.

WHITE.



AIRSHIPS AND CAVALRY IN THE RECONNAISSANCE SERVICE.*

BY CAPTAIN NIEMANN, AUSTRIAN CAVALRY.

BY furnishing timely information to both army headquarters during the recent Imperial maneuvers, airships have proved their suitability in the reconnaissance service; however, the weather conditions were so ideal that we can not say with absolute certainty that their exclusive use in the reconnaissance service will hereafter be resorted to.

We read reports almost daily of the remarkable progress made in aeronautics. The new Zeppelin "*Schwaben*" made one hundred trips within the last three and one-half months and covered a total of 12,460 kilometers. Of course, the balloon is still dependent on its hanger, but the airship may be taken along any place by higher headquarters. Undoubtedly great progress will be made in the near future in both balloons and airships and increase the feasibility of their use.

All this leads to the question: Can we dispense with independent cavalry in the reconnaissance service and utilize the divisional cavalry for messenger service only?

Theoretically considered we concede that airships can transmit information concerning the enemy far quicker and more complete than can the best organized and equipped reconnoitering cavalry, for airships can travel from 80 to 100 kilometers per hour, can observe a large section of terrain,

*Translated from *Kavalleristische Monatshefte*, January, 1912, by M. S. E. Harry Bell, U. S. Army.

have an unobstructed view into depressions and valleys, over village streets and roads and even into forests, if not too dense. Nevertheless even the most enthusiastic supporter of air craft for reconnoitering purposes must concede that it will require a combination of favorable circumstances and weather conditions to make the airship balloon an *absolutely certain* means of reconnaissance. Thick weather, fog, rain and snow, thunderstorms, heavy equinoctial gales will always remain serious obstacles, if not impossible ones, to overcome by a reconnoitering air-craft. Movements of armies and changes of positions of troops made during twilight and night can never be observed and reported by air-craft.

The greater the success attained in giving stability to air-crafts, the more numerous the supply of these with an army, the greater will be the endeavor to battle against them. This battle will be carried on not only from *terra firma* but also in the air itself, the latter method possibly becoming predominant. Equipping airships with fire-arms and explosives to combat each other is merely a question of time. Trials are now being made of the feasibility of having an airship ascend above a balloon and destroy the latter by means of dropping explosive projectiles. However, our new "*Zeppelin No. 9*" has shown that without throwing out any ballast it can ascend 1,350 meters within ten minutes, while during the same time the airship can ascend but 500 meters. It cannot be said in advance whether in an engagement of this kind the airship or the balloon would be victor; but so much is certain: the battle in the air is no illusion; it is a factor which we will have to take into consideration, a factor which decreases the *certainty* of reconnaissance by aerial means.

On the other hand, cavalry reconnaissance, well planned and executed by thoroughly trained troops, will undoubtedly furnish the commander-in-chief with absolutely reliable information, assuring complete freedom to the commander in operative and tactical matters and giving him a clear conception of the entire situation. Cavalry reconnaissance provides zones of absolute security in front and on the flank and is a means at the disposition of the commander to prevent

undesirable surprises and take advantage of discerned weak spots in the hostile grouping of troops.

Air craft is an elongated eye of the commander of the army and troops of undoubted and inestimable value; but cavalry in close touch with the enemy is an elongation of his arm, which can not only feel but also strike while feeling.

Each and every type of air-craft may always have one great defect, *i. e.* uncertainty of motive power; cavalry can never have that defect. Imagine the case that air-craft has reported to the commander the movements of a far off opponent and suddenly ceases to send reports because something went wrong with the motive power; what is the commander to do if he has no cavalry out on reconnaissance?

Even if we can count on the probability that air ships will in future succeed in ascertaining the hostile grouping of troops earlier and more correctly than has heretofore been the case in cavalry reconnaissance, the difficulties of operative and tactical leadership are not altogether overcome thereby by any manner of means. Weak spots in our own grouping of troops will be known to the enemy earlier and will be quicker utilized. The enemy will have the advantage of sooner discerning movements directed against his weak spots and taking proper counter measures. Both sides of course can utilize darkness in making changes of position when contact with the enemy is imminent. When contact is not imminent, however, night marches executed by larger bodies of troops promise no material success as far as secrecy is concerned; the first ray of sunlight will reveal what has been done during the night.

All intended surprises, whether based on offensive or defensive decision, will require an increased celerity of execution, a celerity inherent only to cavalry. A prerequisite of cavalry success always is superiority in numbers over the hostile cavalry, for this will assure the necessary freedom of movement; another prerequisite is that the cavalry is in close touch with the enemy and knows, from personal observation, conditions obtaining with the enemy whom it will often have to combat far from support of its own army.

The impossibility, existing heretofore, of ascertaining the enemy's march into position by cavalry reconnaissance pure

and simple frequently compelled us to decentralize the independent cavalry bodies. Should we at the present day succeed in reconnoitering the hostile march into position by means of air-craft the independent cavalry can be consolidated into groups to take advantage of the results of the aerial reconnaissance. Field Service Regulations (paragraph 137) requires that "reconnaissance should not be carried out merely in the direction where the enemy is known to be, but under certain circumstances in other directions, in which he might possibly appear." This requirement would no longer continue in force if aerial scouts have once made *one* successful trip and we would be able to consolidate a strong cavalry force just there where battle tasks are to be solved. It may be objected that the fighting power of cavalry is too small when opposed to detachments of all arms. To this we would say that we can easily increase the fighting power of our cavalry by attaching numerous cyclists to it; and what should hinder us from reinforcing our cavalry divisions, in so far as they are permanently superior to the hostile cavalry divisions, by numerous artillery and machine gun organizations and thus transform them into competent battle units?

Reconnoitering cavalry, either independent or divisional, will profit greatly by the achievements of air ships. Where its task is to cross occupied sectors and to drive back hostile advance troops, the air ships will show the route to be taken and save the cavalry many a bloody or even useless dismounted action. Based on the results obtained by aerial reconnaissance the cavalry may frequently be able to utilize the night to create for itself conditions favoring an unexpected appearance the succeeding day. The cavalry will be relieved from any onerous reconnoitering duties by aerial vehicles, especially during the march into position, during attack and defense of stream sectors and defiles, attack on permanent fortifications and the reconnoitering of hidden artillery groups and reserves behind the center of the extended hostile battle front. But we must always hold to the maxim that where the decisive operation is to be had we cannot do without an effective cavalry body which keeps in close touch with the enemy and that at the moment of tactical contact a permanent cavalry recon-

naissance of the enemy is absolutely necessary. Aerial navigation can supplement cavalry reconnaissance in the most effective manner; points out the limits to which it can proceed in the reconnaissance profitably, and gives our large independent cavalry bodies an increased importance. The natural consequence of these facts seems that we ought to increase our cavalry and make our cavalry divisions stronger as far as their fighting power is concerned.

There are several new points which should be considered in giving orders for reconnaissance to the cavalry. That cavalry and air-craft must work hand in hand is obvious; this will be best accomplished by attaching flying machines to the different cavalry bodies. We must further be able to transmit the results of the aerial reconnaissance quickly to all organs of the far reconnaissance and must always have the means at hand to change the direction of reconnaissance and operation without loss of time or force. This will be practicable only if we take proper steps to permanently connect all parts of the reconnaissance net and avoid a too much extended formation either in breadth or depth.

The possibility of extensive changes in the position of troops during the night when tactical contact is imminent or has been had, compels us to give greater attention to the reconnaissance at night and to look for means to carry that out in a proper manner. Therefore night marches of larger cavalry bodies carried out without friction, should be made the subject of studies, both theoretical and practical, and through such study we must find out in how far we can transform a massed body of independent cavalry quickly into an efficient and independent battle unit.

TACTICS

BY

BALCK

Colonel, German Army.

VOLUME II.

CAVALRY, FIELD AND HEAVY ARTILLERY
IN
FIELD WARFARE.

AUTHORIZED TRANSLATION FROM THE GERMAN

BY

WALTER KRUEGER,

First Lieutenant, Infantry, U. S. Army,
Instructor Army Service Schools.

FOURTH ENLARGED AND COMPLETELY REVISED EDITION.

The following pages are from the advance sheets of a forthcoming work
of which the above is the title.

Continued from page 765 of the January number of the *Cavalry Journal*.

II. THE FORMATIONS.

In the cavalry—thorough training of trooper and horse, good mounts and good morale being presupposed—combat efficiency depends to a greater extent upon tactical formations than in the infantry. The rapid course of a mounted action makes it impossible to give detailed instructions for its execution. The leader must, in many cases, content himself with simply calling out his directions. In the infantry and, to a more limited extent, in the artillery, it is practicable to correct errors in the plan of action, at least during the preliminary stage. In a cavalry action, however, it is seldom possible to make a change in movements once begun. Everything depends upon making the tactical formations fit the particular situation, and upon accustoming the troops, in time of peace, to that which promises success in battle. Formations that can not be employed in face of the enemy are superfluous. In the cavalry, more than in any other arm, all doubts as to the general principles of combat and as to the formations to be employed in action must be precluded. This is the function of drill regulations. The authorized drill regulations are the basis upon which the independent judgment of subordinate leaders must be developed, for it will depend upon their prompt and correct judgment whether, during unexpected developments in a fight, the proper action is taken. On account of the rapidity with which events occur in a mounted action, an interference on the part of the superior commander during the fight, is almost wholly precluded. Even when launching his organization into action, it will not always be possible for a commander to see everything sufficiently well from one point to

enable him to assign definite tasks to his subordinate leaders. Frequently, the superior commander will be able to control even the reserves to a limited extent only.

1. THE ESCADRON.*

The escadron, whether regularly formed or not, must be able to execute quickly and with precision, under all conditions and on any terrain, all movements prescribed in the regulations. Even when deployed, it must remain well in hand. Particular importance should be attached to a uniform, steady trot and to an extended gallop (especially during frontal movements); to prompt picking up and maintenance of the march direction; to precise and skillful handling of the lance; to brisk mounting and dismounting; and to swift passage from column to line, even when the direction of march is changed. In the larger units, the maintenance of order depends upon the precision and steadiness with which each individual escadron marches. "This means that the tactical unit must be independent; that it must march uninfluenced by neighboring escadrons; and that its chief, who should have it well in hand, must lead it with steadiness and precision at all times.—The escadron must maintain proper interior cohesion under all conditions. An involuntary seesawing and a dribbling away of some of the files, a deployment, must not be allowed to take place under any circumstances." (General v. SCHMIDT). Dismounted drill is restricted to the minimum in Germany. This drill is indispensable, however, for the training of the individual trooper as well as for the employment of cavalry dismounted.

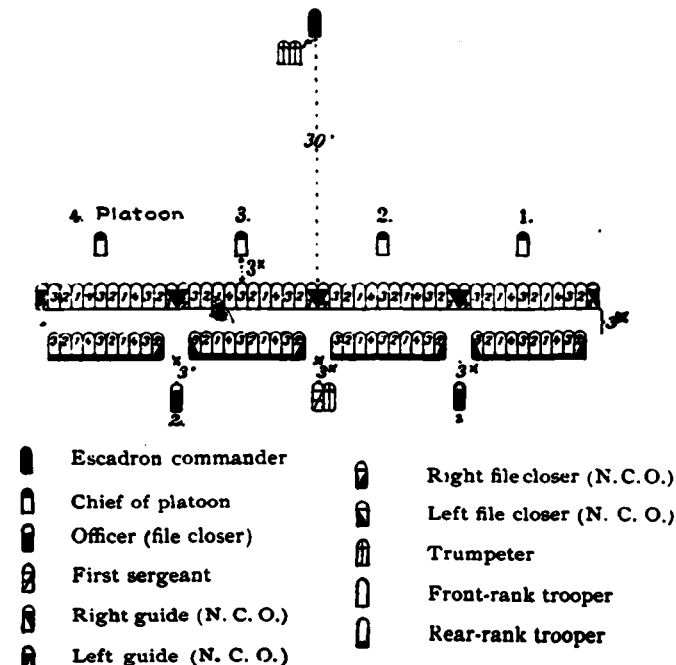
(a) THE FORMATION OF THE ESCADRON.

The platoons, each in two ranks, are formed abreast without intervals. The guides (N. C. O.) are posted in the front rank, on the flanks of each platoon. Non-commis-

*Para. 51-60, German C. D. R.

sioned file closers are posted in the rear rank, on the flanks of each platoon, the files in rear of the guides being left blank. The troopers are arranged, in each rank, according to height, from right to left.

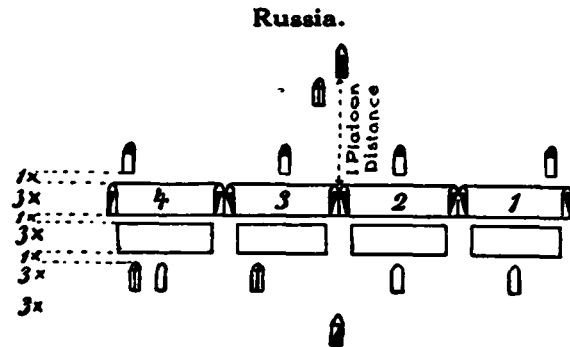
Officers are posted in front of their units in the cavalry of all armies in order to enable them to regulate the march direction and gait, and to obtain a good view. So posted, they can be seen by all their men, just before the shock occurs, can exert an influence by personal example, and can lead their men by means of signals or commands. "In front of his unit, the officer is a leader, in the ranks, a fighter." (v. BISMARCK). In this connection, it should be remembered that well-mounted officers who ride far ahead of their units during a charge, may reach the enemy all alone and may be cut down before support arrives. (Colonel v. Dölffs



at Hainau, in 1813). The Prussian regulations of 1812 prescribed that officers should join the line in such a manner during a charge that the croups of their horses would be in the front rank. Such a decrease in speed on the part of the officers, as this regulation entailed, easily communicates itself to the organization, and it is better, therefore, to post officers closer to the line (as in Germany) and to let them fall back to the line of platoon commanders just before the charge begins (as in Austria).

The figure shown below represents a Russian escadron in line. The chiefs of the flank platoons are posted in front of the second file from the exterior flank of their respective platoons. Officers not commanding platoons are likewise posted in front of the line, to be precise, in front of the second file from the inner flank of the 1st and 4th platoons.

The platoons are divided into squads of four files each. The Russians, who still retain squads of three files each, have to count *twos* for dismounting and *threes* for forming route column. In Italy, each platoon is divided into sets of twos from its center toward either flank. In Austria, the platoons are still divided into three so-called patrols (*Patrouillen*). Platoons generally have an equal number of files and are composed, as nearly as practicable, of men and horses of the same standard of serviceability.* In Germany and Russia, the platoons retain their original numerical



*In Austria and Italy, the front rank is to be composed exclusively of dark horses, having no distinguishing marks.

designations, whereas, in France and Austria, they are numbered, irrespective of their original designations, from right to left when in line, and from head to rear when in column. Whenever a platoon would consist of fewer than twelve files, including guides (N. C. O.), the number of platoons in the escadron is decreased.

The center trooper of the base platoon (i. e., the third platoon from the right) is the guide of the escadron. In movements, the alignment is maintained by all the men riding forward steadily and at a uniform gait. The selection of a good man for duty as guide, and of a good horse for him to ride, is one of the most important duties of the escadron commander. The guide (center trooper) of an escadron must possess some influence over his comrades; he must be a good rider and must ride a powerful, quiet, and well trained horse. Next to the chiefs of platoons and the non-commissioned guides on the flanks of the platoons, the center trooper is the pillar of an escadron. In Italy, the chiefs of the two center platoons are to maintain the alignment by observing the escadron commander.

"The execution of eyes right or left when in motion must be completely tabooed. Proper alignment must be obtained by maintaining a steady, uniform cadence and by loose contact, and under no considerations by turning head and eyes right or left. Whenever the alignment is maintained by means of a uniform cadence, i. e., by instinct, whenever the gait is steady and the cadence uniform, one sees good lines; whenever this is not the case, and eyes right or left alone are employed, one sees poor lines and an eternal seesawing that ruins the horses. The eyes must remain, as much as practicable, straight to the front, and, as an aid to maintaining a uniform cadence, may occasionally be turned now to the right, now to the left, but never toward one side alone." *

"The base unit is responsible for maintaining the march direction, the gait and the cadence; all the other units take

*General v. SCHMIDT, *Instruktionen*, p. 111.

their distances and intervals from it. In units riding abreast, the necessary alignment is likewise obtained in this manner. The leader of the base unit is responsible for its conduct. The leaders of the other units give to their subordinates whatever directions are necessary to preserve the general alignment." (Par. 31, German C. D. R.). In large units, when intervals are not definitely prescribed, the designation of an alignment (on some base unit) is replaced by a statement showing where and how contact is to be maintained.

(b) **CONTACT AND FRONTAGE; NUMBER OF RANKS AND DISTANCES BETWEEN THEM.**

Prussia: Under Seydlitz, the Prussian cavalry rode boot to boot; at a later date, it rode knee to knee; and since 1812, it rides stirrup to stirrup. The front of a trooper is taken as 0.80 m.

Austria: An interval of the width of half a hand is left between troopers. The front of a trooper is $1\frac{1}{4}$ paces or 0.43 m.

France: Loose touch is maintained. "They [the troopers] close in on but do not gain touch with the trooper next in line toward the center, in such a manner as to have freedom of movement in ranks." The front of a trooper is 1 m.

Russia: The troopers ride stirrup to stirrup. The front of a trooper is 0.80 m.

Italy: The front of a trooper is 0.94 m. (four troopers take up a space five paces or 3.75 m. wide). A small interval is left between stirrups of adjacent troopers.

England: An interval of 15 cm. is left between knees of adjacent troopers. The front of a trooper is 0.92 m.

In the German cavalry, the distance between ranks (measured from the tails of front-rank horses to the heads of rear-rank horses) is three paces (2.40 m.) in line, and one pace (0.80 m.) in column of platoons.

In **Austria, France and Italy**, the distance between ranks is two paces (1.50 m.).

In **Russia**, the distance between ranks is one pace (0.70 m.).

In **England**, the distance between ranks is three paces (2.40 m.) in line.

The distance between ranks used in the German cavalry, while greater than that used in most other armies, facilitates movements at the faster gaits. When the rear rank rides close upon the heels of the front rank, a horse falling down in the front rank will inevitably bring down the horse in rear of it.

Number of ranks. In the **Thirty Years' War**, the Cuirassiers of the Imperial army were formed in eight ranks and the Dragoons of that army in five ranks, whereas the cavalry of the Swedish army had already adopted the three-rank formation. Since the battle of **Roszbach**, the Prussian cavalry has used the two-rank formation. In the Prussian cavalry, the two-rank formation was first prescribed in the regulations of 1743.* The Swedish cavalry fought in two ranks as early as 1705. In a boot to boot charge, the troopers in the third rank hardly ever had an opportunity to use their weapons; they served to fill gaps and were likewise used for special purposes, for example, to make flank attacks. A line formed in two ranks will invariably envelop a line formed in three, provided both have the same number of troopers. A further change from the two-rank to the single-rank formation, does not seem advisable, as this would tend to impair cohesion, which the cavalry needs more than anything else when charging cavalry†. It might be well to mention that Lord Wellington objected to a second rank, even when cavalry had to charge cavalry, because it did not augment the shock power but increased disorder. Prince Frederick Charles ‡, likewise believed the single-rank formation to be the formation of the cavalry of the future.

It is claimed that the single-rank formation has greater mobility than other formations; that it facilitates movements and assembling after a charge; and that it suffers less from fire.

On the other hand, it is claimed that the single-rank formation is difficult to handle and easily pierced and that it breaks easily during movements, whereas a second rank, if provided, fills gaps occasioned by losses and resists any hostile troopers that may have succeeded in breaking through the front rank

(c) **ELEMENTARY MOVEMENTS.**

A trooper, when alone, can execute a turn on the forehand, but, when in ranks in close order, he can not do this

*At Kesselsdorf (December 15th, 1745), the cavalry of the second Prussian line was formed in two ranks, in order that it might cover approximately the same extent of front as the first line. *Geschichte des litauischen Dragonerregiments*, p. 87.

†General v. BRANDT, *Grundsätze der Taktik der drei Waffen*, 3d Ed., Berlin, 1850, pp. 42 and 222.

‡KAHLER, *Preussische Kavallerie*, p. 204.

as he takes up a space one pace wide and three paces deep. Wheels and ployments, executed by squads and platoons, take the place of the individual turn (exception: the about by squad executed by the rear rank when moving into bivouac. Par. 422, German F. S. R.).

To mount and dismount (pars. 73-76, German C. D. R.).

Passaging and backing (par. 102, German C. D. R.) are executed for short distances only. In Austria, Russia and Italy, the even numbers of the rear rank move two paces to the rear at the command to dismount.

(d) GAITS.

Uniformity in the gait is of prime importance in maintaining the alignment when in motion and in simultaneously moving large masses, especially when the latter, like the German cavalry divisions, are not formed until a mobilization is ordered. The influence exerted by speed on timely arrival at the decisive point and on prompt termination of a movement must not be magnified. The decisive factors are timely commencement of a movement and correct appreciation of time and space by the leader. The leader who properly appreciates time and space will be able to move his unit at a moderate gait and without winding his horses, so as to arrive at the proper time at the point where he desires to use it. The leader who lacks this faculty will vainly rush his unit forward, at an increased gait, only to arrive too late after all. Rising to the trot* is the rule in all units. The German trot† may be employed in drills where great precision is required, for example in executing wheels. It is more difficult to obtain the gallop when ris-

*In rising to the trot (posting), the rider allows himself to be raised by the thrust of one diagonal pair of legs, the right, for example, (i. e., right fore and left hind); he avoids the thrust produced by the planting of the left diagonal pair and drops back into the saddle just as the right pair is re-planted; this pair then again raises him.—Translator.

†In the German trot, the rider allows himself to be raised slightly by the thrust of each diagonal pair of legs in turn, i. e., he rides the seat we employ at the slow trot, but makes no effort to sit close; in consequence, he bumps the saddle lightly at each step the horse takes.—Translator.

ing to the trot than when using the German trot, as the horse can not be gathered so well in the former as in the latter case.

The mobility of an organization is influenced by the load carried by the horses, by training, by previous exertions, by feeding, and by the character of the ground. When some speed is required, it is best to employ a steady short trot; when considerable speed is required, a smooth gallop (the horses taking long strides without rushing and assuming an unconstrained, natural position), as these gaits produce the least fatigue.

The following table shows the distances covered at the various gaits per minute:

	Walk.		Trot.		Gallop.		Accelerated Gallop.	
	Paces	m.	Paces	m.	Paces	m.	Paces	m.
Germany	125	100	275	220	500	400	700	560
Austria	140	105	300	225	500	375	—	—
France	—	110	—	240	—	340	—	440
Italy	—	100	—	250	—	350	—	450
England	—	106	—	214	—	400	—	—
Russia*	—	{ 89 to 106 }	—	212	—	283	—	425

A short trot that does not strain the lungs and an extended gallop are used everywhere. The gallop is particularly well developed in the German cavalry, which, with its accelerated gallop, covers 120 m. more per minute than the French cavalry with its *gallop alongt*, and 135 m. more per minute than the Russian cavalry with its "field gallop." In charging over 1,500 m. of open ground, against infantry, a German escadron would be exposed to fire for 2 minutes and 37 seconds, a French escadron for 3 minutes and 24 seconds, and a Russian escadron for 3 minutes and 32 seconds. The short distances covered per minute by the Russian cavalry are due to the attempt to harmonize the performance of a mount in the cav-

*Instead of at the gallop, the Cossacks ride at an accelerated trot. This may be increased to the so-called *Namjot*, a species of lope in which 283 m. are covered per minute. The accelerated *Namjot* corresponds to the "field gallop" of the cavalry of the Line.

alry of the Line with that of the smaller Cossack horse. In France, training is to be so regulated that horses will cover 10 km. at a trot, or 6 km. at a gallop without exertion. No definite figures can be given for distances covered per minute at top speed, as allowance must be made, in a unit in close order, for the weaker horses, whose performance is more reduced by exertion and by difficult ground than that of the stronger horses. The Russians count on covering 800 paces (565 m.) during the first minute of riding at top speed.

According to Austrian observations, the distances covered per minute on soft ground in the field, are as follows:

At a walk, 90-96 m.

At a trot, 150-160 m. This may be continued up to 30 minutes = 4,800 m.

At a gallop, 260-280 m. This may be continued up to 5 minutes = 1,400 m.

At top speed, 370-400 m. This may be continued up to 1 minute = 400 m.

The work a horse is capable of performing is limited by the exhaustion of its lungs and muscles. The lungs become exhausted first, the muscles next. A horse, when quiet, takes eight to twelve breaths per minute; after going at top speed, however, it takes 130 breaths per minute.*

The following table shows the number of respirations per minute of a horse:

<i>Without kit:</i>		<i>With field kit:</i>	
Slow walk	16-24	Ordinary walk	30-39
Lively walk	34	Walk uphill	34
Trot, after 1 km.	42	Walk downhill	28
Trot, after 2 km.	46	Trot, after 1 km.	56
Trot, after 3 km.	51	Trot, after 2 km.	60
Trot for longer distances, up to	65	Trot, after 3 km.	65
Gallop for 1 km.	55	Trot for longer distances, up to	79
Gallop for 3 1/2 km.	72-84	Trot uphill	74
Top speed for 300 m.	58	Trot downhill	55
Top speed for 1 km.	60-72	Gallop for 1 km.	74
Top speed for longer distances, up to	130		
Finally: Congestion of the lungs.			

The trot over soft ground imposes the same strain on the lungs as the gallop over hard, level ground.

Fast gaits uphill tire principally the lungs, fast gaits downhill the muscles and joints. Soft ground tires lungs and muscles and affects particularly the sinews, hard ground principally joints and hoofs.

*Fieldmarshal, Lieut. Gen. CONRAD V. HÖTZENDORF, Chief-of-Staff of the Austro-Hungarian Army, *Zum Studium der Taktik*, p. 748.

Upon halting, the number of respirations decreases rapidly, the rate of this decrease being directly proportional to the speed with which the horse moved. If a horse shows 55 respirations after traveling 1 km., this number, upon halting, drops in 5 minutes to 45, in 10 minutes to 28, and in 20 minutes to 17. This clearly indicates the necessity of rests or of coming down to a walk for corresponding periods. The breathing, recognizable by the heaving of the flanks, is an index of the remaining energy in a horse.

Lungs and muscles are tired least by the walk. This gait promises, therefore, the greatest endurance on the part of the horse. A horse will walk ten hours a day without considerable fatigue. This is equivalent to 6,000 m. per hour or 60 km. per day. But, to ride continually at a walk tires the trooper and causes him to lounge in the saddle, which produces a deleterious effect on the horse.

If nothing but the trot were used in covering long distances, the horses would soon become exhausted. Therefore, walk and trot are used alternately.

A fast gallop in itself exhausts horses suddenly; after such an exertion they require from ten to fifteen minutes to recover, to reestablish the normal action of the lungs. General Bonie of the French army considers 5,000 m. to be the maximum distance that a horse can gallop at a single stretch on one day. For some time after such a performance, however, a horse can move only at a walk. At Vionville, v. Bredow's brigade rode 5,500 m. at top speed. General v. Schmidt* says: "It is absolutely essential that the horses gallop quietly and steadily. They must not gallop hurriedly and violently, change from one lead to the other, and throw their riders about in the saddle, for this not only causes disorder in ranks and loss of cohesion in the line, but makes the movement more difficult for the horses, exhausts them prematurely and deprives them, on account of their excitement, of their wind, which they need more than anything else — The gallop stride must go flat and evenly over the ground and must be without high action — The troopers must sit still, press the crotch firmly down into the saddle and must not flounder about. They must let their lower legs hang quietly down the sides of their horses so that the latter are in no way disturbed and excited either by the seat or by the position of the legs. They must, further, closely conform with their bodies to every movement of their horses, must have a light hand, giving and taking rein when necessary, and must make every effort to keep their mounts down to a uniform, long stride. After a few drills, the horses will no longer become excited nor be in the air, and will gallop in good balance, quietly, without hurry and without rushing forcibly into the bit. Both trooper and horse must simultaneously learn to keep their wind, coolness and temper, and acquire a natural, free and unconstrained carriage. Horse and trooper must give one the impression that this extended gallop is easy and pleasant; that they enjoy it; and that they are in a perfectly unconstrained, natural position."

*Instruktionen p. 43.

"This is the only way in which the escadrons can be kept from increasing the gait to top speed against the will of their leaders and that of the troopers. Such headlong rushes can occur only when the gallop during the charge is violent, hurried and unsteady; then the ranks become disordered and cease to exist entirely, so that finally six, eight, and perhaps ten ranks are formed: this is the gravest fault in the shock."*

(e) GENERAL PRINCIPLES FOR MOVEMENTS.

1. Commands, Orders, Bugle and Visual Signals, and Verbal Directions.

Cavalry is led by means of commands, orders, bugle and visual signals, and verbal directions. Leader and organization should keep each other constantly in view. Commands should be given only when the leader is certain that they will be understood; generally speaking, they can not be employed in organizations larger than an escadron. In large units, commands are replaced by orders or by verbal directions. For transmitting orders quickly, the regimental commander may avail himself of his adjutant and his orderly officer. If he does this, his orders can simultaneously reach both flanks of the regiment.

Bugle signals, whose number is rather limited in Germany, enable the leader to communicate his will quickly and thoroughly to the troops. Bugle signals should not be used when they might betray the presence of the organization or cause misunderstanding in other units. A bugle signal is executed as soon as it is understood, i. e., the units should "ride to the tune of the bugle signal" (*in das Signal hineinreiten*). The most important bugle signals are "front" (*Front*),† "assemble," and the "regimental call"

*Ibid., p. 45.

†The signal 'front' is employed:

"(a) To cause a line, a line of escadrons in columns of platoons, or a regimental column (mass) that has wheeled to a flank or to the rear by platoons, to resume the original march direction:

"(b) To cause a double column or a column of platoons to face toward the front (i. e., toward the enemy) by wheeling into line by platoons, or a route column to face toward the front (i. e., toward the enemy) by wheeling into line by squads:

"(c) To cause a route column that is moving to the rear into a defile, to resume the original march direction:

"(d) To cause a unit that is moving to the rear in extended order, to face again toward the enemy.

"Whenever the execution of the signal necessitates a wheel or a turn to the rear, the wheel or turn is made to the left about." (Par. 21, German C. D. R.).

(*Regimentsruf*),* a special one being prescribed for each regiment. The regimental call is to be used in critical moments when no time is available for giving orders or commands. Its purpose is to cause the eyes of all to be directed upon the leader. The organization must be trained to form for attack in correct formation and in the proper direction at a signal from the leaders, and must follow in trace as soon as the latter move off.

Visual signals are used to lead troops silently. Before giving such signals, the leader may attract the attention of his men by means of a blast on the whistle. As visual signals can not be seen by all the troopers when in route column, they are repeated by all subordinate leaders down to and including chiefs of platoons. Visual signals and verbal directions are valuable when the enemy is to be surprised. It must be remembered that such signals do not always ensure the simultaneous and orderly execution of movements. It is of the utmost importance that each unit follow its leader wherever he moves. In front of the enemy, we must absolutely rely upon each trooper's following the lead of his commander. The leader indicates by raising his arm, that his unit is to follow him without command or signal.

2. Wheels and Turns.

The regulations prescribe *wheel*† (on fixed pivot), such as *wheel into column*,‡ *wheel into line*,¶ and *about wheel*,§ by platoons and by squads, and *turns* (on moving pivot), i. e., changes in the march direction without change in the formation. (Pars. 36-39, German C. D. R.). Wheel are executed at angles of 90 and 180 degrees, and turns (changes

*Par. 23, German C. D. R.

†*Schwenkungen*.

‡*Abdrehungen*.

¶*Einschwenken*.

§*Kehrschwenkung*.

||*Drehungen*.

of direction) at any angle. Turns may be executed by command or by signal at angles of 45 or 90 degrees. During turns, the chief of the base platoon maintains the cadence. The other chiefs of platoons and troopers or units diminish or increase the cadence, according to their position, or change the gait when necessary. The leader of the base platoon (or base unit) may be directed to decrease the cadence when necessary.

3. Deployments and Front into Line.

The term deployment, as used in the regulations, denotes the change from one of the deep columns of the regiment to a broader combat formation, for example, the change from column of platoons to line of escadrons in columns of platoons. Line may be formed from column by executing front into line. In the deployment as well as in front into line, the units in rear habitually place themselves on both flanks of the leading unit, the second and third to its right, the others to its left. The distances to be traversed by the units in rear may be decreased by first changing the march direction and, simultaneously therewith, deploying or executing right front into line or left front into line, as the case may be, in the direction in which the turn is made.

The deployments and front into line are executed as follows:

If halted or if marching at the walk, at the trot;

If marching at the trot, at the gallop; and

If marching at the gallop, at the gallop.

In the deployments, if executed from the halt (or while marching at the walk), the base unit advances the distance prescribed or ordered in the particular case, at the trot, and then halts (or comes down to the walk); if executed while marching at the trot or at the gallop, the base unit advances the distance prescribed or ordered, without changing the gait, and then comes down to the next slower gait, or, if deploying from route column, comes down to the

walk. In forming front into line from a halt (or while marching at the walk), the leading element advances twenty paces at the trot and halts (or comes down to the walk); if executed while marching at the trot or at the gallop, the leading element continues to advance without changing the gait.

By halting the leading element, the deployment is accelerated, and gain of ground to the front is avoided.

Changes from one formation to another, in so far as they do not involve the execution of front into line, and ployments (habitually executed on the base unit) seldom require haste. Therefore, such movements are executed without changing the gait.

(f) MOVEMENTS OF THE ESCADRON IN LINE.*

The line is the most important formation of the cavalry, as it is the formation in which the charge is made. It is essential in all movements made in line that the horses be perpendicular to the front and that accurate contact be maintained between stirrups. The march direction can be maintained, after a charge is once begun, only when this principle is observed. The front-rank men take care to maintain proper contact, while the rear-rank men preserve the proper distance and cover in file. The center trooper (guide of the escadron) follows at the prescribed distance in the trace of his chief of platoon. In Austria, when marching at fast gaits, rear-rank troopers are permitted to ride so as to cover the intervals between front-rank men.

The oblique (used for short distances only) is executed by each trooper making a half turn individually, and marching at an angle of 45 degrees to the original direction.

Changes of front are effected either by executing turns or by the leader of the base unit's marching upon a new objective point, the rest of the escadron gradually conforming to the movement.

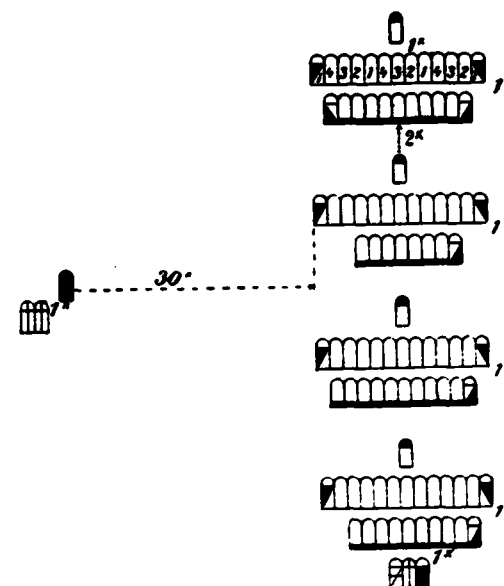
*Pars. 78-80, German C. D. R

If the escadron is to move to the rear, the platoons execute an about wheel (in Russia the about wheel in this case may be executed either by threes or by platoons). At the signal "front," platoons wheel to the left about and face again toward the enemy. The term "front" denotes the side on which the leader is posted.

(g) THE COLUMNS OF THE ESCADRON.

1. Column of Platoons.

Cavalry must be able to form line from column quickly in any direction. For this reason, columns must be open, narrow and not too deep. In addition, they must be capable of changing direction easily, and the distance between ranks in the various elements must be sufficient to enable the horses to gallop comfortably, and to prevent disorders occurring in any one subdivision from being communicated to others. In a close column, the dust raised settles very slowly and the horses can not see where they are stepping; in consequence, they fall and, at the faster gaits, order is easily lost. It is not advisable to increase the distance between ranks as the formation of line is thereby retarded. The column of platoons meets all the requirements of an assembly and principal march formation of an escadron on the battlefield. Line may be quickly formed in any direction from column of platoons, by first partially changing direction. In passing defiles, the files on the flanks are broken off and follow their platoons. (Par. 93, German C. D. R.). When this is done, care must be taken that elongation of the column does not take place. In Austria, entire squads break from the flanks, in France, as many files as required. Column of platoons is formed either by wheeling into column or by plying. The last-named movement is habitually executed on the center platoon, i. e., the base platoon, in exceptional cases, on a flank platoon. When the column of platoons is to be given a different march



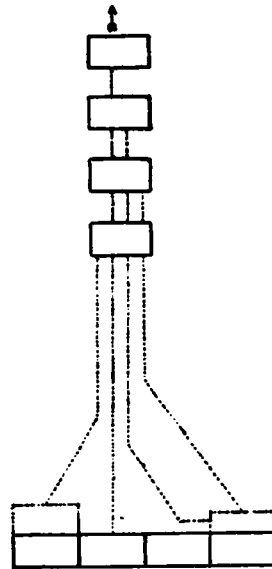
direction than that obtainable by wheeling into column, the march direction is indicated in the command. In column of platoons, the platoons are in rear of and covering each other; the rear rank in each platoon is one pace in rear of its front rank; the chiefs of rear platoons follow the next preceding platoon at a distance equal to the front of their platoon less eleven paces; the center trooper of each platoon follows at one pace distance in the trace of his chief of platoon.

The eleven paces, mentioned above, are obtained by adding to the depth of one platoon (3 + 1 + 3 paces), the depth of the horse (3 paces) of the chief of the next platoon in the column, and the distance of that chief from his own platoon (1 pace). To enable the horse of a chief of platoon to move at fast gaits, it must be at least one pace from the next preceding platoon. Moreover, rear platoons must be able to wheel into line. Hence, the front of a platoon must not be less than twelve paces. Since each trooper occupies a front of one pace, the minimum strength of a platoon is thus obviously twelve files.

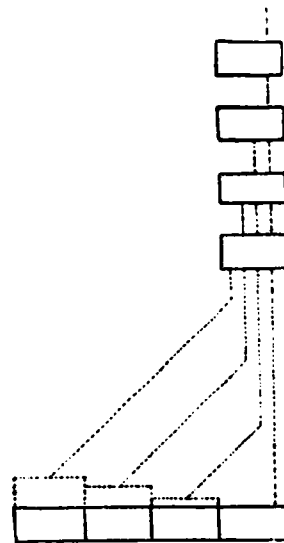
In France, the distance in the clear between platoons amounts to half platoon front. The platoons can wheel into line when each consists of twelve to thirteen files, but not when each consists of a greater number of files. When each platoon consists of eighteen files (each file occupying a front of 1 m.), the distance in the clear between platoons is 9 m. and the depth of the two ranks of each platoon 6 m. Hence, when the platoons wheel into line, three files in each platoon find no room, as the platoon front amounts to 18 m. while the distance between platoons plus the depth of a platoon is 15 m. only.

In other armies, the rear ranks in column of platoons preserve the same distance from the front ranks as in line. In Austria and France, in forming column of platoons on a flank platoon, the latter moves straight to the front, the second platoon executes two wheels, each of 45 degrees, the third and fourth each a quarter wheel, each platoon then following the leading platoon.

Forming Column of Platoons from Line, on the Center Platoon.



Forming Column of Platoons from Line, on the Right Platoon.

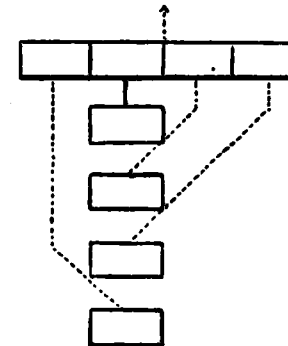


Cavalry should be able to deploy in any direction for attack. Hence, all ideas of the drawbacks of inversion should be abandoned. It is essential that the platoons be

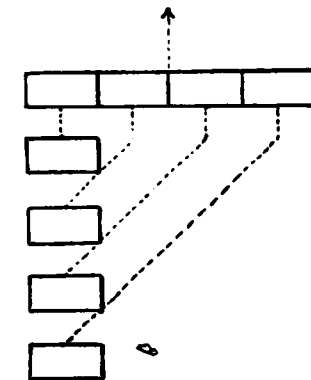
able to wheel into line to the right as well as to the left, and that they be able to form front into line irrespective of the numerical order in which they happen to be. The term "front" always denotes the side of the column on which the leader is posted. It is immaterial whether the first or the fourth platoon is on the right flank in line.

This apparently simple principle has only recently received general recognition in the cavalry, least of all in armies where the number of a unit changes with its position. At *Mockern*, October 16th, 1813, the Lithuanian Dragoons, after charging hostile cavalry, had wheeled about by platoons and then wheeled to the right by escadrons in order to charge, in echelon, retreating French infantry. "By charging with inverted platoons and inverted escadrons, such confusion had been created, that a single hostile escadron would have sufficed to rout the entire regiment. After the fight, I was compelled to post the first sergeant of the Jäger Escadron where the right was to rest and then gradually to form one escadron after another into line."*

Right and Left Front into Line from Column of Platoons.



Right Front into Line from Column of Platoons.



Line is formed from column of platoons either by executing front into line or by wheeling into line. It is simpler to wheel into line than to execute front into line, as contact, alignment and march direction are more easily maintained, the pivot flanks of the platoons being already in the new line.

*Graf HENCKEL V. DONNERSMARCK, *Erinnerungen aus meinem Leben*, p. 229.

Besides, a simple command of the escadron commander suffices for wheeling into line, whereas several commands of the chiefs of platoons are required to execute front into line. Moreover, especially at the fast gaits, it is easier for the troopers to wheel than to oblique, and, in addition, the hesitation on the inner and the rushing on the outer flanks, the seesawing of the line, when executing front into line toward one flank only, is avoided. But, when only a short distance separates the organization from the enemy whom it is to charge, wheeling into line makes it more difficult to put the horses into a fast gait. The manner of forming line is of less importance in an escadron than in larger units. If the leading element continues the march while front into line is being executed, the deployment is retarded, but the distance to the objective is reduced. When, on the other hand, the leading element halts, or changes direction, while the remaining elements wheel into line, the deployment is accelerated, but the distance to the objective is not reduced.

Front into line is habitually executed by the rear platoons placing themselves, at the commands of their leaders, to the right and left respectively of the leading platoon. In exceptional cases, right front into line or left front into line may be executed. This is especially true if the march direction is changed at the same time, when the rear platoons execute right front into line or left front into line, as the case may be, in the direction in which the turn is made. In the Russian and the French cavalry, right front into line and left front into line alone are used. In the Austrian cavalry, the second platoon places itself to the right and the other platoons place themselves to the left of the leading platoon. In France, the escadron commander, by placing himself either on the right or on the left of the leading platoon, indicates whether right front into line or left front into line is to be executed. The advantages of simultaneously executing right and left front into line are obvious. When executing right and left front into line, the leading platoon remains the base platoon; its chief can, without difficulty,

maintain the march direction: the gait is steadier during the movement and order is more easily preserved; and, finally, line can be formed more quickly than when front into line is executed toward one side only. Right and left front into line, simultaneously executed, has the disadvantage that, in certain circumstances, a platoon that is led by a chief who possesses little skill or one who is not well mounted, may become the base platoon.

Right and left front into line follows quite logically from the ployment on the center platoon. In an escadron, it is immaterial how front into line is executed, as the time that could be gained is insignificant. It is simply a question of maintaining a principle that applies to the regiment and is logically also extended to the escadron. For mention of a further drawback of right and left front into line, see p. 924, *infra*.

The following will give an idea of the time required to form front into line from column of platoons when each platoon consists of twelve files:

Right (or left) front into line at the trot requires 21, at the gallop 14 seconds;

Right and left front into line at the trot requires 15, at the gallop 12 seconds;

Platoons front into line from column of fours (each platoon forming front into line) at the trot requires 18, at the gallop 9 seconds.

Hence, front into line from route column, under favorable conditions, requires, at the trot 33, at the gallop 21 seconds.

On the other hand, to wheel into line when the leading platoon has changed direction (90 degrees), requires, at the trot 16, at the gallop 10 seconds.

2. The Echelon Formation.

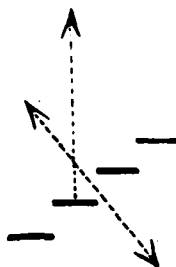
The German C. D. R. of 1909 no longer prescribe the "echelon formation" (the so-called "half-column"), in which the platoons were posted so as to uncover each other wholly or in part. The formation was valuable in training leaders and troops in riding accurately; it could scarcely

be said to be suitable on the battlefield for the purpose of gaining the flank of the enemy.

Orderly movements in this echelon formation are practicable only when the terrain is open and when the platoon leaders are carefully trained. Each platoon leader follows his own march direction, and cohesion during the movement can be maintained only by close observation of the distance from the next preceding platoon. If the rear platoons close up too much, they can not wheel into line; if they lose distance, and this is the most common error, the alignment, on forming line, is lost. Another drawback, finally, was caused by the fact that the position of the non-commissioned guide on the outer flank of each platoon was not fixed, but depended upon the number of files in his platoon. The only way in which the echelon formation could be taken up from line by wheeling, was in a direction making an angle of either 45 or 135 degrees with the original front; whereas column of platoons can be formed in any direction. When in echelon formation, the march direction can be changed only by first forming column of platoons.

In echelon formation, it is difficult to utilize cover and to avoid obstacles.

To form line from echelon formation. When executing right and left front into line from column of platoons, the leader of the base platoon is already in front with his platoon and need only continue to maintain the march direction, whereas, in forming line from echelon formation, he is the second to reach the line, whereby the maintenance of the march direction is endangered. When in echelon formation, the escadron can form line at once in three definite directions only, whereas, when in column of platoons, the escadron, by first partially changing direction, can quickly form line in any direction toward the front or half front.



Single-Rank Formation.

In order to minimize losses, the escadron when in line, or the platoons when the escadron is in column of platoons, may be formed in single rank. (Par. 98, German C. D. R.). The platoons, when the escadron is in column of platoons, may also be formed in single rank when attacking infantry, artillery, or machine guns. (Par. 113, German C. D. R.). Single rank is formed by the rear-rank troopers placing themselves with or without an interval to the right of their file leaders. The troopers must be trained

to form single rank from route column and from column of platoons. If an escadron consisting of 120 troopers forms single rank with an interval of one pace between troopers, it will cover a front of 240 paces, i. e., approximately the same front as a regiment in line.

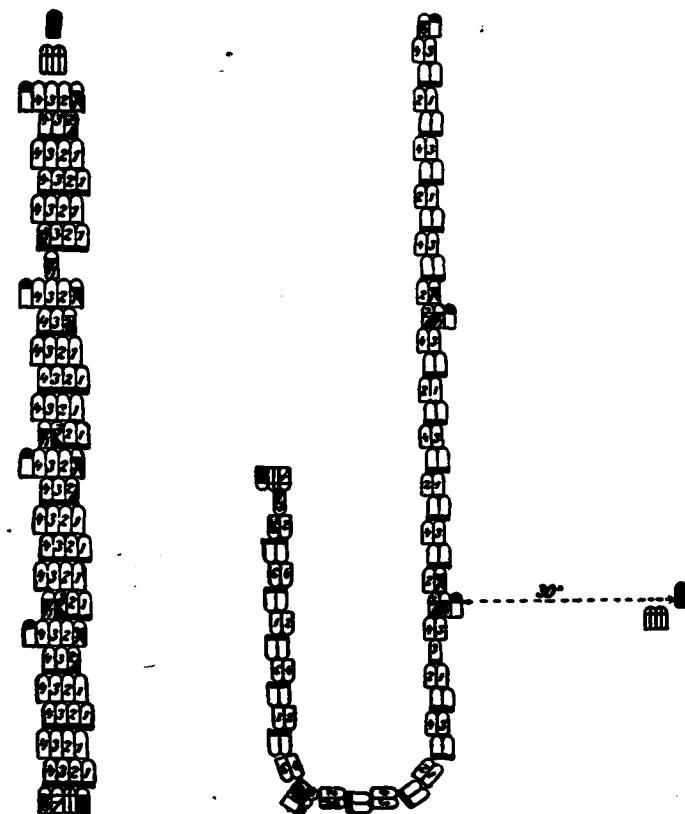
3. Route Columns.

Cavalry marches either in column of twos or in column of fours, as side roads average from two to three, main roads from five to seven paces in width. In column of fours, the

Germany.

Column of Fours.

Column of Twos.



various sets of fours follow each other without distance, the rear-rank troopers in each squad covering the intervals to the right of their file leaders. Thus, the front-rank troopers in each squad but the first, cover the front-rank troopers in the next preceding squad, the rear-rank troopers in each squad but the first, covering the rear-rank troopers in the next preceding squad. In column of twos, the half-squads follow each other in a similar manner. More than two men are never allowed to ride abreast in column of twos, except where the chiefs of platoons are posted.

Route column is generally formed by first forming column of platoons and then by plying on a flank squad (in Italy by plying on a center squad, in France by habitually plying on the right squad, i. e., by executing right forward, fours right). Route column may also be formed by wheeling by squads. As each squad is four paces wide and six paces deep (when the rear rank follows the front rank without distance), the squads can not wheel simultaneously into column, but must follow each other successively. The change from column of fours to column of twos is effected by plying. Platoons front into line from column of fours is executed simultaneously by the platoons, or successively (for example on debouching from a defile).

Line is formed from route column in a similar manner as from column of platoons. When the escadron is in route column and it is impracticable to form line in the usual manner, line may be formed quickly toward a flank by the command "Right" (or "Left") "Front," given by the escadron commander, or by the signal "Front," at which command, or signal, the squads (or half-squads) wheel into line and close in while riding forward at the trot.

Since a squad as well as a half-squad is six paces deep, but the former four, the latter two paces wide, gaps of two and four paces respectively occur when line is formed by wheeling by squads. These gaps must be closed by the troopers' closing in toward the center. The regulations of all the other armies prescribe that, in forming line to a flank, each platoon is first partially to change direction and then to form line.

In order to decrease the depth of route columns, fours (or twos) follow each other without distance in the German cavalry. This practice interferes with riding at fast gaits, but accelerates the formation of line. Disorders are easily communicated to the entire column, whose depth prevents the leaders from exerting as much influence over their men as in other formations. Moreover, when speed is required, it will, as a rule, be necessary to use a formation that permits line to be formed with despatch (column of platoons, for example, the flank files being broken off when necessary).

On June 28th, 1866, the 3d Cuirassier Regiment received orders to march to Königshof with one horse battery and one field battery. The batteries finally found the road impracticable. The three escadrons that marched in rear of the batteries wheeled about and moved to the rear at the trot. As it was almost dark and the path was steep and covered with stones, a number of horses in the escadrons stumbled and fell here and there. The gaps occasioned thereby caused the troopers in rear to gallop ahead to close up, whereby the outposts of the 1st Army Corps, which could not account for this unexpected return of the column, were alarmed. The panic of the Bavarian cavalry at Hunfeld and Gersfeld likewise occurred in route column.*

In other armies fours and twos cover in file. In Austria, France and Italy, the distance between fours (or twos) is 0.75 m., in England, 1.20 m. In practice, the distance of one pace between fours (or twos) is generally increased, as it is difficult to maintain. The French regulations therefore count on an elongation of from one-sixth to one-fourth of the depth of each escadron, but permit a reduction or total elimination of the distance between fours or twos (*"les cavaliers peuvent même gagner du terrain à droite ou à gauche de ceux qui les précèdent"*).

An escadron of 148 troopers, when formed in column of fours in the German manner, has a depth of 97 m., and when formed in column of fours in the Austrian manner, a depth of 124 m. This difference of 27 m., while of little importance in a single escadron, must be reckoned with in larger units, as it retards the execution of front into line. This movement is very apt to be still more retarded, because the distance between fours is more likely to be increased than diminished. The German escadron in column of twos has a depth of 178 m., the Austrian a depth of 233 m. There is thus a difference of 55 m. between the two.

The Russian cavalry uses the column of threes and the column of twos as route columns. Each rank turns independently by threes (or forms column of sixes—the so-called "turning column," the route column

*See v. LETTOW-VORBECK, *Krieg von 1866*, III, pp. 82 and 105; *Neue militärische Blätter*, 1902, I, p. 97. *Queckmoor und Gersfeld*.

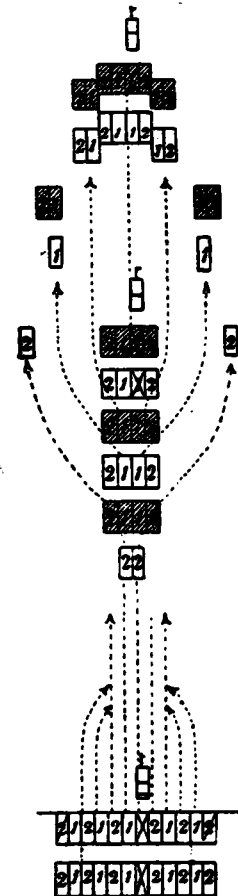
used on wide roads), the rear-rank troopers following and covering their file leaders. In Austria, the turning column is also used for moving a short distance to a flank. Route column may likewise be formed by plying. Column of twos is formed from column of threes in the same manner as column of twos from column of squads in the infantry. Aside from the disadvantage of counting off twice (i. e., counting twos for dismounting and threes for forming route column), the column of threes is longer than the column of fours. As the distance between sets of threes is one pace (0.71 m.), the depth of an escadron in column of threes amounts to 151 m., as against 97 m., the depth of a German escadron in column of fours.

The Italian cavalry uses the most logical procedure, in that the principle of forming column of platoons on the base platoon, and front into line on both flanks of the leading element, has been extended to forming route column and platoons front into line from route column. The senior non-commissioned officer of a platoon rides directly in rear of his chief of platoon, the next ranking non-commissioned officer of the platoon riding in the rear rank and covering the senior non-commissioned officer. Thus, if the chief of platoon should be disabled, he can be replaced in the simplest manner.

The two junior non-commissioned officers of the platoon are posted on the flanks of the front rank of the platoon. The platoon is then divided into sets of twos, from the center toward each flank, the "center trooper" (the senior non-commissioned officer) counting as number one. In forming column of fours, the four files in the center of the platoon ride straight to the front; they are followed by the two files next on the right and by the two next on the left, these forming a new squad in rear of the former center squad, and so on. Front into line is executed by each two files on the right of each squad placing themselves abreast and to the right of the leading squad, each two files on the left of each squad similarly placing themselves abreast and to the left of the leading squad. When the column is to form line to the right or to the left, the chiefs of platoons turn the heads of their platoons in the indicated direction, and each platoon then executes front into line as explained. In forming column of twos from column of fours, the exterior files of each squad place themselves in rear of the center files of their squad.

A difficulty can arise only when the route column has faced to the rear and then executes front into line. In this case, front into line must be executed by half-platoons, the last half-platoon moving abreast of the one in the lead.

Italy.

Forming Route Column
and
Front into Line.Forming Column of
Twos from Column
of Fours.

In the English cavalry, column of fours is formed in a similar manner as in the Italian cavalry, the squad on the right of the center trooper moving out first.

2. THE REGIMENT.

(a) THE FORMATIONS.*

*Comparison: *The Formations of the Regiment:*

- | France. | Germany. |
|--|--|
| 1. Line: The escadrons, each in line, are abreast at intervals of 15 paces. | 1. Line: The escadrons, each in line, are abreast at intervals of 6 paces. |
| 2. Line of Escadrons in Columns of Platoons (<i>Ligne de colonnes</i>): The escadrons, each in column of platoons, are abreast at deploying intervals plus 15 paces. | 2. Line of Escadrons in Columns of Platoons (<i>Eskadronskolonnen</i>): The escadrons, each in column of platoons, are abreast at deploying intervals plus 6 paces. |
| 3. Mass: The escadrons, each in column of platoons, are abreast at intervals of 15 paces. | 3. Regimental Column (<i>Regimentskolonne</i>): The escadrons, each in column of platoons, are abreast at intervals of 6 paces. |
| 4. Column of Platoons (<i>Colonne de pelotons</i>): The escadrons, each in column of platoons, are in rear of each other at a distance of 23 paces. | 4. Column of Platoons: The escadrons, each in column of platoons, are in rear of each other at a distance of 6 paces. |
| 5. Column of Escadrons (<i>Colonne d'escadrons</i>): This is a line of escadrons in column of platoons that has wheeled to a flank. The escadrons, each in line, are in rear of each other at full distance (68 paces), half distance (38 paces), or without distance (23 paces). | 5. Double Column: The escadrons, each in column of platoons, are formed two and two abreast. |
| 6. Double Column: The escadrons, each in column of platoons, are formed two and two abreast at 15 paces interval. The distance between the leading two escadrons and the rear two is 23 paces. | 6. Route Column: Column of twos or column of fours. No distance between fours or twos. The distance between escadrons is 8 m. |
| 7. Route Column: Column of twos or column of fours. The distance between twos or fours is 0.75 m., between escadrons, 12 m. | 7. Open Formations. |
| 8. Line of Platoons in Columns of Fours (<i>Ligne de pelotons par quatre</i>): This is formed by playing from line. The distance between fours is 1.50 m. | |

The regiment consisting of from three to five escadrons, can be led directly by its commander, and, if conditions are not too unfavorable, can be controlled by his voice. The regiment is not too large for the regimental commander to make his influence felt.

The evolutions of the regiment, especially its combat exercises, are designed to weld the escadrons into a homogeneous whole, to train the escadron commanders to act on their own initiative in accordance with the situation, and to prepare the regiment for its duties as a part of a larger organization. (Par. 116, German C. D. R.).

Escadron commanders are responsible for the maintenance of cohesion in and the correct execution of movements by their escadrons. Escadron commanders should foresee fluctuations in the evolution executed by the cavalry force of which their escadrons form a part. Each escadron commander must prevent those fluctuations from being communicated to his own escadron, or cause them to be gradually adjusted while the movement is in progress. (Par. 122, German C. D. R.).

When, as will frequently happen, the voice of the regimental commander does not suffice for giving commands for the execution of evolutions, recourse must be had to orders. For their transmission, the regimental commander has at his disposal the adjutant and one orderly officer.

1. The Regiment in Line.*

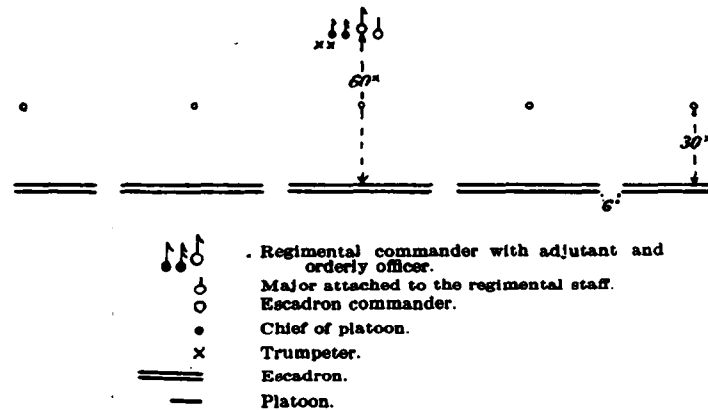
When the German regiment is in line, the escadrons, each in line, are posted abreast of each other at intervals of six paces (4.8 m.). In the Austrian regiment, the interval between escadrons in line is 7.5 m., (between "divisions"—so-called—in line, 22.5 m.†), in the French‡ and Italian

*Par. 127, German C. D. R.

†If the regiment is in one of its columns, the interval between "divisions" is reduced to ten paces (7.5 m.).

‡On account of this interval and the loose touch maintained by the French troopers, a French regiment overlaps a German regiment by one and one-fourth times escadron front, provided the two regiments considered are equal in strength.

regiments, 12 m., in the English regiment, 7.3 m., and in the Russian regiment, platoon front. The line is the combat formation of cavalry. It can not be handled with suf-



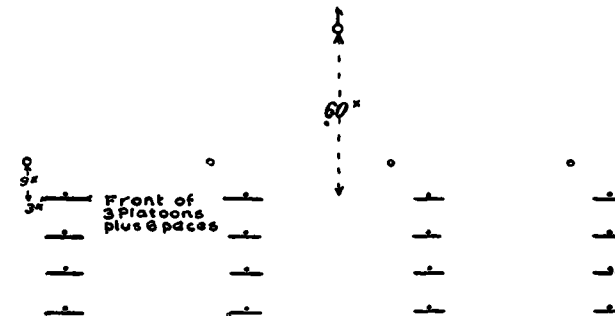
ficient ease to permit march direction or front to be changed quickly at a fast gait. It is best adapted for moving straight to the front or straight to the rear. When a charge is contemplated, line should not be formed until the organization is facing in the direction in which the shock is to be delivered.

2. Line of Escadrons in Columns of Platoons.*

When in line of escadrons in columns of platoons, the regiment possesses greater readiness for combat than in any other formation, barring line. Line of escadrons in columns of platoons is taken up when evolutions are no longer necessary and when the regiment is facing in the direction in which it is to attack. This formation once taken

**Eskaдронскoлoннeн.*

up, the regiment moves, in the main, straight to the front. In line of escadrons in columns of platoons, the escadrons, each in column of platoons, are abreast of each other at deploying interval plus six paces. In this formation, when the platoons consist of twelve files each, the regiment has a depth of 40 paces and a front of 162 paces (when the platoons consist of sixteen files each, a front of 228 paces).



When in line of escadrons in columns of platoons, the regiment can form line without difficulty, can avoid obstacles easily, and its losses are less than in line, as the small columns marching abreast compel the enemy to distribute his fire. Furthermore, this formation facilitates detaching escadrons on independent missions.

Regiments of six escadrons (Austria and Russia) possess these advantages to a limited extent only, as they cover a front of 290 paces (or, when platoons consist of sixteen files each, a front of 400 paces).

The high value placed on line of escadrons in columns of platoons had its origin in the era in which all cavalry formations were designed with a view to the employment of cavalry in successive lines. "It [line of escadrons in columns of platoons] possesses little handiness, renders materially more difficult all changes of direction, loses direction

and distances very easily, and necessitates complex movements in order to form column. These disadvantages become strikingly apparent when considerable masses of cavalry are assembled. Even in a brigade these drawbacks make themselves very sensibly felt. It is, in fact, a formation designed exclusively with a view to the employment of units in successive lines, and for this reason alone meets one-sided requirements only. There is, however, no compelling reason for retaining it as the principal maneuvering formation of cavalry and for considering it, as it were, outside the limits of discussion".* General v. Bernhardt recommends that the regiment be formed in "line of demi-regiments," each of the latter forming one unit and embracing two escadrons, each in column of platoons, abreast. This formation is already employed in Austria, where the regiment advances in line of "division columns"—so-called.



"The regimental commander would then have but two units to direct. These two units will maintain their position relative to each other more readily than four, will execute changes of direction with great ease, and will be able to form line just as quickly as will a line of escadrons in columns of platoons. Moreover, they will permit column or successive lines to be formed with greater ease than is possible from line of escadrons in columns of platoons. The formation in demi-regiments permits successive lines to be formed, in the simplest manner, to the front, and an

*v. BERNHARDI, *Unsere Kavallerie im nächsten Kriege*, p. 162 (see *Cavalry in Future Wars*, by v. BERNHARDI, GOLDMAN's translation, p. 228).

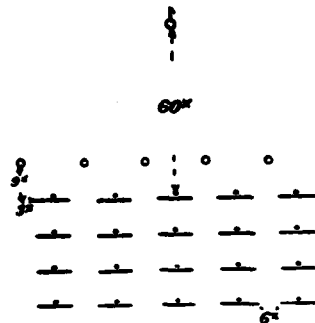
echelon formation to be taken up in any direction. In addition, this formation is very mobile, easily concealed, and combines the advantages of a route formation of little depth with those of a maneuvering formation. In the latter character, it might be employed to particularly good advantage by large units operating in close country, as it enables the regimental commander to keep the troops well in hand, while, at the same time, permitting deployment with the utmost despatch in combat formation in successive lines either to the front or to a flank. It would, without doubt, have the same advantages in the brigade when the regiments are formed side by side. It will be particularly adapted for flank movements, in which it is essential to develop, while in motion, the maximum fighting power in the direction of the movement, and in which it is desirable, after wheeling into line, to have the requisite depth as well as protection on the exposed flank."*

3. The Regimental Column.†

The regimental column (called "mass" in all the other regulations) is used principally as an assembly formation. It should be used as little as possible on the battlefield, as it may receive artillery fire at long ranges and is never secure from being surprised by fire. On account of its width, a regimental column is difficult to conceal and the dust raised by it at fast gaits does not settle quickly, which fact makes it more difficult to surmount obstacles. When the regiment is in this formation, the regimental commander can still con-

*v. BERNHARDI, *Unsere Kavallerie im nächsten Kriege*, p. 163 (see *Cavalry in Future Wars*, by v. BERNHARDI, GOLDMAN's translation, pp. 228 and 229).

†Regimentalskolonne. This formation is identical with the "mass" used in the United States Cavalry, except that the escadrons are in columns of platoons instead of fours, and that the interval between elements is 6 paces instead of 11 yards.—Translator.

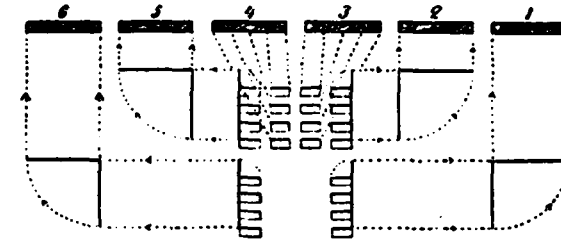


trol it directly by commands. In regimental column, the escadrons, each in column of platoons, are abreast of each other at intervals of six paces (in France, Italy and Austria ten paces, in Russia, seven paces). As the regimental column can not be directly deployed into line, it affords the regiment a readiness for combat next inferior to line and line of escadrons in columns of platoons. When platoons consist of twelve files each, the regimental column is 40 paces deep and 66 paces wide (in Austria 122 paces wide). On account of this favorable ratio of width to depth, this column is both very compact and very mobile.* To form line quickly to the front requires special training. The deployment into line in an oblique direction as a rule causes an echeloning of the escadrons. The regimental column appears to be particularly unsuited for regiments of six escadrons. In Italy, the "mass" formation is to be employed only so long as the enemy's actions or the terrain do not compel the assumption of line of escadrons in columns of platoons. The Russians seek to remedy the disadvantages of the regimental column by breaking off the flank escadrons.

*When cavalry in regimental column enters the zone of effective hostile fire, it very quickly suffers serious losses.

Obstacles on the battlefield of Vionville compelled the 16th Cavalry Brigade to close intervals when it rode past Flavigny in line of escadrons in columns of platoons. This converted the brigade into a dense mass, which offered a favorable target to the French projectiles. The brigade was then forced to retire on account of the heavy losses suffered by it. The 3d Hussars lost on this occasion 3 officers, 80 men and more than 100 horses. KUNZ, *Reiteret*, p. 101

Front into Line from the Russian Regimental Column, in which the Flank Escadrons are broken off.



4. Column of Platoons.

The escadrons, each in column of platoons, cover and follow each other at platoon distance plus six paces. This column can be controlled by the voice of the regimental commander in exceptional cases only. Visual signals and bugle signals increase in importance. This is likewise true of following in trace, the escadrons in rear taking up, without specific orders to that effect, the cadence and formation of the next preceding escadron. When in this formation, the regiment can easily change direction, take advantage of the ground and surmount obstacles. If ditches with marshy borders have to be taken, it is advisable first to execute escadrons front into line. By wheeling into line by platoons, the column of platoons is quickly rendered ready for action to a flank, and for this and the previously mentioned reasons, it is especially adapted for executing flank movements. The weakness of the column in the direction of march requires that special measures be taken to protect its head.



Column of platoons is not a suitable formation for a frontal movement against the enemy, as it is difficult to deploy the column in that direction.

5. Double Column.

The necessity of protecting the head of the column of platoons, quite naturally leads to the formation of double column. In this the escadrons, each in column of platoons, are two and two abreast with an interval of six paces between them, the distance between successive escadrons being platoon distance and six paces. With an uneven number of escadrons, the left column, in which the base escadron is posted, is the stronger. The double column is the mean between column of platoons and regimental column. It possesses the great mobility of the latter without being encumbered with the depth of the former, and can deploy as readily to the front as to a flank. Moreover, it has the same advantages formerly possessed by columns that had wheeled to a flank. For this reason, the double column is especially adapted for flank movements, particularly when two "waves" are to be formed for a charge.

Although the advantages of the double column are especially apparent in six-escadron regiments, some objections are raised against it by the Austrians. For example, it is stated, "that on account of the noise, commands can be heard with difficulty only; that the deployment (in a six-escadron regiment) is, in reality, restricted to the head of the column; and that the latter invariably forms the objective of the hostile attack. The area of burst of a shrapnel covers the entire space occupied by the double column, and a single good hit by such a projectile might perhaps suffice to disperse the column. In spite of this, the double column finds more advocates and more frequent application than it deserves." *

*V. WALDSTATTEN, *Taktik*, I, p. 97.

6. Route Column.*

When the regiment is in column of twos or fours, the escadrons follow each other at 10 paces (8 m.) distance (in Russia at platoon distance). To form line from these columns is difficult and time-consuming on account of their great depth. For this reason, special protection is necessary. Large units will, as a rule, march in column of fours, the deployment being accelerated by a timely execution of platoons front into line. The units in rear of the leading element must assume—independently and without awaiting orders—the formation taken up by those in front. On the march, commanders of escadrons and of platoons ride wherever their presence in supervising their organizations is required. A trumpeter rides at the tail of the column in order to blow "clear the road," this being the signal for clearing one side of the road.

The field train marches at the tail of the regiment in order that it may not interfere with the deployment when the enemy is encountered. When the regiment marches alone, it may be advisable to let the field train march at some distance in rear.

Depth of a regiment:

Germany (4 escadrons):

In column of fours (with combat train) 530 m., in column of twos 1,010 m.

Austria (6 escadrons):

In column of fours 723 m., in column of twos 1,493 m.†

Line of route columns may be used on the battlefield by a large unit, for the purpose of taking advantage of accidents of the ground, for crossing difficult terrain, and

*Par. 348, *German F. S. R.*

†For details see p. 903, *supra*.

for minimizing losses when exposed to frontal artillery fire. This formation is taken up, for example, from line of escadrons in columns of platoons, by one, several, or all of the escadrons forming route column, while maintaining their relative positions with reference to each other (open formations). Intervals and distances may be given up when crossing ground swept by the enemy's fire. Close order formations are resumed as soon as the dangerous zone has been crossed or the position from which the charge is to be made has been reached. This formation in line of route columns is, however, unsuitable when an encounter with hostile cavalry is imminent. Since it is difficult to gallop in column of fours (closed up), it would perhaps be desirable to form line of platoons or half-escadrons in columns of twos, in which the horses can gallop with greater ease.*

France: Line of platoons in columns of fours (*Ligne de pelotons par quatre*), i. e., the four platoons, each in route column with the distance between fours increased to 1.50 m., are abreast of each other at diminished or normal intervals.†

(b) MOVEMENTS OF THE REGIMENT.‡

The regiment marches to the front, to the rear, and to a flank (usually for short distances only, by wheeling into column by platoons), in the same manner as the escadron. It changes direction, when in column, by turning, by marching on a new objective, or by simply following in trace. Considerable changes of direction (i. e., those exceeding 45 degrees) require a different procedure when the regiment is in line or in line of escadrons in columns of platoons.

*For riding in this formation, see v. EDLSHEIM, *Über kriegsmässige Ausbildung usw.*, p. 174.

†*Revue de Cavalerie*, July 1908, l'Anarchie.

Line of platoons in columns of fours is called *le bloc* when the interval between platoons is 4 m., and *le carré* when that interval is 8 m. Intervals of from 12 to 16 m. are recommended for crossing difficult terrain, and intervals of 25 m., for crossing fire swept ground.

‡Pars. 135-169, German C. D. R.

When the regiment is in line of escadrons in columns of platoons, for example, and a considerable change of direction is to be executed, all the escadrons first change direction, those in rear of the first then moving by the shortest route to their new positions abreast of the leading escadron. (See plate p. 921). When the regiment is in line and a considerable change of direction is to be effected, the regiment first wheels into column of platoons and then executes front into line. Under certain circumstances, it may be advisable to have the escadron on the inner flank in line change direction at once, the other escadrons then moving by the shortest route to their proper positions in the new line.*

Deployments.

The regulations make a distinction between *development*,† *deployment*,‡ and *front into line*.§ The term *development* denotes the transition from route column to column of platoons, double column, or regimental column. The term *deployment* denotes the transition to line of escadrons in columns of platoons. The term *front into line* denotes the transition to line. The term *transition*¶ is used to designate all other changes of formation. Transitions to a broader formation are executed as a deployment, transitions to a narrower formation as a ployment. (Par. 45, German C. D. R.).

Changes of formation must likewise be capable of being executed while the march direction of the entire regiment is changed simultaneously therewith. For example, when the regiment is in double column or in regimental column, the leading element of the regiment executes a turn in the new direction; when the regiment is in any other

*In Austria changes of front are effected in a very awkward manner on fixed pivot when the regiment is in line of escadrons in columns of platoons.

†*Entfaltung*.

‡*Entwicklung*.

§*Aufmarsch*.

¶*Übergang*.

formation, the head of each escadron executes such a turn, the new formation being ordered, in either case, while the movement is in progress. The escadrons are then led by the shortest route to their proper positions. The guiding principle is, "*First determine the march direction, then the formation.*" (Par. 168, German C. D. R.).

In Russia, the 1st, 2d and 3d escadrons habitually place themselves to the right, the 4th, 5th and 6th habitually to the left of the leading element.

In France, when deployments and changes of formation are to be executed, the regimental commander, followed by the standard bearer, moves in the new direction for thirty paces and then orders the new formation. The escadrons then move by the shortest route, by obliquing, by partially changing direction, or by moving by the flank to their positions. When deploying preparatory to a charge, it is considered advisable to decrease the gait in order to obtain better cohesion.

Being in regimental column, or in double column, to form line of escadrons in columns of platoons: When the regiment is marching, the escadrons extend (in the reverse movement, they close) on the base escadron. When the regiment is halted (necessarily in a covered position, if the charging ground in front is limited), the escadrons on the right wheel to the right, those on the left to the left, by platoons, gain the necessary ground at the trot and wheel again to the front by platoons and move to their positions. The escadron on which this movement is executed moves forward a distance equal to platoon front plus six paces.

Being in column of platoons, to form line of escadrons in columns of platoons: The leading escadron rides forward sixty paces at the gait ordered and then comes down to the walk. Each of the other escadrons changes direction and moves to its proper place. (Par. 143, German C. D. R.). When this movement is to be executed so that, at its conclusion, all the rear escadrons will be on one side of the leading escadron, a special order to that effect must be given.

Being in column of platoons, to form line of escadrons in columns of platoons to a flank: Each escadron changes direction.

Being in route column, to form line of escadrons in columns of platoons: The leading escadron executes platoons front into line, each of the others changes direction, forms column of platoons and moves to its proper position.

(c) TRANSITIONS TO NARROWER FORMATIONS, AND PLOYMENTS.

Being in line, to form line of escadrons in columns of platoons: Each escadron forms column of platoons.

Being in line, to form double column or regimental column: The base escadron forms column of platoons, the others likewise form column of platoons and move to their proper places.

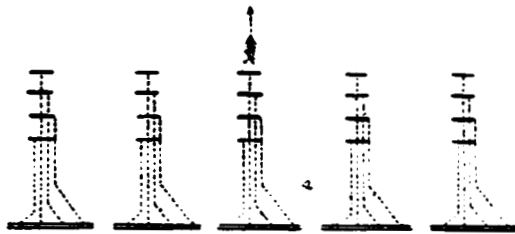
Being in line, to form column of platoons to a flank: The regiment wheels into column by platoons.

Being in line of escadrons in columns of platoons, to form column of platoons to a flank: The escadron on the flank toward which the movement is to be made wheels into line by platoons in the direction in which the column is to face and then forms column of platoons; the other escadrons conform to the movement.

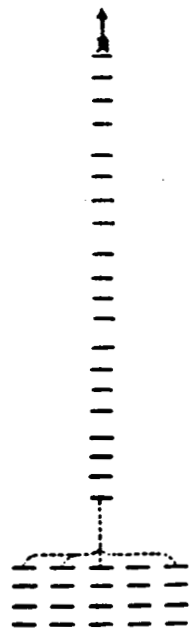
Being in line of escadrons in columns of platoons (or in double column), either at a halt or while marching, to form regimental column: The escadrons close in on the base escadron.

The transition from regimental column to double column and to column of platoons to the front or to a flank, is executed according to the principles already mentioned.

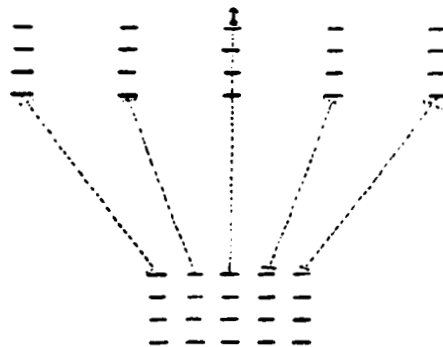
The Regiment Forming Line of Escadrons in Columns of Platoons from Line.



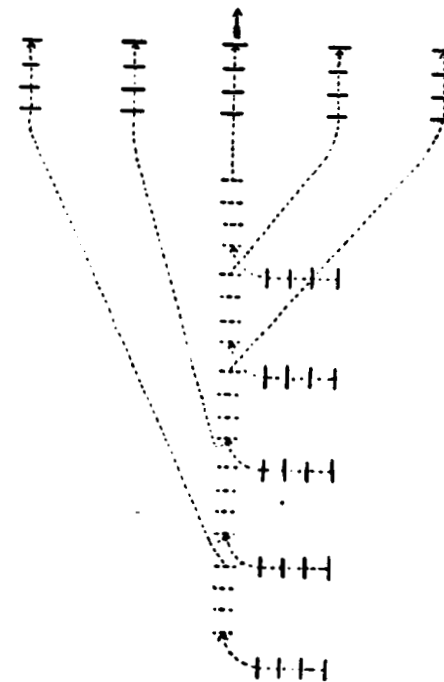
The Regiment Forming Column of Platoons from Regimental Column.



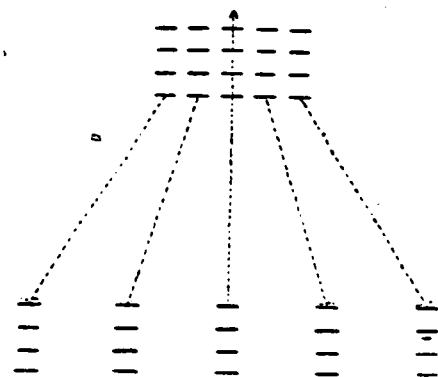
Transition from Regimental Column to Line of Escadrons in Columns of Platoons.



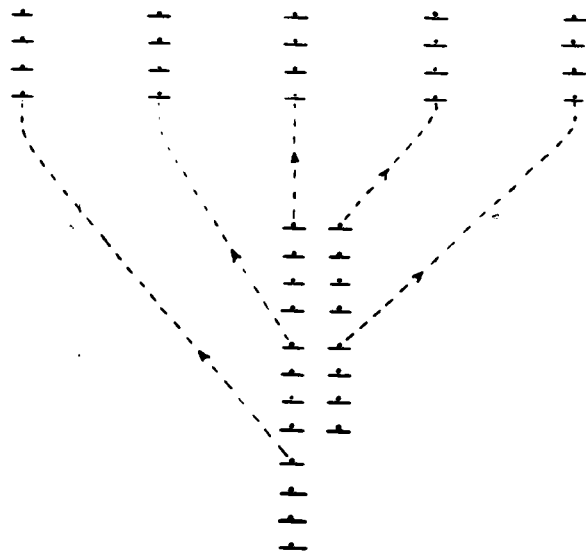
Example of a Considerable Change of Direction Effected by the Regiment while in Line of Escadrons in Columns of Platoons.



The Regiment Forming Regimental Column (while in motion) from Line of Escadrons in Columns of Platoons.

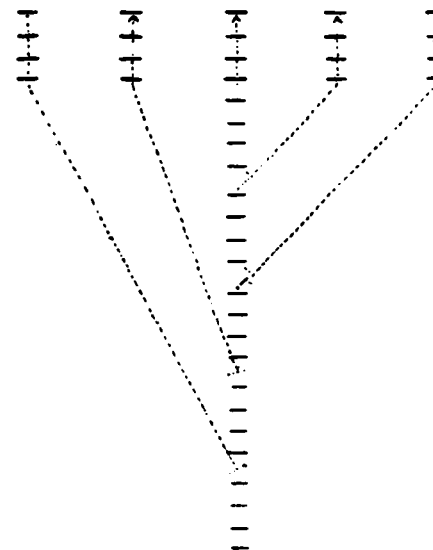


The Regiment Forming Line of Escadrons in Columns of Platoons from Double Column.



(d) MOVEMENTS IN COLUMN AND IN LINE OF COLUMNS.

Transition from Column of Platoons to Line of Escadrons in Columns of Platoons.



(e) TRANSITION TO LINE.

Line may be formed in the simplest and most orderly manner from line of escadrons in columns of platoons and from column of platoons, by executing front into line in the former case, and by wheeling into line in the latter. On account of the depth of the route column and of the column of platoons, the escadrons will frequently not be able to move out at once when the command front into line is given. The leading escadron forms front into line at once, each of the others changes direction and gains sufficient ground to the flank to enable it to execute front into line and to move straight to the front. In close proximity to the enemy, the

regiment, when in column of platoons, will frequently be able with advantage to change direction and to wheel into line by platoons.

Line is formed from line of escadrons in columns of platoons, by all the escadrons simultaneously executing front into line. When the regiment is halted, or when marching at the walk, this movement is executed at the trot; when marching at the trot, it is executed at the gallop; when marching at the gallop, it is executed at an accelerated gallop. As each escadron executes right and left front into line simultaneously, it may happen, when the intervals are too small, that the exterior platoons of two adjacent escadrons collide. (Par. 260, German C. D. R.). Being in line of escadrons in columns of platoons, to form line in an oblique direction: The escadrons first partially change direction, each then executes front into line, and moves to its place in the new line.

Front into line from regimental column* is not so very simple, if time and room are lacking for first forming line of escadrons in columns of platoons. It may, however, frequently become necessary to form line from regimental column.† Each escadron executes front into line separately,

*The regulations do not prescribe how front into line from regimental column is to be executed. General v. SCHMIDT, in his *Instruktionen*, p. 197, says: "It is of the utmost importance that as broad a front as possible be presented at once to the enemy, either in the direction in which the column is facing, or, after the leading element has changed direction, toward the objective." Execution: "The right and the left flank escadrons execute right front into line and left front into line, respectively, and then move out for the purpose of making a flank attack on the enemy. The escadron next in line on the right and the one next in line on the left then promptly execute right front into line and left front into line, respectively. In this manner, all the escadrons but the one in the center (if the regiment consists of five escadrons), are deployed."

†At Worth, the 13th Hussar Regiment, while in regimental column, wheeled about by platoons on sighting French cavalry, and charged directly from its position, as neither time nor room was available for forming line. The rear platoons moved out of the column and turned against the flank of the hostile cavalry. KUNZ, *Battleret*, p. 60.

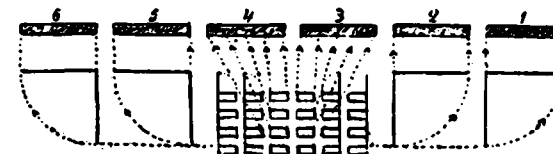
Two escadrons of the same regiment attacked French cavalry that was debouching in column from Gautier (Sedan). The leading platoons of the two escadrons mentioned, charged; the remaining six platoons moved to the rear to gain room, executed front into line and then charged in echelon formation from one flank. *Ibid.*, p. 198.

as follows: The base escadron, on which the extension is made, as soon as it has room for forming line; the other escadrons, as soon as, by changing direction, they have gained sufficient interval to the right and left front, respectively. Each one of these escadrons, as soon as it has formed line, then places itself abreast of the base escadron, whose subsequent conduct is determined by orders. This procedure is accurately adapted to that of the regulations. The certainty of its execution in a critical moment is assured because the deployment is effected in the same manner as if time had been available for first forming line of escadrons in columns of platoons and then executing front into line, except that in this procedure the several movements shade more closely into one another. If a special form of executing front into line were prescribed for this deployment, there would be danger of misunderstanding and of friction that might impair the success of the charge.

France: The right and left center escadrons execute right front into line and left front into line, respectively. The right and left flank escadrons gain the necessary deploying interval by changing direction, and then execute right front into line and left front into line, respectively.

Austria: The two center escadrons move forward a distance equal to the depth of the column and execute front into line. The remaining escadrons gain the necessary interval and each then executes right front into line or left front into line, as the case may be, depending upon whether it is to the right or to the left of the base escadron.

Russia: According to the Russian regulations, the flank escadrons wheel toward the outer flanks by platoons, each escadron then wheeling to the left or right, as the case may be, as soon as it has gained sufficient ground, and marching in line to its place. The right and the left center escadrons execute right front into line and left front into line, respectively. It will, at best, take considerable time to form a broad front in this manner.



(f) TIME REQUIRED FOR DEPLOYING.

Control of time and space is of prime importance to the leader when leading troops on the terrain. Prompt and correct recognition of the point where the collision with the hostile cavalry will take place, in many cases determines the mode of deployment, i. e., whether the deployment is to be made forward or by the flank. If by the flank, the leading element is halted. While the deployment forward, which includes covering part of the distance to the enemy, frequently contains the element of surprise, it always results in increasing the morale. One will choose this mode of deployment, if one may hope to encounter the enemy while he is still in the act of forming line. To halt the leading element and to deploy by the flank saves time, room and energy. The deployment by the flank will be used when unfavorable terrain is located in the immediate front; when one can compel the enemy to charge uphill, over very soft ground, or on difficult terrain; and when one desires to give one's artillery time to produce some effect. In respect to the feasibility of making evolutions in the presence of hostile cavalry, General v. Schmidt lays down the rule that the leader of the first line must be finished with all deployment by the time he has approached to within 500 paces of the enemy; that wheels to a flank by platoons can still be made at 600 paces; and that more extensive flank movements are possible at 1,000 paces.

A cavalry regiment, provided platoons consist of twelve files each, requires 80 seconds at the trot and 40 seconds at the gallop to form column of platoons from column of fours. When the units have to execute front into line successively, these figures are increased to 240 and 120 seconds, respectively. It takes 70 seconds at the trot and 50 seconds at the gallop to form line of escadrons in columns of platoons from column of platoons. To form line from line of escadrons in columns of platoons [each escadron executing front into line],

requires an additional 20 seconds, when executed at the trot, or 12-15 seconds, when executed at the gallop. It is thus evident that a cavalry regiment, in order to pass from route column to line toward the front, requires at the trot 170, at the gallop 105 seconds. When the escadrons successively form column of platoons (for example, on debouching from a defile), these figures are increased to 268 and 139 seconds, respectively. When signals are not used, the time consumed is still further increased by the escadron commanders' repeating commands. In 105 seconds, the hostile cavalry can cover 720 m., in 268 seconds, 1,750 m.

A knowledge of the time required for deploying will enable the leader to determine whether he has time enough to form line of escadrons in columns of platoons from column of platoons (i. e., whether he can deploy forward), or whether, in order to form line more quickly, he should have his leading element change direction and then have the whole force wheel into line by platoons. When platoons consist of sixteen files each, the regiment can form line of escadrons in columns of platoons from column of platoons in 70 seconds, the entire movement into line consuming 92 seconds (leading element at the trot). If we assume that, in addition, a space of 200 m. is required for fully developing speed for the charge, this mode of deployment should be used only if the two opposing forces are still at least 1,000 m. apart. For the leading element to change direction and for the platoons to wheel into line at the gallop requires about 60 seconds. This mode of deployment proceeds with considerably greater rapidity than the one first mentioned, and can still be employed when the enemy is from 600 to 1,000 m. away. A regiment that, while in column of platoons, encounters the enemy within 500 m., will not be able to count upon deploying all of its escadrons, but will be compelled to let them charge individually.

The time required for deploying may be computed as follows: If the leading element continues the march at the trot (300 paces per minute),

it will be overtaken by the last subdivision in x minutes, when the latter has covered 500 paces in x minutes. If we let l represent the depth of the column, we obtain the equation:

$$\begin{aligned} x \times 300 + l &= x \times 500 \\ l &= x(500 - 300) \\ x &= \frac{l}{500 - 300} \end{aligned}$$

In other words, the time, in minutes, required for deploying is equal to the depth of the column divided by the difference between the gait of the leading element and that of the rear subdivision. The result, to be sure, is but a rough approximation, which can have a conditional value only.

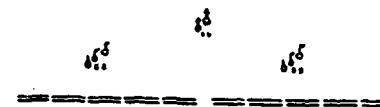
3. THE BRIGADE.*

The exercises of the brigade serve the purpose of training from two to three regiments for employment in one body as an independent tactical unit, and as an integral part of a cavalry division. The drill is concluded in the division. The importance of the brigade as a tactical unit has been enhanced by the employment of cavalry by wings (i. e., the tactical units abreast). The brigade will almost invariably be given an independent combat mission. The brigade commander, who will usually have ridden far in advance, will be able to communicate his intentions to his brigade only by means of bugle and visual signals and by means of orders transmitted through orderly officers.

When the brigade is in line, the regiments, each in line, are posted abreast of each other with an interval of fifteen paces between them. When the brigade is in column, the regiments are either abreast or in rear of each other. The following are the formations of the brigade:

*Pars. 180-202, German C. D. R.

The brigade in line;—in line of escadrons in



Brigade
in Regi-
mental
Columns.



Brigade
in
Double
Column
of
Platoons.



columns of platoons;—in brigade column (the regiments, each in regimental column, abreast with an interval of 15 paces between them);*—in regimental columns (the regiments, each in regimental column, in rear of one another at a distance of 30 paces);†—in double column (the regiments, each in double column, in rear of one another). The employment of the double column, the regiments in rear of one another, appears to be particularly profitable when, in charging infantry, two successive lines are to be formed toward a flank. The brigade may likewise be formed in double (or treble) column of platoons [the regiments, each in column of platoons, abreast of one another]. The brigade column, the brigade in regimental columns, the double column, or the double column of platoons should be used for assembly. These formations do not permit deployment with sufficient ease to make them suitable for movements under hostile fire and when an encounter with hostile cavalry is imminent. The double column may frequently be employed preparatory to a charge against infantry. In other cases, the leader will apply par. 192, German C.

*General v. BERNHARDI, says: "..... This is the popular and favored maneuver formation of all cavalymen of the oldest pattern. It should, of course, not be allowed to appear on the battlefield at all. It might profitably be replaced by the line of regiments in double columns at deploying intervals."

†When regiments consist of four escadrons each, it is possible to wheel into line toward a flank—this, to be sure, only at the expense of the interval between the regiments.

D. R., which states: "Moreover, the brigade commander is not debarred from grouping the regiments (each in some formation prescribed for it), in such a manner at any time, as, in his opinion, the situation and his intentions require." This means that the brigade is to be led forward according to the terrain and the purpose of the action. For example, the regiments may be formed in regimental columns or in double columns with deploying interval between them, either on the same line or in echelon, abreast of each other. The regiment on the left flank of the brigade is designated as the base regiment, or some unit is directed to maintain contact. All the others conform to it in their movements and measures.

The brigade may, in addition, be formed in column of platoons (with platoon distance plus 15 paces between regiments), and in route column (with twenty paces distance between regiments).

Deployments. (Par. 195, German C. D. R.).

When the regiments are abreast of one another without deploying interval, they deploy right front into line and left front into line respectively. When they are abreast with deploying interval between them, each regiment deploys as if alone, i. e., each regiment deploys by executing, simultaneously, right and left front into line.

When the regiments are in rear of one another—the brigade in regimental columns, or in double column—the leading regiment deploys left front into line, the rear regiment right front into line.

Transitions. (Par. 196, German C. D. R.).

"A. Transitions within the regiments, without change in their relative positions:

"(a) When the regiments are in rear of one another and retain their relative positions:

"Ployment: Transition to narrower front:	1. From brigade in regimental columns to double column;	The rear regiment halts until disengaged.
	2. From brigade in regimental columns to column of platoons;	
	3. From double column to column of platoons;	
"Deployment: Transition to broader front:	4. From column of platoons to double column;	All these transitions are executed as prescribed for a regiment acting alone.
	5. From column of platoons to brigade in regimental columns;	
	6. From double column to brigade in regimental columns;	

"(b) When the regiments are abreast of one another and retain their relative positions:

"Ployment: Transition to narrower front:	1. From line to brigade column;	The base regiment forms on its base escadron. The regiment on the right, in order to reduce the distance to be traversed by it, may form on its inner flank-escadron, at the command of its regimental commander, and then, if necessary, move abreast of the base regiment.*
	2. From line to double column of platoons;	
	3. From line of escadrons in columns of platoons to brigade column;	
	4. From line of escadrons in columns of platoons to double column of platoons;	
	5. From brigade column to double column of platoons;	

*"The new formation would, in the above cases, be taken up more expeditiously, if the base regiment would likewise form on its inner flank-escadron. This, however, would mean the abrogation of the principle laid down for the base regiment. No sound reason existed for doing this, in view of the advantages of uniform principles and the insignificant increase in the distance traversed by the base regiment when moving as laid down above." V. UNGER.

"Deployment:
Transition
to broader
front:

6. From double column of platoons to brigade column;

The right regiment forms to the right front, the left regiment to the left front.

"(c) When the regiments are abreast of one another at deploying interval* and retain their relative positions:

"Each regiment executes the transition within itself, as prescribed for a regiment acting alone.

"B. Transitions that change the relative positions of the regiments, one to the other.

"(a) When the regiments are in rear of one another and move so as to come abreast of one another:

"Deployment:
Transition
to broader
front:

1. From brigade in regimental columns to brigade column;
2. From double column to brigade column;
3. From column of platoons to brigade column;

The rear regiment moves to the right front and forms on the right of the leading regiment;

The leading regiment forms to the left front, on its leading escadron; the rear regiment moves to the right front and forms to the right front on its leading escadron.

*Par. 192, German C. D. R.

"(b) When the regiments are abreast of one another and move so as to come in rear of one another:

1. From brigade column to brigade in regimental columns;
2. From brigade column to double column;
3. From brigade column to column of platoons;

The base regiment moves out (and ploys) first, the rear regiment conforming to the movement as soon as disengaged. Until disengaged, the rear regiment halts, as otherwise the transition would consume too much time.

"Route columns have not been considered. Neither is a discussion given of the transition from line to line of escadrons in columns of platoons, nor from the latter formation to line of double columns at deploying interval, as no change takes place."*

Foreign cavalry drill regulations prescribe, in the main, the same formations. It does not seem necessary to prescribe specially the formation in which the regiments are abreast with deploying interval between them, as is done, for example, in France and Italy. The German deployment into line of escadrons in columns of platoons from brigade column, on the center (i. e., on the first escadron of of the left regiment), proceeds more rapidly than if the regiments, each being in regimental column, were first to extend to deploying intervals and then to form line of escadrons in columns of platoons.

It takes about four minutes to form column of platoons from column of fours and eight minutes to execute the same movement from column of twos, when the platoons simul-

*Supplements Nos. 4 and 5 to Militär-Wochenblatt, 1909, p. 179.

taneously execute front into line (their leading elements coming down to the walk). For the brigade to pass at the gallop from column of platoons (each platoon consisting of sixteen files) to line consumes at least four or five minutes when signals are used. The time consumed is considerably increased, due to the repetition of commands, when the movement is executed by command.

General v. Verdy computes that a brigade with a horse battery requires 7 minutes at the trot and 4 minutes at the gallop to deploy from column of threes into two lines; that a second brigade (with a horse battery) following the first in like formation, requires 14 minutes at the trot and 8½ minutes at the gallop for this purpose. •

4. THE CAVALRY DIVISION AND THE CAVALRY CORPS.†

The division consists, as a rule, of three cavalry brigades, one battalion of horse artillery with light ammunition column, one machine gun battery and one pioneer detachment.

It may become necessary, during the operations as well as on the battlefield, to combine several divisions into a cavalry corps. The depth of an army corps in route column requires that, in approaching the battlefield, each division, at least, be assigned a separate road.

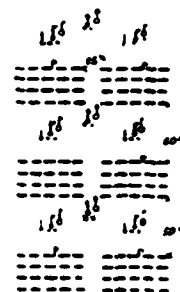
No fixed formations are prescribed for a cavalry division. The division commander, by making proper disposition of the tactical units, forms his division in each case according to the end in view.

*Studien über Truppenführung. Die Kavalleriedivision. I. p. 100

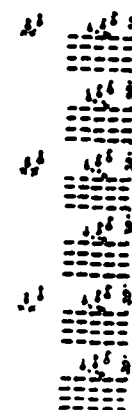
†Para. 203-221, German C. D. R

Assembly Formations.

Division in
Brigade
Columns.



Division in
Regimental
Columns.



The choice of an assembly formation is governed by the extent of the available room. When the available space is very deep, and especially when the division is about to begin a march in close formation, it will frequently be a good plan to use the treble column of platoons (the brigades, each in column of platoons, abreast of each other at intervals of 15 paces). When the division is in regimental columns, the regiments are in rear of one another at a distance of 30

paces. The space required by the division in this formation, when the horse batteries and the pioneer detachment are not present, is about 65 m. wide and 400 m. deep. When the division is in brigade columns, the brigade columns are in rear of one another at a distance of 50 paces. When in this formation, the division requires a space 140 × 200 m.

On the battlefield, the formation of the division depends upon the situation and the terrain. The formation in groups enhances readiness for combat and, under certain circumstances, reduces losses. So long as the subdivisions of the division march in rear of one another, the rear subdivisions conform to the formation and gait of the leading subdivisions without specific orders to that effect. The greater the depth of the division, the greater the importance of keeping it in uninterrupted motion by maintaining a uniform cadence and by other requisite measures, and of preventing elongation of the column. The leading

unit follows the division commander until a march direction is assigned to it. An officer of the leading brigade (after the development, an officer of the base brigade) must be permanently charged to keep the division staff in view.

The deployment of the division will generally be preceded by a development, i. e., the passage from column to a formation of broader front. When the division commander desires to develop the division (from route column or some assembly formation), he designates (in a development order) the brigade on which the development is to be made, as the base brigade and indicates its march direction. In this case, the brigades may be posted either abreast, on the same line, or in echelon. Intervals and distances are regulated by orders. Artillery and machine guns should be posted where their subsequent employment is most probable. When a change of direction is to be effected, the division commander indicates to the base brigade the new march direction, to which the others must conform by the shortest route. When haste is not necessary, the base brigade may decrease the cadence. The relative positions of the brigades to each other remain unchanged unless otherwise ordered. When more extended changes of front, for example to the right or left, become necessary, another formation is usually taken up.

The brigade commanders independently choose the formations in which their brigades are to move, being governed, in so doing, by the following considerations:

Utilization of accidents of the ground as cover;

Employment of formations that minimize the effect of the hostile fire; and

Degree of readiness for combat according to the distance to the enemy.

In the deployment, the brigade commanders independently make the necessary dispositions for distribution in depth and for flank protection.

5. COMPARISON BETWEEN LINE AND COLUMN.

The line is the only combat formation in which cavalry can charge in close order. In case of necessity only, when cavalry is surprised and can not form line in time, is a charge in column conceivable. The success of a charge depends upon the force of the shock (cohesion and speed) and upon the use of the *arme blanche*. The speed that is in the horses can be brought out in line only. Line only, permits all available sabers and lances to be employed.

On November 30th, 1808, the escadron of Polish Lancers detailed as Emperor Napoleon's body guard, and the remainder of that regiment charged in column of fours up the pass of **Somma Sierra** under cover of the morning fog and powder smoke, rode down the Spanish infantry and captured 4 batteries, posted in tiers, with 15 guns. The Lancers lost 6 officers and 80 men out of an effective strength of 7 officers and 150 men.*

At **Dembe Wielki**, March 31st, 1831, when the Russians had already made dispositions for the retreat, 12 Polish escadrons charged in column of sixes along the *chaussee* embankment under cover of darkness. They captured 4 guns, dispersed Russian infantry and repulsed a counter-attack made by Russian cavalry.

The charge at **Meslay** (engagement at **Monnai**, December 20th, 1870): See p. 165, *infra*.

Cavalry should never allow itself to be charged while standing still, for it would be crushed by the force of the shock. A charge in column is but a makeshift, since an equally strong and efficient cavalry force in line would be superior to the former on account of its formation alone.

During the battle of **Balaklava**, October 25th, 1854, a Russian cavalry mass under General Ryow and consisting of 2900 men formed in a single column, was thrown back by six weak English escadrons under General Scarlett. The English escadrons charged the front and flanks of the Russian column, the latter receiving the charge while halted. †

**Kavalleristische Monatshefte*, December number 1908.

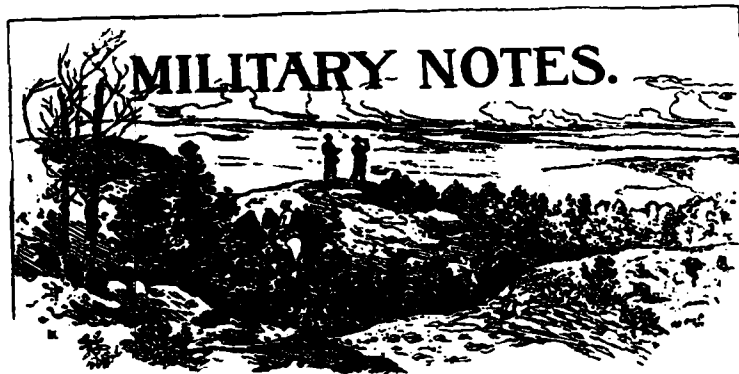
†*KINGLAKE, Invasion of the Crimea*, VII, p. 180.

The principle enunciated is directly responsible for the demand made on the cavalry for great mobility. But mobility is possessed neither by the line nor by the line of columns. This is due to the fact that changes of direction in these formations are awkward movements and that passable ground along the entire front is to be found only here and there for distances of any length. For this reason, the cavalry needs the column as a maneuvering formation. The column has the advantage of greater mobility in all directions than the line. It can change front and march direction more easily and can take advantage of accidents of the ground better than can the line. Moreover, it permits line to be formed quickly either to the front or to a flank. The column, in addition to possessing great mobility, must permit line to be formed in the quickest and simplest manner. This is the standard that determines the usefulness of the various columns on the battlefield.

The deficient maneuvering capacity of the French cavalry at the beginning of this century, compelled the French to hold it together in dense masses, and was responsible for the introduction of the charge in column. "The principal foes of the column are disorder and unwieldiness, which are caused by the leaders' losing almost all influence over their units as soon as the column is moving at a fast gait. This disorder is augmented by dust and by natural obstacles. No one sees where he is going; an evasion of obstacles is not to be thought of; bullets drop into the column; here and there a horse and trooper break down, the others must press on over their bodies; the voice of the leaders and even the blast of the trumpet is lost in the thunder of hoof-beats, the rattle of arms, the roar of hostile guns; the column becomes a mob, which, at best, if crowded together, rushes along like a mass of wild horses. It may ride down, it is true, whatever is opposed to it, but nothing more, and no one can tell what will subsequently become of it. If, therefore, the enemy avoids the direct onslaught and falls upon the flank and rear of this unwieldy mob, from which all order and leadership have parted, the combat is bound to end with the defeat of the column." *

*V. GRIESHEIM, *Taktik*, p. 309.

The line has another pronounced advantage over a column of equal strength—that of greater front, which enables the overlapping portions to envelop the enemy and to attack him at his weakest point, his flank. The line, however, has the disadvantage that its flanks are weak and require special protection (echelons posted in rear of the flanks) and that the danger of being pierced increases with its length (making supporting escadrons necessary). Cavalry that is charged in flank is just as sure to be defeated as cavalry that awaits the enemy's charge. In either case the counter-attack is wanting. As the flanks of infantry and artillery are likewise better objectives for a charge than the firing fronts, the efforts of the cavalry should always be directed toward gaining the exposed flank of the enemy. In doing this, however, the cavalry must take care that its own flanks are not exposed to hostile attack.



SINGLE OR DOUBLE RANK.

IN your issue for November, 1911, on page 562, occurs the following statement by Major H. T. Allen, General Staff U. S. Army: "It is extraordinary that the majority of our officers think that our present organization was the result of war experiences." While Major Allen does not make the statement that our single rank formation is not the result of our Civil War experience, this is the conclusion that I draw from the above statement.

Now I am not in a position to compile as much evidence on this question as is Major Allen, but so far as I have been able to investigate the subject, I arrive at the conclusion that it is extraordinary for any officer to think that the single rank formation is not the result of our Civil War experience. It is not necessary to prove that the cavalry of the eastern armies, both north and south, used the double rank. Almost everybody knows that the double rank was used by both of these armies all through the war.

Lieut. Col. H. M. Kendall, Soldiers Home, Washington, D. C., is my authority for the statement that the regular cavalry continued to use it till 1866 and General T. F. Rodenbough, Governors Island, N. Y., for the statement that it was used till 1867. General Adna R. Chaffee says that the single rank was used by the eastern cavalry when much depleted in strength.

The western armies must be considered separately. In the South, Morgan began to use the single rank from the beginning of the war and never used the double rank.

Forrest began to use the single rank soon after the beginning of the war and never returned to the double rank. But Forrest's cavalry must be regarded as the highest type of mounted infantry which resorted to shock action only on rare occasions.

Wheeler's cavalry began to use the single rank in 1863, (*Campaigns of Wheeler and His Cavalry*, p. 375). He wrote a set of Cavalry Tactics based on single rank, which were officially adopted by the Army of the Tennessee in G. O. 22, dated Dalton, Ga., February 17, 1864. In my humble opinion Wheeler had very few superiors as a cavalry leader.

In the northern armies of the west, Cooke's Tactics came into general use in the fall of 1864 and was used by the cavalry commanded by General James F. Wilson in his famous Selma raid in 1865. Although General Wilson reviewed this cavalry corps in double rank, this fact did not prevent the habitual use of single rank during the campaign. In a letter to me dated October 2, 1909, General Wilson says: "I should say, however, that up to the time I organized the Cavalry Corps, Military Division of the Mississippi, the Cooke Tactics were the standard tactics in use." He also says: "Of course Upton, who commanded my fourth Division, was my constant companion and advisor, and, as you well know, the service contained no abler tactician than he."

General Wirt Davis served with the Fourth U. S. Cavalry in the west during the entire war. He says: "In the spring of 1865 Upton drilled his division in single rank. All cavalry in the western army used single rank during Wilson's Selma raid."

Mr. E. N. Gilpin, who lives at 1429 Girard St., N. W. Washington, D. C., served with a regiment of Iowa cavalry all through the war. He says: "There was no uniformity in different commands as to single or double rank. First of all was the double rank. In the fall of 1864, the single rank began to be used. In the spring of 1865, during the Selma raid, all regiments used single rank tactics."

General Wilson dealt with big matters and such matters as instruction was left entirely to his subordinates of which Upton was the chief. I believe all modern students will agree with General Wilson as to General Upton's ability as a tactician; but as I am dealing with the evolution of the single rank, I will consider Upton's Tactics later.

Cooke's Tactics were written by Colonel Philip St. George Cooke and officially adopted by War Department order November 1, 1861, and were published in 1862. Cooke acknowledges getting his ideas from conversations with Captain George B. McClellan who had just returned from the Crimean War and who had made a minute study of the cavalry of all foreign armies. On page 278 of his report McClellan recommends the use of single rank for our cavalry. Most of Cooke's Civil War experience was with western armies. After his war experience, he adhered to the single rank when rewriting his Cavalry Tactics in 1883. General W. Merritt reviewed these tactics and highly commended them. As a cavalry leader, the war, in my opinion, produced no superior to Wesley Merritt.

Upton's Tactics were written after his war experience both with the eastern armies where the double rank was used, and with the western armies where the single rank was used. In his tactics he adopted the single rank. Why? Surely not to make it assimilate with his infantry tactics. If this had been his object, he would have prescribed the double rank since the infantry always has used it. He must have adopted it because it gave greater rapidity of movement and celerity of formation after the shock.

At the time when the single rank was adopted in our service, the use of both single and double rank in the Civil War was fresh in the minds of all prominent leaders. There were still living most of them, and if they did not actively advo-

cate the change, they at least must have acquiesced in it. I assume that all cavalry officers were as much interested in the future of the cavalry service, at that time as they are at present, and it is inconceivable that they should quietly sit down and allow the single rank to be imposed on the cavalry service if they did not feel that it was for the best. "*There were giants in those days.*"

Now the whole question of single or double rank is boiled down to this: Was it an evolution of the Civil War? If it was, then we should stick to it regardless of what may be the customs abroad or what may be the opinion of any European authority. In looking for opinions we should not go to such men as Wilson and Sheridan who only handled cavalry in large operation. We should go to such men as Wheeler, Forrest Upton and Cooke who made this matter a special study, and to such men as Merritt, Custer, Kilpatrick and others who were always found in the thick of the fray.

I hope the CAVALRY JOURNAL will not let this matter rest but will thrash it out for the benefit of the cavalry service.

The following list of officers were furnished me by General Wilson. Letters should be addressed to them asking if, in their opinion, the single rank resulted from our Civil War experience?

Colonel E. B. Beaumont, U. S. A., retired, Wilkesbarre, Pa.; General Henry E. Noyes, U. S. A., retired, Berkeley, Cal.; Major L. M. Hosea, Cincinnati, O.; General E. F. Winslow, Fourth Iowa cavalry, 28 Rue de Madrid, Paris, France; General John W. Noble, Third Iowa Cavalry, St. Louis, Mo.; General Smith D. Atkins, who commanded one of Kilpatrick's brigades, Freeport, Ill.; Colonel Julian G. Dickinson, Adj. Fourth Michigan Cavalry, 46 Newbery Bldg., Detroit, Mich.; General O. H. La Grange, Colonel Wisconsin Cavalry, Old Soldiers Home, California.

Besides these, there are dozens of men now living who went through the war in the cavalry service. All cavalry officers should inquire of any of these officers who happen to be located conveniently asking the question. "Did the single rank result from our Civil War experience?" and send the result of their investigations to the CAVALRY JOURNAL to be compiled.

If the consensus of opinion is that it did, then to my mind the question is settled in favor of retaining it, if it did not so result, then there may be some reason for going back to the drill regulations of Frederick the Great.

ALONZO GRAY,
Major of Cavalry.

DOUBLE OR SINGLE RANK.

DOUBLE rank was pre-eminently the formation of the Civil War. This is attested by the distinguished living officers of that war: Wilson, Gregg, Young and Rodenbough and by the present Assistant Secretary of War. It is provided for in Scott's tactics in 1826 and in Poinsett's (Secretary of War from 1837 to 1841) in 1841, 1855, 1861 and 1864, and it was likewise set forth in full in General McClellan's instructions for cavalry in the field in 1862. From 1841 to 1864, and for a number of years after the close of the war, the authorized regiment had five troops of ninety-six men each in ranks. The policy then of having no squadron (battalion) distances nor intervals was precisely what is now advocated. It would, therefore, seem that the regiment with five big troops in double rank without squadron (battalion) intervals and distances is fully entitled to be classed as *American*.

1. After the war there was only Indian warfare and this necessitated a wholly different use of cavalry from that demanded by war with nations in arms. For Indian warfare alone there was absolutely no reason for double rank, nor for many of the demands made on modern cavalry. That condition of affairs has changed.

2. The proposed regiment has not to exceed half the number of units of the present one, and it is handled almost exactly as is one of the three semi-independent parts into which the present regiment is subdivided; it is, therefore, clear that in general its handling must be far simpler than the present one. Ex-

perience fully confirms that. For militia and volunteer troops this advantage would be inestimable. The more experienced men in the front rank are valuable guides for the raw men in the rear rank. The inexperienced colonel would command one very large squadron instead of three small ones, assuming that the number of sabers in each case are the same.

3. Any portion of the earth's surface as large as a great State possesses practically all varieties of terrain. Whatever organization be adopted, it must have sufficient adaptability to permit its effective handling in all kinds of country. Contrasts of terrain exist in Europe as with us. Contrast for example the Alpine region with the plains of northern Europe the Balkan countries with the vast level expanse of much of Russia, the Virginia wilderness with the greater part of our country, especially those parts contiguous to our northern and southern boundaries. Single rank should not be abolished. When troops become greatly decimated, double rank would be useless.

In connection with the subject of terrain, too great importance can hardly be attached to the facility and quickness with which the compact regiment may profit by the accidents of the ground for securing cover.

4. Experiments thus far have demonstrated the great readiness with which troops in double rank may be dismounted from practically any formation. To quickly seize and hold a given position on foot the advantage of this compact organization is manifest. The sum of the distances travelled by the dismounted troops in the proposed regiment is considerably less than in the case of the present regiment, and the time is decidedly significant. In general, the advantages of having the command well in hand are especially noteworthy for fighting on foot.

5. From well grounded information, it may be said that neither Europeans nor South Americans, nor Asiatics, have seriously contemplated adopting our present organization. Moreover, it is difficult to understand why one organization having relatively a greater number of field officers and a greater number of company officers should be relatively cheaper than another having a lesser number of each.

6. Under the proposed organization, majors would have fully as much or more command than at present, though in the field they would, as a rule, be less separated from the colonel and other elements of the regiment than at present. The close relation of the field officers to each other and the troop commanders is one of the great advantages of the proposed regiment. It avoids the squadron distances and intervals now so baneful to regimental mobility. Instead of having four small troops the majors would have three large ones. Their administration and control need not be in any degree different from what it is at present. As to numbers, the major's command should be increased, and as to administrative importance it would remain practically as at present. Majors would, therefore, gain by the proposed change.

In summing up the essentials to be considered in any cavalry reorganization, it is fundamentally important to give the captain a command worthy of his grade, and then to determine how many such commands a colonel can effectively handle, both mounted and dismounted. The lieutenant colonel's duties would be the same as at present, and similar to those of lieutenant colonels in all branches. Each major would have half of the total number of troops determined upon.

The advantage of large troops, both in economy of men detached from the combatant force and in the great saving in constructions of barracks, stables, blacksmith shops, kitchens, streets, sewers, etc., would be enormous.

It is unfortunate that where the trials have been made up to the present time few regiments have been able to form more than four large troops and in no case has it been practicable to maneuver more than one regiment at a given station.

Finally, if we are to consider our cavalry in its proper relation to modern warfare, on a scale that would actually take place, we must also experiment with organizations larger than a regiment. In these experiments as in all others, we should not lose sight of the fact that the standard of American cavalry for mounted action should be at least as high as that of any foreign cavalry; and for dismounted action, it should be at least equal to any foot troops man for man.

HENRY T. ALLEN,
Major, General Staff, U. S. Army.

OUR CAVALRY DRILL REGULATIONS.

REGIMENTAL DRILL.

OUR present cavalry drill regulations seem to have been drawn up with the idea that the cavalry regiment shall have as little mobility as possible. As these regulations were promulgated years ago, only minor revisions having since been made, it is easily understood that the officers constituting the board were acquainted only with small posts and small garrisons, the latter seldom exceeding three or four troops at the best. Hence the idea of the board was that of carrying into regimental drill the systems of troop and squadron drill. But since the formation of new and larger posts, it becomes plain that the detailed formations of small units are not at all applicable to large bodies. Hence our regiments are so handicapped by drill regulations that instead of being mobile bodies they are singularly immobile.

As soon as our officers began to see regimental drill and spend part of the year's instruction on this drill it became apparent to them that the line formation had no place or use on the drill field. If a regimental commander now gets his regiment into line while drilling he should be at once ordered before a retiring board on the ground of eminent inaptitude and remarkable incompetency. There is as little use in forming a regiment of cavalry in line as putting a brigade of infantry into that formation. Consequently the column of fours should seldom be seen on the drill field. This is a marching formation and cannot be dispensed with quite so completely as the formation in line, but it might be eliminated from the drill field proper.

The line formation should be dropped from the drill book. Its danger is more than enough to overcome its occasional use in a street parade when the column of fours is formed into line to a flank for the passing of some local mogul in white hat and red sash. Its danger lies in this: We are rapidly approaching a time when our regimental commanders will be men of about sixty years of age. At that age they will be most likely to con-

tent themselves, when at regimental drill, with forming the regiment in line, wheeling by fours and then giving front into line. As the regimental front will be between one-half and three-quarters of a mile long the forming into line from column of fours will take some ten to fifteen minutes, considering the dressing, accurate alignment, etc. Follow this with the same movement to the opposite flank and then fifteen minutes rest and one or two repetitions of the same thing and we have our regimental drill hour gone. In such a drill there is less instruction in the real work of our profession than there would have been in leaving the command in barracks to play checkers or some other game requiring a modicum of sense.

The only formations suitable for rapid regimental work are the mass and platoon column formations. The latter is formation for mounted action (if ever we have any) while the former is for rapid marching close to the scene of action and dismounting for action with the rifle. Yet when we turn to our regulation we find no provisions for passing from one of these formations to the other. The most important, in fact the only important regimental formations and yet no means of getting directly into one from the other. Today if a regimental commander wishes to have his regiment prepared for modern war conditions he must drill his regiment in rapidly passing from mass formations to platoon column formations and vice versa. Yet he is prohibited from such drill by the statement in the drill book that all exercises not embraced in the drill regulations are prohibited.

If our present regulations were elastic and regimental commanders were familiar with mass and platoon formations we should find that there would be no need of changing our organization or even of the double rank formation. The mass and platoon column formations offer opportunity to the capable colonel that is not handicapped by many of the disadvantages of double rank. Familiarity with these formations will allow us to out maneuver most other cavalry organizations and the greater number of men in our organization will then assure victory. Leave the present organization alone and change the regimental drill. Of course there is little objection to introducing the double rank if any one desires it, but

with a proper appreciation of what can be done with mass and platoon column formations there is no need of the double rank.

The best way to change the regimental drill is to eliminate the commands as laid down in the drill book. Give a list of formations that may be used and then, something in the nature of the language of the drill book under *The Division*, say—"The orders of the colonel are communicated through staff officers or otherwise."

In the above, the line formations referred to are those as used in the drill book, not line of columns but the extended line. When we go to the brigade we find the same idea, that of forming the brigade in line. Nothing could be more absurd than the idea that the brigade will ever form line by drill commands as laid down. Who can conceive of any occasion arising where two or more regiments will be formed in line and then leave interval for the battery of horse artillery? The only statement necessary under the heading "The Brigade" is the first part of paragraph 813: "The drill exercises should be limited to movements used in campaigns." Paragraphs 815 to 827, inclusive, are useless, as well as 809 to 812, inclusive.

LOONEY TROOPER.

FORAGE AND FEEDING.

IN the January number of the U. S. CAVALRY JOURNAL is a very good and instructive article on "Forage" by Veterinarian G. E. Griffin, Third Field Artillery.

There are some points, however, on which, I should like to make a few comments:

On page 632, he begins to discuss corn as a horse feed, but although he has apparently had considerable to do with the feeding of corn, he does not give the particulars.

In my own practical experience, for I lived on a farm till I was twenty-two, we used ear corn very extensively for feed-

ing horses. Our horses were about the size and weight of the Light Artillery horses. As they were used both for draft and driving purposes, their work was also of a somewhat similar nature.

During the period of hard work in the spring, we fed oats largely, but varied this with an occasional feed of corn when a horse lost his appetite with the heat and fatigue. We also followed the same practice during the extreme heat in summer, on account of the heating character of corn as a food. When the work slacked up we returned to corn to keep the horses in flesh. In winter we fed corn almost entirely and supplied the protein element of their ration with the leavings of the clover hay from the cattle feed racks. The proverbial quality of oats to produce high spirits also led us to feed corn. A fractious horse is an abomination on a farm and many troop commanders find the same in their own corrals. With a ration of corn, and with that frequently reduced in winter time the horse received enough heat producing material to keep them in good shape.

I do not agree with Veterinarian Griffin that "Corn is indigestible for any horse." I have seen it fed year after year and the horses keep in proper condition. Very little undigested corn passed through any of our horses except in the cases of certain animals which we knew were greedy and given to bolting their grain. I have seen farmers put one or two rocks the size of a man's fist in the feed box to make the horse hunt for each mouthful and keep him munching all the while.

Here at Fort Sheridan just now, January 31, 1912, the roads have been slippery with snow and ice for a month and will continue so for about another month longer. Not a cavalry horse has been on the road all this time. Just the same the ration of oats is fed and the restless, chilly horses "take it out" on each other in the corrals, while if they were fed corn they would be better warmed and less excited.

I am inclined to take issue with Veterinarian Griffin's informant on paragraph 4, page 632. There is no animal of which I know of that digests corn so thoroughly as does the hog. In the corn belt, hogs are regularly allowed to run with

steers that are being fattened on corn and are confined to a feed yard. They will live high and keep in good health on what passes through the cattle. The story that hogs will feed on each others droppings is preposterous. No live stock are so neat in that matter as hogs, for they always deposit their droppings in one corner of their pen and carefully avoid that place.

I most heartily agree in condemning the practice of feeding only twice a day. The remarks on "Feeding," on pages 648 and 649 should be read and considered carefully. It is very probable that our practice on the farm of watering before feeding and of feeding three times a day was the reason for so little corn passing through the horses undigested, since Veterinarian Griffin complains so bitterly of the present army system of feeding being the cause of the presence of so much whole grain in the horses' droppings.

W. G. LANG WILL,

Second Lieutenant 27th Infantry.

Bachelor of Scientific Agriculture, Iowa State College, 1908.

FIGHTING ON FOOT.

REGARDING fighting on foot by cavalry of other States, I beg to invite your attention to the following taken from a very interesting report of Captain Scott, 5th Field Artillery, concerning the German maneuvers of last year.:

"Great attention was paid to patrol work and apparently none to spectacular attempts. The infantry were not slow to say that the cavalry are really mounted infantry. The cavalry say they are much superior to mounted infantry, but admit that they depend more than ever before on dismounted fire action. The tendency in this direction was well shown on one occasion. The Red cavalry division got on the flank of the Blue right column, unobserved, and attacked from less than 1,000 yards with eighteen guns and ten dismounted squadrons. The remaining five squadrons remained mounted

as a reserve. It was a complete surprise to the blues. A better opportunity for a mounted attack could not have been desired. However, the attack as carried out was fully approved by higher authorities. Some hours later this division found itself on the flank of the victorious Blues, who were on the point of carrying the Red position. It looked like that the psychological moment one reads about, and there seemed nothing to prevent, but again ten squadrons dismounted and advanced to the attack. The halt sounded before their attack was well organized, and the exercise ended. Not much doubt as to the conduct of the German cavalry in the next war."

Under the head of "*Patrolling*" he states as follows concerning the rising at the trot:

"Cavalry patrols were numerous and energetic, and covered great distances with remarkably little detriment to their horses. This was largely due to never going faster than a trot, unless in an emergency, and to patient, steady work with no attempt at hurry or dash. I am also inclined to think that rising at the trot is after all, a good thing, and conducive to sparing both horse and man. On one day I made forty-five miles myself, over all sorts of country, ending in such good shape that I was greatly surprised when I learned what distance had been covered. I am perfectly satisfied with the McClellan saddle and close seat neither would have been in such good condition."

X.

THE ELLIS SELF SCORING TARGET.

AT the School of Musketry, Presidio of Monterey, there has recently been tested a self scoring target, invented by Lieutenant Commander Mark St. Clair Ellis, U. S. Navy, the merits of which are established.

This target, as shown in the photograph, consists of a base on which is mounted the shuttle board; a spindle project-

ing through the center of the shuttle board; a series of designating plates or segments held rigidly in position by powerful radial springs which project from the center spindle; and a number of shuttles which are mounted on the shuttle board behind the segments, and which act as the circuit closing agency. These shuttles which are simply brass rods protected from the



THE SELF SCORING TARGET.

"splash" of the bullets by armored tubes, are held perpendicularly against the rear faces of the designating plates by spiral springs. The shock caused by the impact of the bullet on one of these plates is absorbed by its radial spring and the shuttle is driven backward where it closes the circuit by passing between brass wipers. This causes the drop on the annunciator corresponding to the segment struck to fall. The shuttle

is returned to its normal position by its spiral spring and the circuit thus broken. The annunciator is cleared or set by pressing a button.

The designating plates are staggered and underlapping, those of the highest value being placed farthest to the front the "fours" next and so on. This insures the registration of the higher value should a dividing line of the target be struck.



AT THE FIRING POINT.

The "A" target gives definition for every hour on the clock in the "four," "three" and "two" sections and one definition for the bull's eye; also for every half hour and for all shots cutting a line, there thus being practically an infinite number of designations with a finite number of registering plates.

The "B" target will have thirty-three designating plates, nine of which will be for the bull's eye; target "C" forty-four

plates (also with nine for the bull's eye) and target "D" twenty-seven. This gives sufficient definition for every practical purpose.

One of Commander Ellis' targets has been in use at the Mare Island Navy Yard for over eight months and has been most favorably reported upon. Over seventy-five thousand rounds have been fired at it with practically no failures to register and no breaks of any nature. The target is in daily use and the designating plates, which are made of Vanadium steel, are as good as new.

Of the many advantages claimed for the self-scoring target, the immense saving in time insured by its use (about seventy-five per cent.), the elimination of pit details and its infallible accuracy will most strongly appeal to those who would use it.

AUBREY LIPPINCOTT,
Captain Thirteenth Cavalry.

LEST WE FORGET.

THERE are twenty-one officers on the active list today who have brevets for services in Indian Campaigns, viz:—Schuyler, Miller, W. H. Cruse, Smith, A. L. Morgan, Wilder, McClemand, West, Brown, W. C., Sibley, Day, M. W., Quilfogle, Slocum, H. J., Blocksom, Walsh, Hatfield, Taylor, C. W., Duncan, Van Orsdale, Sharpe, A. C., Mills, S. C.

All the officers above named *except the last four* won their brevets while serving as cavalry officers.

We take the following from the *New York Evening Post* of January 6, 1911:

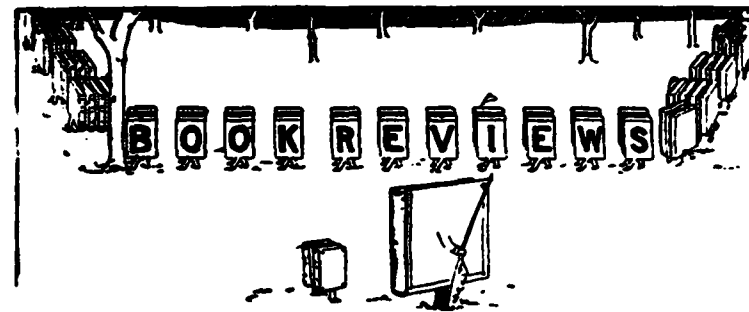
AGES OF OFFICERS.

The accompanying table shows the average ages of the ten senior captains, and the field officers of each branch of the line, and including the engineers. It will be seen that the ages of the cavalry officers are higher than those in the other

branches of the service. The ages of the cavalry officers were also higher in 1910, while the ages of the infantry colonels were highest in 1909. The coast artillery has the youngest colonels, lieutenant-colonels and majors, while the Corps of Engineers has the youngest captains. The table explains itself:

	Cols.	Lt. Cols.	Majors.	First 10 Captains.
Engineers.....	55 7-11	49 17-18	41 13-35	35 1-5
Cavalry.....	59 11-23	55 6-7	49 19-20	46 3-5
Field Artillery.....	55 4-9	48 4-7	42 15-17	36 1-2
Coast Artillery.....	55 8-23	48 6-19	40 49-56	38 1-5
Infantry.....	57 15-46	53 15-47	47 95-121	44 1-5

This is a sad showing, not only when considered as a reward for work done in the past, but also as a preparation for the future. Clearly the cavalry field officers are too old for their rank, and some method should be devised to eliminate those who are the least active, and it would by no means be going too far to give those who are retired an additional grade particularly those of exceptionally good records. In any war the cavalry must be the very first to move out and get in touch with the enemy, to raid, and to harass the enemy by cutting his lines of communication. Such work can be accomplished only by vigorous leaders. Must we wait until war is upon us before we place such men in command of squadrons and regiments?
X.



Medical Service in Campaign.*

The first edition of this book has already been reviewed in these columns. The present edition contains much new matter and various changes looking to improvement. No line officer can afford to be without this work, which is not a medical book but one which deals with the business and military administration of a department, which, with the division is numerically greater than that of all other divisional troops, has a column one and one-quarter miles long and needs over thirty acres to encamp, under official regulations.

There is a best way of handling these reserves and upon line officers devolves the responsibility for directing them what to do. Nobody else can do it and the day of miracles has gone by. It is a healthy sign of the times that the books on this subject are going through various editions as a result of more general appreciation of their practical value.

E. I. M.

*"MEDICAL SERVICE IN CAMPAIGN." A Handbook for Medical Officers in the Field. By Major Paul Frederick Straub, Medical Corps (General Staff), U. S. Army. Second Edition. 1912. P. Blakiston's Sons & Co., Philadelphia. Price \$1.50, net.

Army Officer in Japan.*

The author has made his book more than an account of journeying by introducing historical sketches that are brief and well told. The list of special chapters, besides those on Spanish rule in Manila and the rise of Nippon, are on Japanese relations in the Chinese Boxer troubles, a summary of the Russo-Japanese War, national religions and the Japanese Army and Navy.

Colonel Maus refutes the popular impression that the Japanese Medical Corps was efficient to a degree never before reached in civilized warfare by numerous figures, that for instance of the 320,000 men that were returned to Japan for treatment.

The reader is left with a well developed and unsatisfied curiosity as to the author's special mission abroad.

The illustrations are not typical of the best types of native photographs and have been placed in the book without regard to the subject matter.

This is an invaluable book to the traveler to the lands described and a clear word picture to renew past impressions those who have visited and enjoyed "Dai Nippon."

E. T. E.

Machine Guns with Cavalry.†

In this book, which is in the original German, the author informs us in the foreword that, while commanding machine gun detachments during the years 1907 to 1910, he participated in the settlement of the machine gun question in Austria-Hungary and also had an excellent oppor-

*"AN ARMY OFFICER ON LEAVE IN JAPAN." By Colonel Mervin L. Maus, Medical Corps, U. S. Army. 1911. A. C. McClurg & Co., Chicago. Price \$1.50.

†Das Maschinengewehr im russisch-japanischen krieg und persönliche Erfahrungen über Kavallerie-Maschinengewehrabteilungen. *The Machine Guns in the Russo-Japanese War and Personal Experiences relating to Cavalry Machine Gun Detachments*; by Henry Viktorin, Captain Austrian Cavalry. Vienna, L. W. Seidel & Son, 1911. 144 pages, numerous cuts and illustrations; 6 x 9 inches. Price \$1.25.

tunity to inquire into the relative merits of the several types of machine guns.

In this book he discusses a series of very interesting problems and matters pertaining to cavalry machine gun detachments, especially their employment in army and cavalry division maneuvers, in training cavalry in reconnaissance service, and in general training of the machine gun personnel. The author describes the great role played by machine guns in the Russo-Japanese War in a study, in the composition of which he consulted all available works so far published dealing with that war. The book is a compilation of military historical examples of the employment of machine guns in the different battle situations and is especially suited for instructing machine gun detachments by using the applicatory method.

Chapter I deals with Machine Guns in the Russo-Japanese War—the role played by them; which method of transportation has proved the best; the amount of ammunition used.

Chapter II deals with the employment of Cavalry Machine Gun Detachment No. 3 during the Imperial maneuvers of 1908.

Chapter III deals with the employment of the same detachment during the maneuvers of the Landwehr Cavalry Brigade, Colonel Tarlowski, in May, 1909.

Chapter IV discusses Major General v. Czerliens "Cavalry Studies" in so far as they relate to Cavalry Machine Gun Detachments.

Chapter V deals with the training of Cavalry Machine Gun Detachments.

Twenty-one reproductions of photographs taken from nature are appended to the book; four of these show cavalry machine gun detachments equipped with wheel mounts, system Maxim, and seventeen showing detachments equipped with probable mounts, system Schwarzlose.

HARRY BELL.

**Star
Pocket-Book.***

The Star Pocket-Book is a small work, 4 in. x 5¼ in., of eighty pages that is a simple and clear guide for finding one's way at night by the stars. After giving some preliminary instruction, it is devoted to the subjects of identifying the chief stars; notes on the nomenclature of stars, star tables, which give the greater stars in their order of magnitude, where found and the constellations to which they belong; notes on the planets; notes on the star plans or maps, followed by the star plans, fifteen in number; three methods of determining a north and south line; a summary of the directions and several tables, such as the time of the year when certain stars cross the meridian at midnight, the time between the rising or setting of stars in various latitudes, etc.

It is well printed, the star maps are clear and distinct and it is bound in stiff board backed with cloth.

**Care
of the
Cavalry Horse †**

This is a small pamphlet of sixteen pages which was compiled for the use of Troop 1, Squadron "A", National Guard of New York. As far as it goes, it is an useful and instructive little compilation for the cavalry of the National Guard. It covers the subjects of feeding, watering, grooming, fitting the bridle and other equipments and the more simple treatment for the ordinary ailments, such as sore backs, colic, heat exhaustion, rope burns, scratches, sprains, etc., and the care of the horse in general when on active service.

It should be in the hands of the cavalry of the militia and it would be of use, also to the non-commissioned officers of the regular service and possibly of some of the younger officers, as well.

*"THE STAR POCKET-BOOK OR HOW TO FIND YOUR WAY AT NIGHT BY THE STARS." By R. Weatherhead, Naval Instructor, R. N., with a foreword by Sir Robert Ball, Professor of Astronomy at Cambridge. 1911. Longmans, Green & Co., London, New York, Bombay and Calcutta. Price, fifty cents, net.

†"CARE OF THE CAVALRY HORSE." By Sergeant William Macnaughton, Troop "1", Squadron "A," N. G., N. Y. Price \$9.00 per hundred copies.

**Submarine
Boat.***

The Norman W. Henly Publishing Company of New York has gotten out a chart of a modern submarine boat which gives a longitudinal section of one of the latest types of submarines. It purports to be an accurate, drawn to scale deliniation of all of the parts of these complicated machines, if they can be so called. All of the parts are numbered and an explanatory reference list gives their uses. "To make the engraving more readily understood, all the features are shown in operative form with officers and men in the act of performing the duties assigned to them in service conditions."

**Military
Works.**

We have received from L. W. Seidel & Son, of Vienna, their latest catalog of military books, the edition of 1912, in which are listed the latest foreign publications of a military nature. This firm has long been known to military students in this country and for those familiar with the German language, this catalog will be useful.

*"CHART OF A MODERN SUBMARINE BOAT," with 200 parts numbered and named. The Norman W. Henley Publishing Co., 132 Nassau St., New York. Price twenty-five cents.



THE STRENGTH OF THE CAVALRY.

Every patriotic American who correctly understands the situation must deplore the action of the House of Representatives on February 9th, in passing an amendment to the annual appropriation bill reducing the regular cavalry from fifteen regiments to ten. There seems to be a misunderstanding as to the relation of the cavalry to other arms and a failure to appreciate the necessity of a strong body of cavalry for our national defense.

Mr. Hay said (page 2000 Congressional Record, February 9th): "Mr. Chairman, I would not advocate this reduction if I did not believe that it could be safely accomplished without in any way impairing the strength and efficiency of the Army. I would not advocate it unless I had been told by officers of the Army that it could be done without in any way hurting or injuring the efficiency of the army."

Who were the officers of the army who told Mr. Hay this?

Out of the mass of misstatements in which this debate abounded we will select one as a subject of a few comments. Mr. Hay said (p. 2000 C. R.) "At the time the Army was reorganized (1901) there were twenty-five regiments of infantry and ten regiments of cavalry. We only added five regiments of infantry and five regiments of cavalry, whereas before that time there was only two-fifths as much cavalry as infantry." Mr. Burleson said (p. 2003): "The army wants more infantry and less cavalry." And the same member said (p. 2004): "Our cavalry is one-half as large as our infantry."

We now have one-half as many regiments of cavalry as there are regiments of regular infantry, but the legal limit of the strength of a troop (company) of cavalry is one hundred while the legal limit of strength of a company of infantry is one hundred and fifty. The actual strengths contemplated on a war footing are, we believe, 86 and 142; and, as the number of companies to the regiment is now the same in both, the strengths of the regiments will bear approximately the same ratio. And the regular infantry does not comprise all the infantry we have. There has been a remarkable development of the Coast Artillery since the Spanish War and we now have one hundred and seventy companies of that arm. As it is inconceivable that all of our sea coast forts will be attacked at one time it is probable that the greater part of our Coast Artillery will always be available for service as infantry. There has also been a remarkable expansion of the U. S. Marine Corps and we have in that corps a strong body of infantry which is available for service anywhere. We have additional bodies of infantry in the Porto Rico regiment, in the Philippine Scouts and the Philippine Constabulary.

Our second line of defense, the volunteers which would be organized for a war, could not be formed into cavalry readily. It would require over a year to make efficient cavalry from volunteers, and the time and difficulty necessary to accomplish this is increasing as we become less and less a nation of horse-men and riflemen.

Consequently, unless our cavalry is considerably increased over its present strength we will enter upon any war in which we may engage with a smaller ratio of cavalry to infantry than is considered proper by any foreign nation. It is not the policy of our government to maintain a large regular army in time of peace; but we should maintain a nucleus which can be expanded into an efficient army in time of war. The policy of this country heretofore has been to keep its regular infantry at a lower ratio to its war strength than other arms. This is shown by the reorganizations of the army which have been made at the close of each of our wars, at times when the relative difficulty of raising and training troops of the different arms was fresh in the minds of all.

At the close of the Mexican War the strength of the regular Army was reduced from 30,890 to 10,320 but at the same time a new mounted regiment, the Mounted Rifles (present Third Cavalry) was added to the Army; this gave the reorganized Army three mounted regiments to eight of infantry, but as the mounted regiments were numerically stronger than the infantry regiments, the mounted troops were more than one half as strong as the infantry. After the close of the Civil War the regular infantry was greatly reduced but the cavalry was increased by four regiments (Seventh, Eighth, Ninth and Tenth). In 1880 we had ten regiments of cavalry and twenty-five regiments of infantry, but each regiment of cavalry had twelve companies while the infantry regiments had only ten; the cavalry in all had 120 companies to the infantry's 250; and as the cavalry companies numbered about sixty and the infantry about forty, we had considerably more than half as much cavalry as infantry. About 1890 two companies in each regiment of cavalry and of infantry were skeletonized, and from that time to the Spanish War the cavalry consisted of 100 companies and the infantry of 200 companies. During and shortly after the Spanish War, the skeleton companies were filled up, each infantry regiment was increased by two companies, the infantry was increased by five regiments and the cavalry was increased by five regiments. The increase of the cavalry was natural and in keeping with what had been done at the close of our former wars; it was to be expected in view of the facts that the cavalry had not been increased for nearly forty years and the wealth, population and international responsibilities of the country had greatly increased during that time. But the increase of the infantry after the close of the war was unprecedented; and it was remarkable that the infantry was increased more than the cavalry, since the infantry was increased 160 companies while the cavalry was increased only 80. This increase of the infantry is only to be explained by the fact that it was needed for immediate service in the Philippines. And although an increase was made in the regular infantry we really followed our policy of reducing the infantry at the close of war in that we mustered out our great

volunteer army, which was composed almost entirely of infantry.

Owing to the fact that the infantry was increased more than the cavalry, since the Spanish War, the latter has been only one-third as large as the regular infantry, while before that time it was more than one-half as large. Considering the Coast Artillery and the Marine Corps as part of our infantry, the cavalry is now only one-fourth of the infantry.

But the ordinarily accepted ratios of strength do not constitute the real guide in determining what the strength of our cavalry should be. The strength which our cavalry should have depends upon our actual needs and is to be deduced from a consideration of the work it is to perform in war. We do not maintain in time of peace an army on a war footing of a size sufficient to meet on equal terms any army by which we are likely to be invaded; and, after we find an invader actually on our shores, we will need months to develop an army from our great resources of men and materials. If we can throw a body of cavalry in contact with such an invading force—strong enough to beat the cavalry which accompanies it—we can then hamper its movements and restrict its operations to a limited area until we gain the time we need to raise the force of infantry which will ultimately aid us in defeating it. An example of this is to be found in the work of the Boers (who were mounted) during the first year of the war in South Africa. Our cavalry can do all that the Boers did and more. But the cavalry which is to blind, hamper and hold the invader must be ready at the outset. The war will not last long enough to give us time to create it. The strength it should have can be computed with tolerable certainty since we know the strength of the cavalries of other nations. Allowing for part of our cavalry being beyond immediate reach when needed (five regiments are now outside of the United States) it is estimated that we should have twenty-one regiments. If these regiments were grouped in time of peace in seven brigades of three regiments each it would go far toward ensuring uniformity of training and rapidity of mobilization. Part of this cavalry would doubtless be needed during the war for service with the infantry, as divisional cavalry; but our experience during the

Civil War teaches us that the greater part of our cavalry should be held in independent bodies.

WHY WE NEED CAVALRY.

1. The American Army should be organized with a view to resisting invasion, since it is contrary to the well-recognized principles of our institutions to act on the aggressive.

2. The earlier stages of a war against a powerful invading force would find us on the strategic defensive. The enemy would seek to bring us to decisive action while we, by a series of delaying actions, would seek to avoid decisive encounters until our volunteers could be mobilized and concentrated.

3. In order to successfully carry on such a campaign we should have a *mobile* force of sufficient strength to defeat any *similar* force which the enemy could send against us on their first expedition and then follow the enemy step by step, tormenting him, engendering uneasiness, discovering all his projects, and so to make him feel that every move on his part is under observation and that a resourceful commander will ever be ready to block his plans. Just in this manner did the mounted Boers block the English advance in South Africa for months and until a large force of English cavalry was sent against them.

4. All foreign nations which could, at present, have any reason for landing on our shores could, and judging from the past, would land a force of cavalry intermediate between that of Japan with at least 14,000 and Germany with about 28,000. This would be superior to any cavalry force which we could muster against them, since our regiments on foreign service would not be available.

5. "The amount of patient and persistent hard work required to convert 1200 untrained citizens, unaccustomed to the care of a horse or his use under the saddle, and wholly inexperienced in the use of arms, into the *semblance* of a cavalry

regiment in six months is known only to those who have done it."—Gen. WM. W. AVERELL, Vol. II, page 429, B. & L. of the Civil War.

On May 20th, 1864, Gen. GRANT sent the following telegram to Gen. HALLECK: "Send all new cavalry equipped as infantry and mount veterans on their horses."

The fact that within the last few years there has been a marked decrease in the number of men who make a practice of riding for business or pleasure would add to our difficulties in raising volunteer cavalry at the outbreak of a war.

6. Various influences are at work in this country which are decreasing the demands for riding horses and it is sound military policy for the government to take steps for providing more demand for that class of horses, otherwise the gravest difficulty will be encountered in obtaining mounts during a war and those obtained will either have to be taken by force or paid for at enormous prices. Unless we keep a sufficient force of cavalry in time of peace to create a fair demand for suitable mounts, breeders will cease to raise that class of horses. It is within the recollection of all of us how England not only exhausted her own available horse markets during the Boer War but nearly exhausted our supply of suitable mounts; this at a tremendous loss to herself and entailing much loss of valuable time. We will have no such foreign markets available.

7. Should it be necessary to enter Mexico for the protection of American citizens, most of our offensive work must be done by mounted men. If we do not actually enter that country we shall probably require indefinitely, a large mounted patrol along the border.

8. We wish to make it clear that we are not working for selfish ends. An increase of our cavalry could most efficiently be made by keeping all units at war strength. A bill such as now proposed by Congress which will allow of our transfer to other branches of the service, with rank from previous commission would actually be a benefit to most of us but we must all view with alarm anything which would tend to blindfold our army at a time when the very existence of our nation might be threatened.

9. In our country with bad roads, difficult trails over rugged mountains and arid deserts, the proportion of cavalry to infantry must be greater than in European armies to perform efficiently the duties of security and information.

10. Cavalry duties today render it as highly specialized an arm in its own line as is the field artillery. The proper and only efficient ways of performing the duties of screening and reconnaissance are as important to be thoroughly taught as the conduct of cavalry in battle and cannot be learned in a few months, so that volunteer cavalry hastily raised, is not to be depended on except for orderly and escort duty.

11. While the brunt of the fighting must be met by the infantry, with its auxilliary arm the field artillery, they would be as blind men but for the knowledge of the enemy received from the cavalry reconnaissance.

12. In such duty as was and is being performed by troops on the Mexican frontier, cavalry is much more valuable than infantry owing to the rapidity of its movements, the distance covered and the far less degree of exhaustion experienced by the men in that hot, dry country. During the late troubles on the border the cry of all commanding officers was for "more cavalry."

During the Spanish-American War, in Cuba the cavalry fought on foot with the infantry with equal efficiency. It is a doubly valuable arm and when performing purely cavalry duty as scouts and advance screens, it has been ranked as the best in the world.

Of the regular cavalry available in this country there are only 8,540. Mexico, a second rate power, has 7,318 regular cavalry and 5,000 mounted rurales.

An army in the field without sufficient cavalry is like a blind man in a fight.

To train a cavalry soldier properly requires at least two years and many authorities think three years.

A reduction of five regiments of cavalry, while it will effect a pecuniary saving, would so reduce the efficiency of any force we might be called upon to put in the field that it would be a measure of very false economy and would greatly lessen the results that could be obtained by even a large army of efficient infantry.

RELATIVE COST OF A REGIMENT OF INFANTRY AND A REGIMENT OF CAVALRY.

In compiling these figures we have endeavored to cut out any thing that could be considered as foreign to the uses of these two branches of the line.

The figures are taken almost entirely from the digest of appropriations, 1912.

It will be seen that the overhead charges are enormous and that the difference between the cost of a regiment of infantry and a regiment of cavalry as compared with these overhead charges is small.

Salaries of Secretary of War's Office.....	\$ 147,970 00
Salaries of Adjutant General's Office.....	781,950 00
Salaries of Inspector General's Office.....	12,560 00
Salaries of Judge Advocate General's Office.....	20,800 00
Salaries of Signal Office.....	25,800 00
Salaries of Q. M. General's Office.....	278,410 00
Salaries of Commissary General's Office.....	78,840 00
Salaries of Surgeon General's Office.....	166,288 00
Salaries of Paymaster General's Office.....	71,900 00
Salaries of Chief of Ordnance Office.....	91,760 00
Contingent Expenses, War Department.....	50,000 00
Stationery, for office.....	25,000 00
Postage War Department and its bureaus.....	500 00
Rented buildings, War Department.....	10,220 00
Contingencies of the Army.....	40,000 00
Army War College.....	10,000 00
Military information section.....	10,000 00
U. S. Service Schools.....	25,000 00
Contingencies, headquarters Military Departments.....	7,500 00
Ordnance Department, pay of enlisted men.....	317,356 00
Post Q. M. Sergeants.....	108,000 00
Additional length of service for Post Q. M. Sergeants.....	38,000 00
Commissary Sergeants.....	111,708 00
Additional length of service Commissary Sergeants.....	45,000 00
Pay: Clerks, Messengers, Laborers at Headquarters, Divisions, Departments, Posts commanded by General Officers.....	351,240 00
Officers, Staff Departments:	
Adjutant General's Office.....	110,500 00
Inspector General's Department.....	75,000 00
Quartermaster's Department.....	340,900 00
Subsistence Department.....	183,280 00
Medical Department.....	1,629,660 00

Ordinance Department.....	\$ 284,220 00
Pay Department.....	190,460 00
Judge Advocate General's Department.....	55,000 00
Retired Officers.....	3,362,850 00
Retired Officers, active.....	70,000 00
Retired enlisted men.....	2,147,670 00
Miscellaneous Pay:	
Hospital Matrons, Dental Surgeons, Contract Sur-	
geon, Extra Duty, enlisted men, etc.....	4,177,692 00
Regular Supplies Q. M. Department.....	8,338,387 33
Incidental expenses Q. M. Department.....	2,100,000 00
Barracks and Quarters.....	1,856,050 00
Barracks and Quarters, Philippine Islands.....	600,000 00
Transportation and supplies.....	11,023,615 06
Roads, Walks, Wharves and Drainage.....	449,315 79
Water and Sewers.....	2,250,903 27
Equipment of officers' school at military posts.....	9,350 00
Construction and repair of Hospitals.....	450,000 00
Quarters for Hospital Stewards.....	10,000 00
Shooting galleries and ranges.....	125,985 00
Army War College.....	12,700 00
Medical and Hospital Department.....	700,000 00
Library Surgeon General's Office.....	10,000 00
Army Medical Museum.....	5,000 00
Dental Surgeons.....	330,000 00
Trusses, Artificial limbs, etc.....	7,000 00
Repairs of Army Medical Museum.....	10,000 00
Ordinance Service.....	337,000 00
Ammunition for Reserve Supply, Fire Arms and Salutes,	
military posts.....	500,000 00
Repairs at Arsenal.....	536,400 00
Mileage.....	600,000 00
Military Post Exchanges, schools, etc.....	40,000 00
Overhead Charges.....	Total \$45,749,740 45
Total enlisted force in organizations of the Army, including	
Signal Corps, Porto Rican Regiment and Philippine	
Scouts.....	74,059
Regiment of Infantry, total enlisted.....	869
Regiment of Cavalry, total enlisted.....	854
Percentage of Regiment of Infantry to total enlisted force.....	1.173%
Percentage of Regiment of Cavalry to total enlisted force.....	1.153%
Amount of overhead charges to be borne by regiment of Inf.....	\$536,644 41
Amount of overhead charges to be borne by regiment of Cav.....	527,494 46
Total enlisted men entitled to rations and clothing.....	83,762
Percentage for regiment of Infantry.....	1.037%
Percentage from regiment of Cavalry.....	1.019%
Total subsistence.....	\$9,033,579 40

Total Clothing.....	\$4,901,271 67
Subsistence for regiment of Infantry.....	98,678 22
Clothing for regiment of Infantry.....	50,826 19
Subsistence for regiment of cavalry.....	92,052 17
Clothing for regiment of Cavalry.....	49,943 56
Small Arms firing, enlisted men, regiment of Infantry.....	9,993 50
Small Arms firing, officers, regiment of Infantry.....	557 50
Small Arms firing, enlisted men, regiment of Cavalry.....	11,665 64
Small Arms firing, officers, regiment of Cavalry.....	655 50
Small Arms enlisted men, regiment of Infantry.....	15,474 40
Band revolvers, regiment of Infantry.....	324 80
Cost per year, average life 6 years (small arms).....	2,579 06
Cost per year, average life 6 years (revolvers).....	54 13
Arms, enlisted men, regiment of Cavalry.....	25,853 80
Band revolvers.....	324 80
Cost per year, average life 6 years (arms).....	4,308 96
Cost per year, average life 6 years (revolvers).....	54 13
144 Revolvers issued to companies of regiment of Infantry,	
average life, 6 years, cost per year.....	278 40
Equipment, average cost per year, regiment of Infantry.....	6,710 68
Equipment, average cost per year, regiment of Cavalry.....	16,191 84
Forage, including officer's horses, for regiment of Infantry.....	4,996 60
Forage, including officer's horses, for regiment of Cavalry.....	95,167 80
(Exact figures on forage not available but above estimate made from actual cost of forage at an average post.)	
A Cavalry Regiment has 12 more stables than an Infantry regi-	
ment, the estimated depreciation, repairs and light	
per stable is.....	650 00
Difference in yearly cost in stabling a Cavalry regiment.....	7,800 00
Horse-shoes, nails, etc., for regiment of Infantry (including	
mounted officers).....	94 60
Horse-shoes, nails, etc., for regiment of Cavalry (Including	
officers).....	1,801 80
Appropriation for horses for the year 1912.....	517,165 50
Total cavalry horses.....	11,760
Total infantry horses.....	870
Total artillery horses saddle.....	2,100
" " " draft.....	4,004
Since artillery draft horses cost about $\frac{1}{4}$ more than sad-	
dle horses, they may be assumed as having a total	
of horses.....	7,105
Grand total.....	19,735
Percentage infantry horses 4.3%, per Infantry regiment .143%.	
Percentage cavalry horses 60%, per Cavalry regiment 4%.	
Cost of infantry horses one year, per regiment.....	\$ 789 55
Cost of cavalry horses one year, per regiment.....	20,686 62

REGIMENT OF INFANTRY.		REGIMENT OF CAVALRY.	
Overhead charges.....	\$ 536,644 41	Overhead charges.....	\$ 527,494 46
Pay.....	317,860 56	Pay.....	331,460 05
Subsistence.....	93,678 22	Subsistence.....	92,052 17
Clothing.....	50,826 19	Clothing.....	47,943 56
Small arms firing.....	10,551 00	Small arms firing.....	12,321 14
Arms.....	2,911 59	Arms.....	4,363 09
Equipment.....	6,710 68	Equipment.....	16,191 84
Total.....	\$1,019,182 65	Total.....	\$1,031,826 31
Forage.....	4,996 60	Forage.....	95,167 80
Stables (difference).....		Stables (difference).....	7,800 00
Horses.....	739 55	Horses.....	20,686 62
Horse-shoes, etc.....	94 60	Horse-shoes, etc.....	1,801 80
Total.....	\$1,025,013 40	Total.....	\$1,157,282 53

Ratio of cost of Infantry regiment for one year in time of peace to cost of Cavalry regiment for the same period, is as 1 is to 1.129 or approximately as 1 is to $1\frac{1}{8}$.

This plainly shows that the wisest place to exercise economy is in reduction of the overhead charges and not in a reduction of the number of enlisted men in the army.

One of the great difficulties our country would have in time of war would be that of procuring suitable mounts. The supply of suitable mounts in our country is growing less each year. The breeding of such animals can be promoted only by having a demand for them in time of peace. Such a demand can be stimulated by keeping a strong mounted force in our army in time of peace, and as shown above the difference in cost between keeping mounted and dismounted troops is very small indeed.

MORE CAVALRY INSTEAD OF LESS.

It is unnecessary to state that our cavalry officers were much exercised over the Hay amendment to the army appropriation bill which reduces our cavalry regiments by five. Such a proposition has never been thoroughly discussed in or out of Congress, especially by the Military Committee of

the House which usually and properly takes testimony regarding the wisdom of making any great change in army organization.

We are receiving from all over the country clippings from various periodicals which are combatting this legislative action, extracts from which are reproduced herewith below. These, together with other contributed editorials appearing in this number of the CAVALRY JOURNAL are given for the information of our cavalry officers and the service at large.

There are hundreds of arguments, legitimate and sound arguments, in favor of an increase of our cavalry and no good reason why there should be a reduction in that branch of the service, and it is hoped that our members will, in case they have any ideas not advanced in these several editorials, not hesitate to send them along to the Secretary for the information of the cavalry arm.

The following are some of the extracts mentioned, the omitted parts being those where the same arguments are repeated:

From the Kansas City Times:

"You've seen twenty-two steaming and mud-begrimed men, selected for their physical fitness and self-control and developed by long, hard training, struggling for an inch on the football field. Of the twenty-two only two, who happened to be in command, are permitted by the rules to express themselves in words.

"And surrounding the noble twenty-two, in comfortable ulsters and furs, are twenty-two thousand persons who have paid \$2.00 each to be there. Before the game is half over every one of the twenty-two thousand can—and does—point out errors, or error, on the part of some one or all of the twenty-two experts engaged in making ruts with their faces. The \$2.00 ticket of admission included the privilege of commenting freely and openly, favorably or unfavorably, giving advice and pointing out blunders in organization, discipline and general conduct, regardless of the fact that many of the twenty-two thousand had never seen a game before, had never seen a book of rules and couldn't keep score.

"In the American Army there are about ninety thousand trained men who ought to know something about their business. On the side lines there are ninety million free-born citizens, each with the God-given privilege to tell the soldier just where he is wrong and why. About once every two years the ninety million avail themselves of their right through Congress and an 'Army Reorganization' Bill is born. This session, the House, in its army 'reorganization,' reduces the cavalry branch from fifteen regiments to ten. It was 'reorganized' from ten regiments to fifteen regiments just after the Spanish War. Now it is to be reorganized back again.

"The advocates of the change say that the cavalry arm is too large in proportion to the rest of the army. That would be true, were our army considered in the light of a field force. In fact, however, it is still the old familiar 'skeleton army' which is to be filled in, or out, when war comes. But you can't create cavalry in a month or ten months. Nearer two years to make cavalry of a lot of untrained men and horses; infantry, naturally, in about half that time.

"So, right now, to one of the ninety million experts in the bleachers, it seems that cavalry is the one arm that should not be cut down; it would take too long to replace it. In case of war these five regiments of cavalry would be needed—not in two years, but at once. They might be needed this year for patrol duty in Mexico.

"Couldn't a better place to economize be found?

"But the greatest good that could come to the American Army—again one of the suggestions of the bleacherites—would be to give it a little rest from never ending reorganization. It leads all the armies of the world in reorganization experience. How would it be to let the army alone for a few minutes at a time and see what would happen? In other words (more advice from the bleachers), why not let the responsibility of the army rest on the army, just as an experiment?"

From the Burlington (Vt.) Free Press:

"The whole country should view with alarm the amendment that has been added to the army appropriation bill by

which it is proposed to reduce the strength of the cavalry by five regiments. The bill has already passed the House and although it probably will not pass the Senate, it is a matter that should not be allowed to pass by without a strong disapproval from the country.

"The United States Cavalry Association has taken the matter up and we believe that it is our duty as citizens to try and instill into our people some idea of what the safety of our country will demand in time of war in the matter of cavalry organization.

"Facts are overwhelming in favor of more cavalry instead of less and it is the duty of all who know this to point it out to the country. All the data that can be collected shows plainly that in any real war that may come our present cavalry is at least one hundred per cent. below the amount that will be immediately required.

"The only cavalry that we need consider is that which is trained and ready at the very beginning, the regular cavalry. Modern war is too short and decisive to give any time for organizing and training cavalry. It is in the infantry alone in which our militia and volunteers can be effective.

"We all know that our shamefully small regular army will form hardly a nucleus of the army that would be at once necessary for war even with much berated Mexico.

"If we were called upon to go into Mexico it would require more than all the cavalry we have in the United States. The work of rounding up the scattered enemy would fall almost entirely upon the cavalry. The two recent disturbances there show that a hard campaign in Mexico is an ever present possibility.

"We have then right on our border a situation that may at any moment demand more cavalry than we can obtain. The necessity of a large cavalry force in a war with any first-class power of course would be imperative and immediate and all the peace societies that the world will ever see can not give the least assurance that such a war will not at any moment be thrust upon us.

* * * * *

"We are no longer a nation of riders. Our people use the electric car and the automobile. Riders and horsemen in our country, except for a handful on some ranches in the west, do not exist.

"Yet when war suddenly comes we shall need the cavalry first and immediately. It is the cavalry that is the first line of the army. The Boers in South Africa held England at a standstill for nearly a year until General French's cavalry arrived and took the field.

"We have at the present time in the United States eleven regiments of cavalry, 8,580 men, (four regiments being on foreign service). This is all of our cavalry that is available, mounted and ready to launch against the enemy should he come tomorrow.

"Japan, if she should attack us would send 14,000 cavalry with her first landing party. Germany would send 28,000 cavalry with the first expedition and could quickly follow it with more.

"Our other possible enemies could land between these two amounts of cavalry with their first expedition.

"Should we reduce our cavalry to five regiments, we would have left six regiments in the United States 4,680 men. Mexico has 7,318 men in its regular cavalry.

"Inasmuch as our military policy, if we have one, is to consider our regular army as only a nucleus, for the large army that will be at once necessary to raise in time of war, it behooves us to keep the strength of our cavalry and artillery on the fighting basis that is required for war, and to trust to the militia and volunteers only for infantry.

"Count Von Wrangel says: 'Improvisation is nowhere so useless as in the cavalry arm. This arm must be exactly equipped in peace as one expects to use it in war.'"

From the Washington Post:

"The unsound policy that would sap the foundations of government and business in order to justify a gratuity of \$75,000,000 voted to those whose names were transferred from the Army roll to the pension roll fifty years ago has got around to the Army. Having already sought to dim our luster

as a sea power, our land power is now being shorn for campaign purposes by the power-seeking politicians. They strike at the vitals of their quarry unerringly. They could have done the fleet no greater disservice than to abandon the battleship program. They could not have lessened the efficiency of the undersized army to a greater extent than by cutting the cavalry down a third. They could not have hit upon a more inauspicious time for such a step than the present, when the patrolling of 2,000 miles of border for an indefinite period makes a heavy call on the mounted service.

"Could there have been found a flimsier pretext than the fact that the British Army has a smaller percentage of cavalry than ours? Great Britain, with an area less than half of that of Texas and a population less than half of that of the United States, finds employment for more cavalry than we have, with our 4,000,000 miles of area all told, and 5,000 miles of border. There is no comparison, no point of similarity, between the two countries, and he who seeks to bolster up a weak cause by drawing such a parallel is reduced to an extremity that puts him in a ludicrous light. The proposition is as amusing as the plea that it is right and proper to cripple the Treasury in order to benefit consumers in the Eastern States."

From the Washington Star:

"In view of the experience of the United States at the time of the Spanish-American War, and especially in view of the happenings of a year ago on the Mexican border, it seems incredible that there should be a disposition in Congress to reduce the regular army to any extent. And yet this is the present tendency in the House of Representatives, where the army appropriation bill is now under discussion. Amendments have already been adopted indicating that the House will seriously disarrange the organization. It is possible, of course, that the present system is not the most effective. That is a matter of expert judgment and cannot be most satisfactorily considered in connection with the pursuit of a policy of mere money saving. There is no popular disposition to question the wisdom of maintaining a standing army of sufficient size to cope with conceivable emergencies. Nor, on the other hand, is there desire

for an army big enough to protect the United States in the case of a foreign invasion by a large power. Reliance must be had at all times upon the citizen soldiery, the effective organization of which constitutes the first reserve, with ultimate dependence upon the unorganized mass of people. But even with the most effective militia organization, the army must be maintained at sufficient numbers to supply the necessary structural formation for a military campaign. The whole question as it stands in the House is unfortunately one of cutting off expense and not keeping up the military force to the top notch of efficiency and reliability. Against the views advanced in support of the curtailing amendments are opposed the opinions of the most eminent military authorities of this country. The Senate will be relied upon, in case the bill passes the House in the shape that is now indicated, to prevent the contracting, weakening policy from being carried into effect."

From the New York Times:

"The essence of cavalry is its mobility. Without its horses and the full knowledge of how to use them, cavalry loses its strength, and in exact proportion as its mobility is impaired its entire usefulness is reduced. Those men who are mounted on raw, untrained horses become a drag on their comrades who are mounted on trained horses and reduce them to their own level of inefficiency.

"Take Squadron 'C' of Brooklyn as a criterion. The state appropriates \$1,200 a year more for the maintenance of each of its four troops than it appropriates for an infantry company, and yet the squadron must engage in a large business enterprise to provide about one-half the number of horses required to fully mount it at its peace strength, one-third the number needed to put it on a war footing.

"The state appropriation for the maintenance of this squadron is \$7,800 a year. In order to keep up the 140 horses that are the property of the squadron it has to earn \$32,000 a year in addition. The squadron costs, aside from the upkeep of its armory, \$40,000 a year, and to earn this it must virtually engage in the livery business on a large scale.

"Your cavalry is probably the most efficient of all the National Guard cavalry, and yet because of its shortage of horses it can hardly be said to be more than fifty per cent. as efficient as it would be if fully mounted on suitable horses. Nor can this deficiency be supplied in less than from three months to one year, with the latter period the more nearly correct one.

"New Hampshire has one troop, located at Peterboro. It has no horses, no drill hall. Its members ride only seven days in the year. It has not even an armory floor large enough for the troop to form on in line. It has men and a good spirit, but is no more entitled to be called a troop of cavalry than any body of well-meaning young men who organized with the intention later on of learning to ride when some one gave them horses.

"Massachusetts has two brigades of good National Guard infantry. It has four troops of cavalry, so called. None of these troops has horses; there is no armory for them to ride in. One troop is quartered in a seven-room apartment, where no single room is large enough to seat a single squad for theoretical instruction. Another troop is quartered in a loft over a garage, with no accommodations worthy of the name. Neither of the other two troops has an armory large enough to form line in. The state of Massachusetts appropriates \$10 a man a year for hire of horses for instruction purposes!

"And yet, with all this handicap, there is included in the personnel of this squadron as fine a body of young men as can be found in any organization, social or military, in the United States, held together by the hope that some day their State or the Nation may supply the horses and forage, that they may learn to become cavalry.

"In Rhode Island there are three troops. Again there are no horses, no drill hall, very little money, and at present very low efficiency, because of the lack of horses and an opportunity to learn to ride—to master the very heart of their profession. The fine young men composing these troops are hoping, almost against hope, for better days. One troop discouraged by its utter lack of facilities, is struggling in the

throes of dissolution. Perhaps it may revive, but until horses and a place to ride are provided there is small hope for it.

"In Connecticut we find in New Haven a troop, owning thirty-four horses—fairly good ones. This comes the nearest to being a troop of cavalry of any of those enumerated. In fact, its members know where to put their hands on enough more horses to mount it in a very few hours.

"The other Connecticut troop is in Hartford. It has a splendid personnel, but, as it is not a year old yet, it has not horses or drill hall. But the members are resourceful young men and will soon supply this deficiency. There is much to hope for here.

"The whole idea of giving you the above data is to show the futility of expecting the State to maintain cavalry in a state of instant readiness. If New York and New England, with great wealth and high patriotic impulses, cannot do it, what States can hope to do it?

* * * * *

From the Washington Star:

At the annual banquet of the Department of the Potomac, Grand Army of the Republic, last evening at the Arlington Hotel, President Taft, speaking to more than 200 veterans of the war between the states, made a plea against the reduction of the number of cavalry regiments in the regular army. Coming from the foremost advocate among the world's rulers of universal peace and international arbitration, the address of the President was regarded as particularly significant. He said:

"You are a part of the great army that saved the republic. You are an evidence that in the past, at least, though a republic we have not been able to live without war. You are not in love with war. You know what it is. You understand the awful consequences in its immediate happening, the dreadful consequences that follow for years, even after it comes to an end, and I never rise before a body of Grand Army men that I don't know that I find in their hearts a response to every effort that is made for future peace.

DRINK



FALSTAFF

BOTTLED BEER.

**"THE CHOICEST PRODUCT
OF THE BREWERS' ART."**

Army Mutual Aid Association

Organized January 13, 1979.

Total Amount Paid Beneficiaries, - \$1,850,806.87
Reserve, - - - - - 325,282.11

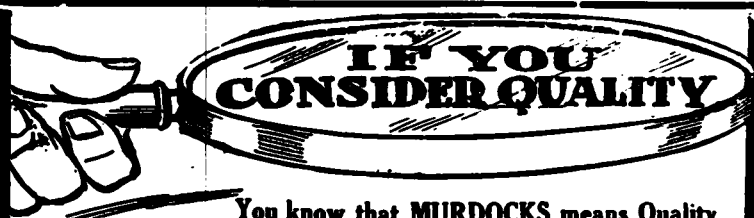
Age Years	Rate Per \$1,000
21 - - - -	\$13 61
31 - - - -	17 58
41 - - - -	23 88

Membership limited to Commissioned Officers of the Army.

Apply to the Post or Transport Surgeon for

Application Blank or write to the Secretary.

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You know that MURDOCKS means Quality.

When you buy flavoring extracts, spices, baking powder or coffee, you can be quite sure by insisting on Murdock's. Because....

The materials are the best

The preparation is the best

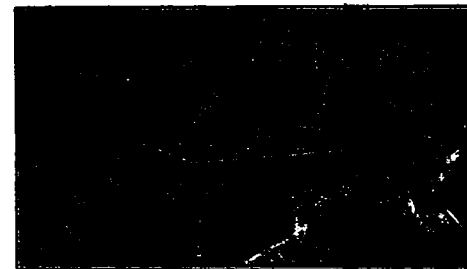
Those who use the goods want only the best

OPT. Flavoring Extracts, Opt. Baking Powder, Spices and Hecla Coffee are Fully Guaranteed Under the Pure Food Law, and Always Have Exceeded the Legal Standard of Purity and Quality.

At First Class Grocers.

C. A. MURDOCK MFG. CO., KANSAS CITY, MO.

HOME BILLIARD TABLES



Billiard Tables for private home use a Specialty.

The table as illustrated above has our guarantee that it is equal to any of our \$200.00 tables for playing purposes. This table can be had in a 3 1/2 x 7 size at \$85.00; 3 x 6 table \$65.00.

By means of the adjustable top, which we supply, it is readily converted into a handsome Dining or Library Table, sold on easy payments. Catalogue showing different size of tables on application.

We will mail book showing 100 new shots on receipt of 20cts.

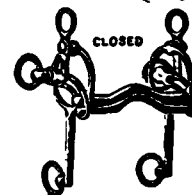
Catalogue with full information sent free on application.

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Branch Houses in the Principle Cities of the United States, France, Germany and Mexico

THE SAFETY-HYGIENIC HORSE BIT.

Invented by Capt. GIOV. CIAMMAICHELLA, of the Italian Army.



Owing to construction and functions, it is absolutely impossible for the horse to put his tongue between the bars of the BIT, or take it in his teeth.



The BEST all around Bit on the market. Has all the good points of the Bit you are now using with additional features. Insures absolute safety to the Rider or Driver by giving perfect control at all times, and in any emergency. Never becomes displaced in the mouth. No head pressure. No torture, no chafing, no callous formation.

Makes this Bit the Most Perfect and Practical for Riding, Driving, Hunting, Polo Playing, Cavalry and Mounted Police.

SAFETY-HYGIENIC HORSE BIT CO.,

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At all first-class Saddlery Dealers.

Write for Booklet.

LIBERAL DISCOUNT TO U. S. ARMY OFFICERS.

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Walthams of the Colonial Series represent the last word in watch-making. They are made as thin as it is safe to make a reliable watch. They possess great beauty and will give a life long service of accurate time-keeping.

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BAKING POWDER

Absolutely Pure

*The only baking powder
made from Royal Grape
Cream of Tartar*

No Alum, No Lime Phosphate

The
"COBBAR"

**FELT LIGHT
EXERCISE SADDLE**

ADVANTAGES OF THE PATENT FELT SADDLE:

Its extreme lightness.
Cannot give horse sore back.
If they have a sore back it is the only saddle which can be comfortably worn.
They place the weight of the rider slightly more forward than the old style of saddle; a great advantage for race riding.
A tall man can ride with his stirrups **EXTREMELY** short without having his knees right off the saddle, as this saddle is cut more forward than the old style.
The tree cannot be broken or spread.
It is exceptionally nice to ride jumping in, also for backing horses for first time as stirrups can be dispensed with.
They cannot go down on to a horse's withers.
These saddles can be made in different sizes to suit customers, and can be made about 2 lb. in weight for racing, to 6 lbs. for hunting for which they are very suitable.

Model 8 lbs.
Patent No. 6266

BARTLEY BROS. & HALL, 50 WARREN STREET
NEW YORK CITY

"War is an awful thing to contemplate, and I have no doubt that you, who look back to the real blood, to the cruelties and to the awful sorrows that were in war, can testify that it is not something to wish for, but something to avoid at all honorable hazards. And yet, my friends, much as we desire peace, much as we hope that we may be able to devise in the near future some means of assuring all the nations that are armed to the teeth a method of settling international controversies other than by war, we know that, being charged with the responsibility of defending the integrity of our nation, we must continue to be prepared until we reach the time when only peace is possible.

"Therefore we ought to look with the gravest concern and with a great deal of caution upon any proposition to reduce the army and the navy so as to make them less useful for the defense of our country and for the carrying on of those duties that we as a world power have assumed in the last decade. It does not make any difference whether we ought to have assumed them—upon that question I would like to be heard before it is decided—we have assumed them, and to say that that one soldier in a thousand of our population is too great for us to support is to say that we are not a nation willing to meet our responsibilities.

"One soldier in a thousand is not, under the hand of the most tyrannical and despotic and ambitious executive, going to subject our people to any particular danger. But if five regiments of cavalry are taken away from the fifteen we now have it may be that it will prevent our discharging, in the effective way we ought, our duties as a nation. This should not be undertaken until it is ascertained certainly that we can perform those obligations that we have to our people and those peoples for whom we have assumed obligation and protection and still part with that force.

"Now I come here with a great deal of pleasure to appeal to this body of men who don't desire men in the army just for the purpose of show—that they have had all that in their early youth, and they are above it. They don't want an army, except for actual use—to discharge the duties that the nation ought to discharge. I believe we are going to get those treaties

ratified, and I know I have your assistance in trying to do so. I do think it is proper to invite your attention. as men who know, as men skilled in the actual defense of the country, and to arouse your interest in the question whether we ought to reduce the mobile army, small as it is, for this country, and run the risk merely for the purpose of reducing our expenses. I don't believe you agree with that, and I thank you for your sympathy in that regard.

The following has been furnished as being pertinent to this subject.

"I am sending a few notes taken from Wrangel's 'Cavalry in the Russo-Japanese War,' which may be desirable for the JOURNAL.

"I would also call your attention to the article in the *Army and Navy Journal*, of January 27, 1912, signed 'National Defense,' the main purpose of which appears to be to advocate that the Federal Government should assist in organizing more militia cavalry. This is a strong argument in favor of the idea that we have not now sufficient cavalry for use in any war of the size that will be required in a real war.

"To spend our money on militia cavalry is worse than useless. Our infantry claims that the militia infantry falls far short of the requirements as regards training for war. If this is so, you can multiply the deficiency by ten when it comes to considering the militia cavalry. In these days of short and decisive wars, the war will be over and defeat be ours before we can even make a start at training volunteer cavalry. The only real effective cavalry that we will have for such a war will be that of the regular service."

From Wrangel's "Cavalry in the Russo-Japanese War."

"Improvisation is nowhere so useless as in the cavalry arm. This arm must be exactly equipped in peace as one expects to use it in war.

"Our conviction that a strong cavalry, now as formerly, forms an absolutely necessary fighting force for every modern

army is supported by a powerful ally. According to the latest reports, it is the intention of the leaders of the Japanese Army to form not less than eight divisions of cavalry in the course of the impending reorganization of their army. This means a doubling of the cavalry force which was hitherto available.

"The creation of a strong and modern cavalry arm presents, by the further increase of the Japanese forces, the first and most difficult problem. Under all circumstances a solution must be found. The experiences of the battle of Mukden alone prove this to be essential. There was only wanted a few cavalry divisions to gather completely ripe fruits, which the infantry tired to death, were unable to reap. A peace such as the Japanese nation wished and deserved would have been, probably, the result of an energetic cavalry pursuit."

A RESOLUTION.

Adopted by the Washington Branch of the U. S. Cavalry Association, held in the City of Washington, 24 February, 1912.

"1. Whereas, from time to time during the past year articles have appeared in the public press purporting to represent the views of the best cavalry officers and claiming that the present organization of the cavalry arm is antiquated and archaic, and that the proper organization is one involving a fewer number of troops per regiment, and

"2. Whereas, it being the opinion of a large majority of the members of this Branch Association that it has not been demonstrated that such an organization of a fewer number of troops per regiment is an improvement over our present organization, and

"3. Whereas, the agitation for the reorganization or increase of any arm or branch of the service, except as part of a general plan for improving the efficiency of the whole military establishment, is believed to be untimely and injurious, and

as the present agitation for the reorganization of the cavalry is believed to be one of the causes of the attempts to reduce that arm, now, therefore,

"BE IT RESOLVED, by the Washington Branch of the United States Cavalry Association that it be made a matter of record that this Association is strongly opposed to the reorganization of the cavalry except as a part of a general plan for securing a proper organization for the entire military establishment."

The above preambles and resolution were considered by the Fort Leavenworth Branch of the U. S. Cavalry Association, as well as by other officers temporarily on duty at that station, and was fully concurred in by them, there being but two votes in the negative.

EDITOR.

BRANCH ASSOCIATIONS.

Probably at no time in the history of our Association has there been seen the importance of having a well organized Branch Cavalry Association at every cavalry garrison than the present when there is so much to be done in attempting to head-off the proposition to do away with five of our cavalry regiments. If there was ever a need of a Cavalry Association with live Branches that could and should handle such matters as has arisen in this emergency, now is the time. It has always been the opinion of our more progressive officers that our Associations, if properly managed in conjunction with energetic Branch Associations, could be a power in shaping opinions upon the many questions that arise regarding the cavalry service, its organization, equipment, tactics, etc.,

Now, that there is so much to be done and in so short a time, the few Branch Associations that have been formed recently are of immense help in carrying on the work of the educational crusade upon which we have entered and if there were

more of them, one in every cavalry garrison, this work would be much simplified and there would be a great saving of time and money.

In this emergency that has arisen, the Executive Committee has not hesitated to use the money of the Association in preparing and sending out printed matter where it will be of use, but particularly in sending to every cavalry officer hastily prepared data for their use as ammunition in this campaign. This work would have been much less and at less expense if it could have been handled through the local Branch Association.

Such Branch Associations have been formed recently at West Point, Washington, Fort D. A. Russell, Fort Ethan Allen and Fort Oglethorpe, and it is to be hoped that the good work will be taken up at all the other cavalry posts.

AN APOLOGY.

Ever since the receipt of the startling news of the proposed amendment to the army appropriation bill, reducing the number of cavalry regiments in our service, little has been done in the office of the CAVALRY JOURNAL but prepare and send out literature on this most important subject, together with preparation of the foregoing editorials. As is natural, our cavalry officers are much agitated about this proposition and all are striving in every legitimate way possible to head off this attempted legislation which is so out of place on an appropriation bill.

However, this is but preliminary to announcing that, owing to the above mentioned work of preparing and sending out educational matter relating to this amendment, two important items are being left out of this number of the JOURNAL.

The first is that of the annual report of the Secretary and Treasurer of the U. S. Cavalry Association and the account of the proceedings of the last annual meeting of the Association.

The second is a report of the award for the best horse in the Charger Class at the Virginia and Maryland Horse Shows for the year 1911, together with cuts showing the winner and other competitors, and also the pedigree of the horse that won the most blue ribbons at those shows.

THE AMERICAN RED CROSS.

The American Red Cross desires again to invite attention to the exhibition in connection with the Ninth International Red Cross Conference, which will be held in Washington, D. C., from May 7 to 17, 1912.

The exhibition will be divided into two sections, which will be styled Marie Feodorovna and General. The former is a prize competition, with prizes aggregating 18,000 rubles, or approximately \$9,000, divided into nine prizes, one of 6,000 rubles, approximately \$3,000; two of 3,000 rubles each, and six of 1,000 rubles each.

The subjects of this competition are as follows:

1. A scheme for the removal of wounded from the battlefield with the minimum number of stretcher bearers.
2. Portable (surgeons') washstands, for use in the field.
3. The best method of packing dressings for use at first aid and dressing stations.
4. Wheeled stretchers.
5. Transport of stretchers on mule back.
6. Easily folding portable stretchers.
7. Transport of the wounded between warships and hospital ships, and the coast.
8. The best method of heating railway cars by a system independent of steam from the locomotive.
9. The best model of portable Roentgen apparatus, permitting utilization of X-rays on the battlefield and at first aid stations.

The maximum prize will be awarded to the best exhibit, irrespective of the subject, and so on.

The General Exhibit is again divided into two parts; the first will be an exhibition by the various Red Cross Associations of the world. The second will be devoted to exhibits by individuals or business houses of any article having to do with the amelioration of the sufferings of sick and wounded in war, which are not covered by the Marie Feodorovna Prize Competition for the year. While the American Red Cross will be glad to have any articles pertaining to medical and surgical practice in the field, it is especially anxious to secure a full exhibit relating to preventative measures in campaign. Such articles will be classified as follows:

1. Apparatus for furnishing good water in the field.
2. Field apparatus for the disposal of wastes.
3. Shelter such as portable huts, tents and the like, for hospital purposes.
4. Transport apparatus (to prevent the suffering of sick and wounded) exclusive of such apparatus as specified for the Marie Feodorovna Prize Competition.

As with the Marie Feodorovna Prize Competition, for this country only articles having the approval of the Central Committee of the American Red Cross will be accepted.

Diplomas will be awarded for exhibits in this section of the exhibition as approved and recommended by the jury.

Further information may be obtained from the Chairman, Exhibition Committee, American Red Cross, Washington, D. C.

It is perhaps to apparatus having to do with prevention of disease in armies that the energies of Americans have been specially directed since the Spanish-American War. Therefore, the last mentioned section of the Exhibition should make an appeal to them.

+ : Publisher's Notices. : +

THE SAFETY-HYGIENIC BIT CO.

The following testimonial from Captain M. C. Grimsgaard, author of "The Handbook for Riders," will be of interest to those horsemen who are familiar with this bit:

Capt. Giov. Ciammaichella, 309 Broadway, New York City.

MY DEAR CAPTAIN:—I have found that on American trained horses your bit offers the most important purpose of the reins—that of giving the horse just the "proper" support on the bit, a point rarely to be attained with the American schooled saddle horse.

The arrangement of your bit, "when properly handled," *i. e.*, in accordance with the instruction of your circular, makes it possible to have the horse so in hand that even under different circumstances the same yielding to the tensions upon the reins and the same support on the bit can be attained—no matter what may be the nature of the animal's mouth.

I find also that the last bit which you sent me, is of superior workmanship to the first bits you put on the market.

Congratulating you on the improvements, I beg to remain,

Yours very truly,

M. C. GRIMSGAARD,

K. W. O., G. M. H. S. S.

Captain, Royal Norwegian Cavalry.

N. B.—Captain M. C. Grimsgaard is one of the foremost riding masters of this country and Europe, is author of the interesting "Handbook for Riders" and was an exhibitor and contestant in the International event for officers at the National Horse Show, held at the Madison Square Garden, November, 1910.

THE UNDERWOOD TYPEWRITER CO.

An order just secured by the Underwood Typewriter Company from the Western Union Telegraph Co., for 10,000 Underwood machines is the largest purchase of its kind in business history and breaks all records.

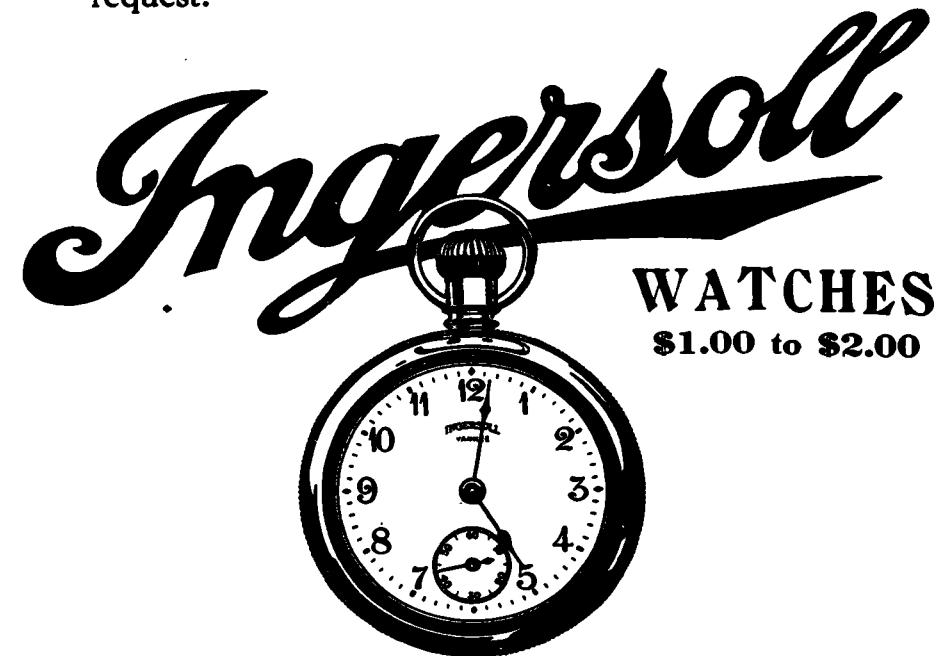
The innovation of day and night letter service, at reduced prices, and the great increase in business in consequence, made necessary the inauguration of more progressive methods in the transcription of all messages received over Western Union wires.

The proposition of purchasing the machines was put up to a committee some months ago. This committee took into consideration, not only the necessity for the purchase of typewriters, but the practical and mechanical merits of all machines. The result was a report to the company in favor of the purchase and the adoption of the machine just ordered. Within a year every telegram, and particularly the day and night lettergrams received over the Western Union wires, will be typewritten. When the method is fully in force it is expected that a vast improvement will be apparent.

The machines are to be delivered from Hartford, the home of the Underwood, to the various telegraph offices. The purchase because of its importance and size, has caused sensation in typewriter circles and great gratification on the part of the army of operators who are handling the telegrams of the world

If you lose your watch you lose what you paid for it. If you lose an Ingersoll Watch you are inconvenienced but that is about all. If you carry an Ingersoll you have the correct time with you always, and that is all you can expect to get from any watch.

15,000,000 people arrange their days by Ingersoll time. See the various styles of Ingersoll's at your dealer's or any dealer's. Booklet free on request.



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173 Ashland Bldg., New York.

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Fall in with the satisfied shavers—those who use **COLGATE'S** SHAVING STICK

Lathers abundantly, smoothly.
Softens the beard quickly—you
don't have to "rub in" with the
fingers.

Notice the cool, refreshed feeling
of your face after a shave with
Colgate's Shaving Stick.

In cleanly convenience and in
economy of use as in lux-
ury of its lather, Colgate's
Stick excels.



Send us 4 cents in
stamps for trial Stick.

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Whether you travel for the benefit of the service
or for your own pleasure, you will find Santa Fe
service closely approaches the military ideal of
perfection.

On Your Next Trip Travel Santa Fe

Which is under one management from Chicago
to California, El Paso, Galveston and Denver.
Then you will have Pullmans to rest in and live
on Harvey meals.



Send for copies of "California"
Limited" and "Titan of Chasms."
Their perusal will prepare you
for the good things you'll get
when you do travel.

E. E. HOOK, General Agent.

Both Phones No. 28.

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**Lancaster,
Pa.**



**Washington,
D. C.
1806 F Street.**

1876.

1911.

ALL CLOTH USED IN UNIFORMS IS OF MY OWN IMPORTATION
AND I GUARANTEE SATISFACTION.

The Latest Novelties in Civilian Dress.

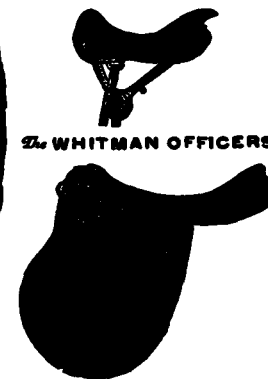
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LATEST REGULATION
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WHITMAN OFFICERS

WHITMAN
POLO AND HUNTING

All Pigskin Puttees, All Quality, per Pair - \$6 00
(We export this Puttee to England, France and Germany.)

The Whitman Officer's, complete, - \$20, \$22, \$25, \$27 and \$33.
The Whitman Polo, complete, - - - - - \$25, \$30, \$40.
The English Polo, complete, - - - - - \$40.

We manufacture every type of saddle and saddle-tree and are the sole makers of the
celebrated Whitman, the latter in some seventy-five different styles. Our factory is the most
modern equipped and the only one in the world producing nothing but equestrian goods.
Everything from "saddle to spur." Illustrated catalog free. All prices quoted
subject to above discount.

The MEHLBACH SADDLE CO. Successors to Whitman Saddle Co.
106 D Chambers St. New York City.



Underwood Standard Typewriter

MECHANICAL EFFICIENCY

"A writing machine of extraordinary perfection in its minutest details."—*Committee on Science and the Arts, Franklin Institute.*

The Franklin Institute of Pennsylvania, recognized as comprising the foremost body of the mechanical engineers in this country, awarded the Elliott Cresson Medal, its highest award, to the UNDERWOOD TYPEWRITER on February 2, 1910, after a thorough investigation of the machine by its Committee on Science and the Arts. An extract from the certificate accompanying the award is given below.

"Abundant opportunity was given the committee to examine minutely every detail of the manufacture of its writing machine at the Factory in Hartford, Conn., where, under the most able management, the best materials obtainable are converted by a very superior equipment and through exacting workmanship into a writing machine of extraordinary perfection in its minutest details."

"The Machine You Will Eventually Buy."

**UNDERWOOD
TYPEWRITER CO., INC.**

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Branch Offices Throughout the World.

It will help the Cavalry Journal if you mention it when writing.

The Army National Bank OF FORT LEAVENWORTH, KANSAS.

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This Bank solicits the business of the entire Army. Our checks are par everywhere as they are "payable in Eastern exchange if desired."

E. A. KELLY, President.

P. B. JOHNSON, Vice-President.

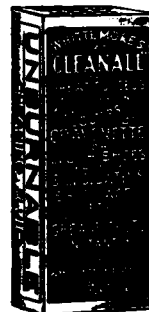
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Endorse your pay voucher. "Place to my credit with
THE ARMY NATIONAL BANK," Fort Leavenworth, Kan.

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Finest
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Largest
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"CLEANALL" the great success for cleaning velvet and silk shoes and slipper, also crayonette and all silk or woolen fabrics, pink and blue kid, etc. 25c.

"OIL PASTE" for ALL kinds of black shoes and OLD rubbers. Black, polishes, softens and preserves. Contains NO ACID to injure the leather. LARGE tin boxes. 10c.

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"DANDY" Combination for cleansing and polishing all kinds of russet or tan boots, shoes, saddles, etc. 25c. "STAR" 10c.

"QUICK WHITE" makes dirty CANVAS shoes clean and white. In thick form so it can be quickly and easily applied. No white dust. Will not rub off. A sponge in every package, so always ready for use. Two sizes, 25c and 10c. Also the following colors for CANVAS shoes: Blue, Pink, Red, Green and a dozen other shades; two sizes, each color, 10c and 25c.

Whittemore Bros. & Co., Cambridge, Mass.

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Base Ball Time,
Bicycle Time, Fishing Time,
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Golf Time, Hammock Time,

The time when we can all, the entire family, enjoy the woods and lakes and nature.

It's Coming, not far Off

In the mean time enjoy our Spring Catalog No. 749. It shows everything in good

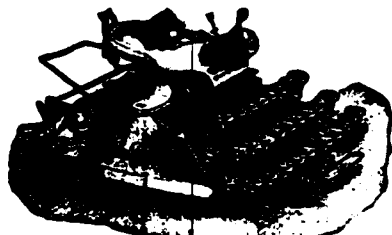
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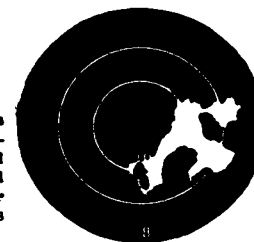
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Automatic Pistol

was fired 10,000 times with full charge smokeless powder and full jacketed bullets, and then, without cleaning the arm, this target was made off-hand.



(TARGET, HALF SIZE)

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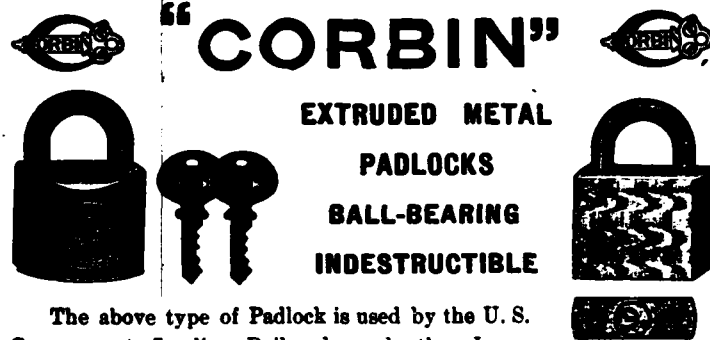
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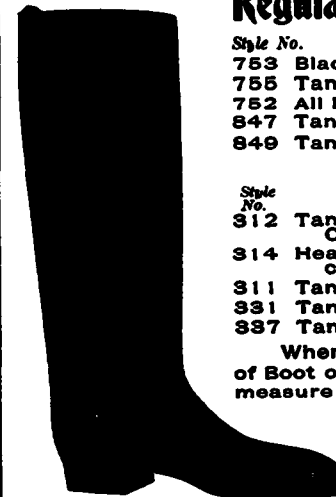
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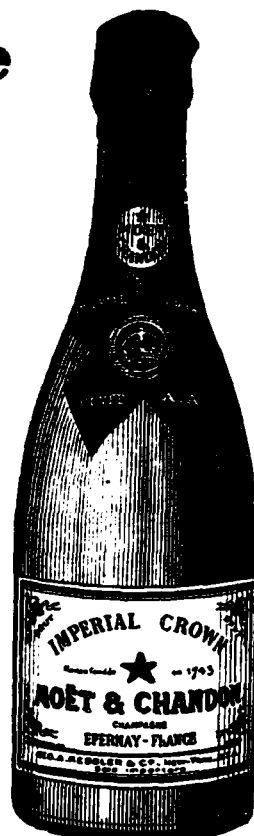
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CONTENTS FOR MAY, 1912.

	PAGE
OUR CAVALRY ORGANIZATION AS VIEWED IN THE LIGHT OF ITS HISTORY AND OF LEGISLATION—Captain H. R. HICKOK.....	995
REDUCING THE CAVALRY OF THE REGULAR ARMY—Major A. L. DADE	1010
WATERING THE HEATED HORSE—Veterinarian Wm. P. HILL.....	1017
DAILY DIARY OF EQUITATION WORK AT THE MOUNTED SERVICE SCHOOL.....	1021
OUTLINE OF A SINGLE RANK MOVEMENT SYSTEM FOR CAVALRY —Brigadier General F. K. WARD.....	1057
THE RESTRICTED CLIMATIC ENVIRONMENT OF HORSES—Lieuten- ant Colonel CHAS. E. WOODRUFF.....	1086
REPRINTS AND TRANSLATIONS:	
THE ARMY REMOUNT PROBLEM—GEORGE M. ROMMEL.....	1104
THE FIRST AEROPLANE UNDER FIRE.....	1128
THE MOUNTED TROOPS OF THE EXPEDITIONARY FORCE.....	1131
MACHINE GUN TACTICS.....	1140
MORGANS AS ARMY HORSES—Major F. A. BOUTELLE.....	1147
MILITARY NOTES:	
THREE VALUABLE BOOKS—Major M. F. STEELE.....	1150
THE ADVANCED RETROGRESSION OF OUR CAVALRY—Captain GEORGE B. RODNEY.....	1153
FORAGE—Veterinarian R. VANS AGNEW.....	1158
EXTRACTS FROM A LETTER FROM AN OFFICER AT SAUMUR.....	1161
MILITARY RACES AND HORSE SHOWS IN FRANCE.....	1163
RIDING IN THE ITALIAN ARMY.....	1164
THE FRENCH CAVALRY SADDLE—PACKED.....	1166
OFFICERS' DRESS.....	1168
FORT LEAVENWORTH HORSE SHOW.....	1169
OFFICERS' CHARGERS.....	1178
BOOK REVIEWS.....	1183
EDITOR'S TABLE.....	1187

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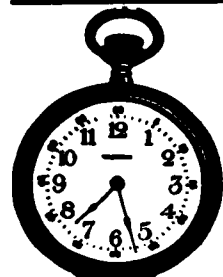
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**OUR CAVALRY ORGANIZATION AS VIEWED IN THE
LIGHT OF ITS HISTORY AND OF LEGISLATION.**

BY CAPTAIN H. R. HICKOK, FIFTEENTH CAVALRY.

In the past year or so much has been said and written on the subject of our cavalry organization and of the needs for its reorganization. All sorts of organizations have been proposed ranging from those as small as the cavalry regiments in the British service to others more or less similar to our present organization. But most of these suggestions, when reduced to the ultimate reason, point to promotion. Robbed of that feature, many of them would not be advocated. That there is much dissatisfaction in the cavalry service is unquestionable, and most of it is traceable to the inequalities of promotion in the various arms. But any reorganization scheme that is based on the inequities and inequalities of promotion alone, or has these as the moving causes, is not sound. It is the purpose of this paper to present the salient features of the legislation affecting our cavalry service together with certain conclusions to be drawn therefrom.

In the following table is given a synopsis, in parallel columns for the purpose of comparison, of the various principal

legislative features affecting cavalry and infantry organization since the formation of the federal government.

THE VARIOUS ORGANIZATION OF CAVALRY AND INFANTRY REGIMENTS SINCE THE FORMATION OF THE FEDERAL GOVERNMENT DOWN TO THE PRESENT TIME.*

CAVALRY.

- 1792 1 sq. lt. drags. 1 maj. adj. qm. etc., 4 trs. en. men totaling 320. Raised for 3 years only.
- 1796 2 cos. lt. drags. each of 1 capt. 2 lts. 1 cornet and 63 en. men.
- 1798 6 addl. trs. lt. drags. raised, which with the 2 trs. authorized in 1796 formed a regt. of 8 trs. Rgt. officers, 1 lt. col. 2 majs and rgt. staff and n. c. staff.
- 1799 Rgt. cav. reorganized, to consist of 5 sq. each of 2 cos., officers as before and 930 enlisted men.
- 1800 Prov. army disbanded and of cav. only 2 trs. lt. drags. retained.
- 1808 1 Regt. lt. drags. organized 8 trs., 1 col. 1 lt. col. 1 maj. rgt. staff, etc. Each tr. 76 men.
- 1812 6 cos. rangers, each co. 4 off. 68 men.
1 Regt lt. drags., 2 bns. 6 cos. each, each co. 91 men. Officers, 1 col. 1 lt. col. 2 majs. 1 rgt. staff and n. c. staff.
- 1813 addl. maj. authorized. 10 cos. rangers to be raised in lieu of 1 of 20 rgts. inf. authorized this same year.

INFANTRY.

- 1790 1 Regt. 1 lt. col., 3 majs. 3 bns. 12 cos. each co. 76 en. men.
- 1792 5 Regts. all told, each of 960 en. men and the authorized officers.
- Each regt. to consist of 3 bns., except one regt. to have 2 bns. and 1 sq. lt. drags.
- 1798 Rgts. raised to 10 cos. Lt. col. commands. 2 majs., etc.
- 1808 Rgts. of 10 cos. Field and staff as drag. regt. each co. 78 men.
- 1812 Rgts. 2 bns. 9 cos. each. Each co. 110 men. Field and staff as for regt. lt. drag.
- 1813 1 addl. maj. per rgt. authorized.

- 1814 2 existing rgts. lt. drags. combined into 1 regt. 1 col. 1 lt. col. 2 majs, rgt. staff and n. c. staff, 8 trs. ea. 5 off. and 116 en. men.
(Out of service 6-15-15).

- 1815 Service reduced to peace establishment. Regt. 1 col. 1 lt. col. 1 maj. rgt. staff and n. c. staff, 10 cos. ea. of 78 en. men.
- 1821 Rgts. reorganized, ea. to consist of 1 col. 1 lt. col., 1 maj. rgt. staff and n. c. staff, 10 cos. ea. 3 off. and 51 en. men.

- 1832 1 bn. 600 mtd. rangers, ea. co. 4 off. and 110 en. men.
- 1833 Rgt. dragoons authorized in lieu bn. mtd. rangers. 1 col. 1 lt. col. 1 maj. rgt. staff and n. c. staff, 10 cos. ea. 3 off. and 71 en. men. (This was known as the 1st dragoons.)
- 1836 An addl. rgt. dragoons or mtd. riflemen authorized. (The 2d Dragoons.)

- 1838 Added to every inf. co. 1 sgt. and 38 privs., total en. per co. 90.

- 1842 Each co. Drags. reduced to 61 en. men.
2d Dragoons converted into a rgt. riflemen to date 3-4-43.
- 1844 Repeals act converting 2d Drags. into riflemen, remounts rgt. and gives it title of 2d Drags.
- 1846 Authorized 1 rgt. mtd. riflemen. 1 col. 1 lt. col. 1 maj. rgt. staff and n. c. staff, 10 cos. each co. 3 off. and 76 en. men.
- 1847 1 addl. rgt. Drags. authorized for service during war with Mexico.
1 addl. major authorized per rgt. for service during the war. Certain teamsters added per rgt.

- 1847 1 addl. major per regt. authorized as for cav. Certain teamsters added per rgt.

*Extracted from: U. S. Military Laws 1776-1863, Callan.
Military Laws of the U. S. to 1874. Scott.
Military Laws of the U. S., 1911 rev. McClure.

- 1850 President authorized to mount any part of army now serving on foot.
For cos. on frontier, privates, may be increased to 74 per co.
- 1855 2 Rgts. cav. added to army, to be organized as in the existing forces.
- 1858 1 Rgt. Texas Mtd. Vols. authorized for Texas frontier service for 18 mos.: 1 col. 1 lt. col., 1 maj., rgt. staff and n. c. staff, 10 cos. each of 3 off. and 85 en. men.
2 Rgts. 18 mos. vols. authorized for service in Utah, either as mtd. rgts. or inf. and organized as for the Texas Mtd. Vol. Regt.
- 1861 500,000 vol. all arms authorized, cavalry in proportion of 1 co. to every regt. inf. and to be organized as in regular service.
- 7-29 Adds. 1 cav. rgt. (the 6th) to consist of not more than 3 bns. of not more than 2 sq. each, each sq. of 2 cos. ea. 1 col., 1 lt. col. rgt. staff, n. c. staff and band. Each sq. 1 maj. and sq. staff and n. c. staff. Each co. 3 off. and 92 men.
- 8-3 Different mtd. rgts., now all grouped together and designated "cavalry" and given numerical designation from 1 to 5.
- 1862 All cavalry reorganized: each regt. will consist of 1 col. 1 lt. col., 3 majs., staff and n. c. staff, 12 cos. or troops, each troop 4 officers and 100 en. men.
- 1860 As for cavalry.
- 1855 2 Rgts. inf. added to army to be organized as in the existing force.
- 1861 Rgt. organization: 1 col. 1 lt. (7-22) col. rgt. staff and n. c. staff band, 10 cos. ea. of 3 off. and from 80 to 98 men.
- 7-29 9 Rgts. added to reg. army. Each rgt. not less than 2 nor more than 3 bns., each bn. 8 cos., each co. of 3 off. and not to exceed 97 en. men. Rgt. and bn. officers as for cavalry. Band authorized. (Officers were appointed for entire rgt., but not more than two bns. of each of these rgts. were ever manned, the officers being used on other duties.)

- 1863 Grade of supernumerary 2d lt. abolished.
- 1866 Adds 4 cav. regts., now 10 all told. Organization as for 1862.
- 1866 Regular establishment 45 rgts. ea. rgt. to consist of 1 col., 1 lt. col., 1 maj., rgt. staff and n. c. staff, 10 cos. each co. 3 off. and 69 en. men, which may be increased to not to exceed 100.
- 1869 Infantry reduced to 25 regiments.
- 1883 Designation of "company" of cavalry changed to "troop" by Circulars 8 and 9 that year.
- 1890 2 troops in each regiment were skeletonized by G. O. 79 and 120 that year.
- 1898 Skeletonized troops remanned.
- 1890 2 companies in each regiment were skeletonized, as in the cavalry.
- 1898 Battalion organization adopted, each regt. to consist of 2 bns. of 4 cos. ea., and of 2 unmanned cos. Upon declaration of war a 3d bn. authorized to be composed of the 2 unmanned cos. now to be manned and of 2 additional cos. This when in final effect made the majors to be 3 per regt.
Skeletonized cos. remanned and battalion organization made fully effective.
- 1899 The regimental organization of 8 squadrons, each of 4 troops adopted.
- 1901 5 Rgts. cav. added. The present organization, 5 field officers, full regiment and sq. staff and n. c. staff, band and "twelve troops organized into three squadrons of four troops each." Each tr. 3 off. and 65 en. men and may be increased to not to exceed 100 en. men.
- 1899 The regimental organization of 3 battalions of 4 companies each is continued.
- 1901 5 Rgts. inf. added. The present organization, as for cavalry except substituting battalion and company for squadron and troop, respectively. Each co. 3 off. and 65 en. men, and may be increased to not to exceed 150 en. men.

DRILL REGULATIONS.

Until 1891, drill regulations in our service were designated "tactics." As we understand the term, "tactics" refers to the dispositions for and the methods used in fighting, and not to the manner of drill nor instructions for maneuver.

The following references give an outline of the principal drill-book regimental organizations that have been in use at various times since the formation of our federal government.

CAVALRY DRILL.

1794. "Manual Exercise, and Evolutions of the Cavalry, as Practiced in the late American Army," by Baron von Steuben. The regiment of nine troops was formed into three squadrons, each of three troops; the regiment of eight troops into two squadrons, each of four troops. The major or adjutant exercised the regiment; captains took post with their troops; no mention is made of the colonel or lieutenant colonel; apparently there was no designated commander for each squadron. Movements were the simplest, and devoid of detailed description, and went no farther than the regiment. Arms: swords and pistols.

This book also included within its covers the infantry drill, which provided for company and regimental (battalion) formations, the regiment (battalion) consisting of eight companies.

1809. "Modern Tactics," Duane. "The first organized portion of an infantry regiment is a company; that of cavalry a troop. As the infantry is divided into two battalions of four companies, so the cavalry is divided into two squadrons of four troops each, composed of the numbers as above." These tactics provided for mounted action and indicated the necessity for a limited number of carbines for special cases of dismounted action. Sword and pistols were the other arms.

1811. "Abstract of the Instruction for Volunteer Corps of Cavalry," by Colonel Herries of the British service, and based on the British organization and tactics. It was brought out for use by the Philadelphia City Militia Cavalry. In this drill, a regiment consisted of three, four or five squadrons, according to the regimental strength, and each squadron

generally of two troops. The armament indicated was pistols and swords.

1834. "A System of Tactics: or Rules for the Exercise and Maneuvers of the Cavalry and Light Infantry and Riflemen of the United States." This work was also known as the "Scott Tactics..." It was submitted in 1826 by a board appointed that year. General Scott and Lieutenant Colonel Zachary Taylor were two of the members of the board. At the date of its report, there was no cavalry in the United States service. It was published the year following the authorization of the 1st Dragoons. Two troops (the legislative troops), companies or divisions, as they were variously called, composed a squadron, and four squadrons a regiment. The squadron was commanded by the senior of the two captains whose troops composed the squadron. The regimental commander was the only field officer who had a command; the others had only supervisory but no active independent duties or commands at drill. Mounted formations were all in double rank. No organization higher than a regiment was discussed. Armament and dismounted action were not discussed in the cavalry section of this book.

1841. "The Poinsett Tactics," so named for the then Secretary of War. These were also called the "1841 Tactics." This drill provided for a five squadron regiment, but the general principles were as in the Scott Tactics. The armament was saber, pistol and carbine. Dismounted action was provided for. The Scott and Poinsett Tactics were those chiefly used during the Civil War.

1861. The Cooke Tactics, devised by General (then Colonel) P. St. George Cooke, were approved and issued to the service. The text provided for the maneuver of the squadron (our troop, not the two-troop unit of the Scott and Poinsett Tactics), the regiment and the brigade. Between the squadron (our troop) and the regiment there was no intermediate unit corresponding to our present squadron. The regimental commander was the only one of the five field officers who had specific directive duties, the others having merely supervisory duties. These tactics provided that two regiments formed a brigade and two brigades a division. The chief differences between

Cooke's and the preceding drill systems are the introduction of mounted single rank formations and the substitution of ten squadrons (our troop) for the four and five-squadron regimental drill of the preceding drill books. The saber and pistol are specifically provided for and the carbine by inference in the instruction for dismounted action.

1873. "United States Tactics, Cavalry: 1873." These were an assimilation of cavalry drill and of infantry drill as laid down in Upton's Tactics. For dismounted work the cavalry drill book prescribed practically an infantry double rank formation. For mounted work the battalion consisted of any number of companies from two to seven, four being considered the normal number. A major commanded the battalion. The regiment was supposed to consist of three battalions of four companies each, but the rules of drill were applicable to a greater or less number of battalions of a greater or less number of companies. The brigade was given as composed of three regiments. The size of the division was not stated. Armament was the saber, pistol and carbine.

1891. "Cavalry Drill Regulations 1891" definitely adopted the four-troop, three-squadron regiment. Armament as in the 1873 drill book.

1896. The Drill Regulations of these years are really develop

1902. ments of the 1891 edition, retaining the same drill

1909. organizations and armament.

INFANTRY DRILL.

1809-1891. Subsequent to the Duane Tactics of 1809, above noted, many books of infantry drill were brought forward. Until 1891, these books all provided for drill by company and by regiment or battalion of eight or ten companies, "battalion" being the maneuver name of the regiment. Between the company and the regiment there was no intermediate drill organization corresponding to the present battalion. The regimental commander was the only field officer exercising active command at drill.

1891. Infantry Drill Regulations of this year definitely adopted for drill and maneuver the four-company, three battalion regiment, which had been adopted by the cavalry in 1873.

1911. The Infantry Drill Regulations of this year continue the previous organizations and make the first mention of the maneuver dispositions of machine guns.

HISTORICAL NARRATIVE.

In the Revolutionary War there were all told four regiments of light dragoons, which passed out of existence at the end of that war. The first cavalry of the present government was raised in 1792 and consisted of one squadron with approximately the same number of officers and organization as an infantry battalion of that time and of our squadron to-day.

The first infantry regiment was authorized in 1790 and, except for having no colonel, was given practically the same legislative organization as our infantry regiments of to-day. If we follow the legislative organizations authorized for cavalry and infantry we will notice that the organizations kept practically the same down to the time of the Civil War. Some new regular regiments were then authorized which had peculiar organizations, but these peculiarities were only short-lived. The masses of troops in the Civil War usually had the organization for infantry of ten companies per regiment.

In 1862, all regular cavalry regiments were made twelve troops strong and were given three majors. The volunteer cavalry was required in 1862 to conform to this organization. The infantry continued the ten-company regimental organization down to 1898, when legislation adopted the modern four-company three-battalion regiment. The four-troop three-squadron regiment was legislatively adopted in 1899.

Steuben's Tactics, which were our earliest cavalry drill regulations, made no mention of dismounted action. Duane's Tactics followed a few years later and showed the necessity for such action. The mounted rangers authorized in the early part of the nineteenth century were really mounted infantry. The necessity for having a permanent mounted force finally produced the 1st Dragoons, and later other cavalry regiments, all of which were trained for both mounted and dismounted action, and some fought entirely dismounted and without horses through entire campaigns.

Besides the regular and volunteer organizations noted, for the frequent Indian and other wars there were various volunteer forces raised, but these had no permanent effect on organization.

In 1906, a provisional organization of a machine gun platoon was created by War Department orders for each regiment of cavalry and infantry. Congress has not yet recognized these as legislative organizations by the enactment of the appropriate statute, and they may at any time be abolished or changed by War Department order.

Our cavalry started out in the Revolution with no traditions and adopted the European light dragoon as its model. In the course of a few years, the necessity of using cavalry for dismounted service was indicated both by legislation and by the drill books. The cavalry then broke away from the European organization and took the infantry organization. For maneuver and field duties the cavalry took the four-troop three-squadron regimental organization eighteen years before it was adopted by the infantry.

By comparing the above cited legislative extracts with those from the drill books, certain facts are noticed and others may be deduced, among which are the following:

The legislative and drill-book organizations frequently did not coincide. The fighting was done by the organizations prescribed in the drill books. The drill-book organizations are tactical matters properly left to executive discretion.

The Scott and Poinsett tactics were practically the French cavalry drill of that period and called for a maneuver organization—the four or five-squadron regiment—which is the usual European cavalry regiment of today. The drill of the civil War was done first with ten and then with the twelve legislative troops that exist today. The double rank formation was rendered necessary by the employment of large cavalry masses and may again be resorted to, should large masses be brought together. Notwithstanding our Civil War experiences, the drill organizations and maneuvers of the Scott and Poinsett tactics were dropped.

Cooke's Tactics of 1861 were not found suitable in handling large cavalry masses and were not generally used. They

had their influence on the assimilated tactics of 1873. Indian warfare required different formations from those of civilized war and the single rank was more flexible for that service.

The 1873 Cavalry Tactics adopted the regimental drill organization of the three squadrons, each squadron of four companies. This was a practical adaptation of the drill of the three-battalion infantry regiment which had already been adopted in Europe, but was not adopted by our infantry until 1891. The Cavalry Drill Regulations of 1891 give a more positive declaration of the four-troop three-squadron regiment. This organization, except for the fact that the war strength of an infantry company may be larger, is also the present day infantry organization. By executive act, machine guns have been added to all regiments, both of cavalry and infantry, but that has not changed the legislative organization nor the drill of the regiment. Today the legislative organization of cavalry and infantry regiments are the same.

Accordingly we see that legislation during the greater part of our national existence has given to cavalry practically the same organization as infantry. This similarity is also reinforced by other legislative enactments, of which the following are quoted:

1792. ".....and it shall be a condition in the enlistment of said dragoons to serve as dismounted dragoons whenever they shall be ordered thereto."

1796. The legislation of this year authorized "two companies of light dragoons who shall do duty on horse or foot, at the discretion of the President of the United States."

1812. Legislation authorized for frontier service "six companies of rangers, to serve either mounted or dismounted, to be armed, equipped and organized in such manner and under such regulations as the President directs."

1833. The statute authorizing the formation of the 1st Dragoons provided that "Said regiment of dragoons shall be liable to serve on horse or foot, as the President may direct."

1858. Legislation reads: "The President is authorized to receive into the United States service not exceeding two regiments of volunteers for eighteen months for service in Utah, either as mounted regiments or infantry."

1866. Legislation of this year, which is still in force, reads "Any portion of the cavalry force may be armed and drilled as infantry or dismounted cavalry at the discretion of the President."

It will also be noticed that after each war the military force was reduced, either by cutting off certain organizations or by reducing the strength per organization. Following these precedents, Congress will probably further reduce, both in number of regiments and in their size, any small regimental organizations that may be proposed.

In our present legislative organization our squadron is a small European regiment and our regiment is a small European brigade. On a peace footing the difference is more marked than when at war strength. In war, our regiments will, if the Civil War be taken as a precedent, be liable to fall off in strength so that the regiment will be no stronger than a large or war strength squadron.

Our present organization, first legislatively authorized in 1899, was reaffirmed in 1901, eleven years ago. There was no attempt made then to change our organization to the small European regiment and the conditions affecting then existing organizations have not since changed. The growth of the sentiment for a small cavalry regiment may be said to date from the introduction into our service about eight years ago of numerous German text books. Outside of a very few persons in our cavalry, the small cavalry regiment may be favored by some officers of other arms who, disregarding the combined composition and strength of our regular and militia forces forming our first line, our traditional cavalry tactics, the nature of the warfare in which we will probably engage, the character of the terrain in the probable theater, and the strategic considerations involved, would organize our regular cavalry in peace on the basis and proportions to the regular infantry of the European armies at war strength.

Concerning cavalry types, Colonel Wagner wrote in 1894:*

"The dragoon is essentially the cavalryman of the present day, and the American cavalryman of 1864-5 is the type to which all European mounted troops are more or less reluctantly, or perhaps more or less unconsciously, approaching. A cavalry is now demanded which can seize the transient op-

*Organization and Tactics, pp. 57-8.

portunities of charging with the saber, can fight sturdily on foot, and can operate independently. All this the American cavalry could do, and did do, in the War of Secession."

The recent writings of many Europeans, the latest being General von Bernhardt of the German service, confirm this view. This view is also borne out by the following extracts from a report to the War Department of Captain E. N. Scott, *Fifth Field Artillery*, dated December 8, 1911, on his personal observations of maneuvers in the German army in September, 1911:

"Its (cavalry) officers are better, its enlisted men not so well mounted as ours,.....all have the same organization and carry the lance, saber and carbine. Pistols are to be issued in war. The soldier does not ride as well as ours, but his horse is trained to the gentleness of a 'doctor's nag.'

"Great attention was paid to patrol work and apparently none to spectacular attempts. The infantry were not slow to say that the cavalry are really mounted infantry,—the cavalry say they are superior to mounted infantry, but admit that they depend more than ever on dismounted fire action. The tendency in this direction was well shown September —. The Red cavalry division got on the flank of the Blue right column, unobserved, and attacked from less than 1,000 yards with eighteen guns and ten dismounted squadrons. The remaining five squadrons remained mounted as a reserve. It was a complete surprise to the Blues. A better opportunity for a mounted attack could not be desired. However, the attack as carried out was fully approved by higher authorities. Some hours later this division found itself on the flank of the victorious Blues, who were on the point of carrying the Red position. It looked like the psychological moment one reads about, and there seemed nothing to prevent, but again ten squadrons dismounted and advanced to the attack. The halt was sounded before their attack was well organized, and the exercise ended. Not much doubt as to the conduct of the German cavalry in the next war.

"There is no question that the German cavalry ideas have undergone a great change in the past few years, and it is worthy of note that the conduct of American cavalry in the Civil War is receiving a great deal of attention."

ARMAMENT.

Under the drill book citations made above is given the armament assumed in these books. During the Mexican war the dragoons were armed with musketoons, Prussian sabers, and horse pistols. The mounted rifles were armed with percussion rifles and Colt's army revolvers. The cavalry regiments were during the period just before the Civil War armed with sabers, rifle-carbines, and Colt's navy revolvers. During the Civil

War the cavalry was generally armed with rifles or carbines, sabers and revolvers. There was only one lancer regiment in the Civil War, the Sixth Pennsylvania, and that changed the lance for the saber in 1863.*

Concerning the use of the lance in the Mexican War, we read:†

"With the lance they (the Mexicans) were greatly our superiors, and used that weapon with great effect both at Buena Vista and at San Pascual. We have yet to make good lancers in the United States, as experiments, even on a small scale, have proved failures among Americans."

DEDUCTIONS.

The organizations created by legislation, although based on the recommendations and testimony of military experts, are usually adjusted to meet political conditions. Hence, while the organizations may not fully measure up to the best military views of their respective times, they indicate the general nature of those views.

Although the drill books of the Civil War, when our principal cavalry traditions were created, provided for maneuver with organizations similar to those of the European cavalry, our cavalry, even while using that drill, was reorganized and given the organization of twelve troops with three majors per regiment, which organization led directly to our present four-troop three-squadron regiment.

Excepting possibly the temporary force created in 1799, there never has been a legislative organization in our service similar to the typical cavalry regiments of Europe.

The armament indicates the nature of the duties. Starting out with the European light cavalry armament, we soon changed to that of dragoons. Our cavalry definitely rejected the lance. In other words, the sentiment of our service is opposed to pure cavalry of the European type.

The European cavalry is little by little adopting our tactics; but European countries are so hedged about by their historic traditions, and economical considerations being so weighty with them, it is difficult to foresee to what extent they may change their organization. Under these circumstances

*Cavalry Tactics as illustrated by the War of the Rebellion, Gray, pp.7-8.

†History of the U. S. Cavalry, Brackett, p. 83.

it would be unwise even to suggest that we adopt their cavalry organization.

CONCLUSION.

As most cavalry officers are or should be well acquainted with the history of our cavalry and of the tactics it has used, these matters will not be further discussed at length in this paper. But, an analytical examination of history will show that our cavalry possesses the following methods of fighting:*

- "1. The mounted charge, alone, or supported by artillery or by dismounted fire action, or both.
- "2. Dismounted fire action, offensive or defensive, alone or in combination with artillery.
- "3. Mounted fire action in exceptional cases."
4. In a dismounted campaign, the tactics of infantry.

In other words, we are dragoons, not cavalry of the European traditional type, and our organization should be that which gives greatest efficiency for both mounted and dismounted service. Our present organization is a development and growth of over a century and should not be changed until the necessity therefore becomes apparent.

In summation, I can do no better than repeat what I have elsewhere said:

"It will be further observed that our cavalry holds strongly to the principles of dismounted fighting. This is an essential difference between our cavalry and that of the rest of the world. Our cavalry has always been trained for mounted combat, but during the Civil War and in partisan and border warfare, before and since, dismounted fighting has been an essential feature of our fighting tactics. It is, therefore, traditionally impossible for us to adopt any organization that does not give great prominence and consideration to dismounted fighting, and we are not prepared to adopt the European organization, which is founded on the organization of Frederick the Great and has practically no traditions which are not those of mounted combat."†

*F. S. R. 269.

†Cavalry Reorganization, Journal of the U. S. Cavalry Association, September, 1911, pp. 268-9.

REDUCING THE CAVALRY OF THE REGULAR ARMY.

BY MAJOR A. L. DADE, NINTH CAVALRY.

The House of Representatives propose to lop off a third (five regiments) of the cavalry of the regular army under the grave misapprehension that it has become useless, is superfluous and an unnecessary burden on the country in the way of expense.

While laudable efforts to reduce the enormous expenditures of the Government will meet with general approval, those who are aware of the disastrous consequences that must inevitably follow such ill-considered action cannot but deplore the unfortunate choice of means to that end in the particular instance.

There are other methods of reducing the expense of the military establishment without touching its personnel or its pay. Those who are in it and of it see many ways by which large economies may be effected. It is unnecessary to touch upon them here farther than to say that such means are properly a part of a definite military policy,—which is now and always has been the crying need of our service,—and are not to be brought about by piece meal legislation which has been the bane of the Army. Such a policy should be inaugurated by the creation of the proposed Council of National Defence. We will then quickly have a definite object in view and all legislation touching the military establishment will conform to that object.

Such a policy has been prepared and is believed to be ready for the consideration of the Council upon its creation by the Congress. Such a system was followed in the creation of the Endicott Board (so-called) under Mr. Cleveland. The labors of this board extended over many years and though its personnel changed from time to time, it adhered to a fixed

general policy. The result is shown in our system of coast defences which is a monument not only to the board but to the excellent system under which it worked.

An impression seems to exist among certain members of the House, including Mr. Hay, the chairman of the Military Committee, that changed conditions of warfare have so modified the functions of Cavalry that less of it will be needed with armies in the future than was required in the past. Nothing could be farther from the case. On the contrary, it is a fact, that following every great war for the past seventy-five years, both victor and vanquished have bent every energy towards increasing the size and effectiveness of their cavalry forces. This is true of both Russia and Japan in the far east. So keenly has Japan felt her deficiencies in good Cavalry that with a depleted treasury and taxes piled to the limit, she has, nevertheless, set aside thirty million yen—fifteen million dollars—for the establishment of Government breeding farms for Cavalry horses. The next war will find her former deficiencies fully remedied. There is little place for the horse in the economic life of the Japanese. The Government wants Cavalry horses and nothing else and that is what they are breeding, as is known from officers who have visited and inspected their breeding stations in the past six months.

It is also a fact that the amount of Cavalry maintained by European countries is limited by expense rather than by other considerations. They maintain with the colors the minimum to meet their needs, but it must be remembered that they have large reserves of trained men available at a moments call to supplement losses and increase the force, while we having nothing of the kind must always create anew after the emergency is upon us.

Up to 1901 our own cavalry consisted of ten regiments only. Its increase then to fifteen was directly the result of our experiences for the preceding three years.

Should it be necessary for us to enter Mexico or Cuba and there wage the guerrilla warfare peculiar to those peoples, a much larger force of mounted men than we now possess would be necessary to bring it to a successful conclusion. Every so-called insurgent in Northern Mexico today is a mounted man.

The assertion is made without fear of contradiction, that not one, among the great number of military writers of accepted authority, maintains that cavalry has lost one whit of its importance numerically or otherwise as a component part of armies. On the contrary all maintain that while its role on the actual field of battle may have undergone slight modification it has broadened in other directions until on the whole its importance has increased.

Be it remembered that our cavalryman is just as effective with his rifle on foot as the infantryman. If this fact needed demonstration we might point to the Cavalry Division of the Fifth Army Corps at Santiago which went to Cuba dismounted, were assigned their sector of attack on the Spanish position and carried it as their infantry brothers carried those assigned to them.

If we are to follow the maxim of the Great Forrest—"Git thar fust with the most men"—we can do no better than put all our men on horses, as he did, make horsemen of them—Cavalrymen,—then we cannot only "git thar fust" but we "git thar" fresh and ready to do the work required.

President McKinley in his 1901 message to Congress, said: "The American cavalryman trained to maneuver and fight with equal facility on foot and on horseback is the best type of soldier for general purposes now to be found in the world. The ideal cavalryman of the present day is a man who can fight on foot as effectively as the best infantryman and who is, in addition, unsurpassed in the care and management of his horse and in his ability to fight on horseback."

This is the type of fighting man that the Hay amendment proposes to eliminate as no longer of military use. It proposes the wiping out of that which has been years in the making and which once destroyed will require years to create anew. The fine well trained experienced non-commissioned officers and men of these five splendid cavalry regiments cease at once to perpetuate themselves by training up successive generations of the same kind and their like can be obtained again only after years of such work as has made these regiments the effective fighting units they now are.

To quote from a distinguished cavalry officer of the Civil War, General William W. Averill: "The amount of patient and persistent hard work required to convert 1,200 untrained citizens unaccustomed to the care of a horse or his use under the saddle and wholly unexperienced in the use of arms into the *semblance* of a cavalry regiment in six months is known only to those who have done it."

The writer finds ready confirmation of these words out of his own experience for he became a captain of a troop in one of the new regiments created by the Act of February 2, 1901. With two excellent and experienced lieutenants for his assistants he labored day and night for upwards of two years before he felt that he had a troop of cavalry worthy of that name. Indeed it was much longer than two years before the reliable and experienced non-commissioned officers and men, the backbone of every efficient organization, were to be found in these new regiments in sufficient numbers to make them the equals in efficiency of the old.

The army today is barely adequate in size to meet the demands upon it and at the same time these demands are increasing. A garrison must be provided for Hawaii; another for the Canal Zone; American troops are once more in China; Mexico is turbulent, Cuba is restless.

Our efforts last year at assembling a division in Texas might well have caused military men the world over to smile. By stripping our garrisons throughout the country we were able to bring together at San Antonio but little more than half a division in numbers. The mobile army within the territorial limits of the United States is less in numbers today than it was at the outbreak of the war with Spain.

The country cannot afford to give up a single soldier, least of all a single cavalry soldier. Our people are no longer riders of horses. The cowboy has almost ceased to be a feature of the western plains. We have no considerable class of horsemen in any section from which to draw recruits for the mounted branches.

Our militia cavalry is composed of the finest class of men but the difficulties under which they labor in the matter of horses are such that if called into the service of the General

Government and supplied with mounts (necessarily largely or wholly untrained) it would be months before they could reasonably be expected to perform any but the simplest duties of their arm.

The writer has practiced and studied the profession of Arms for almost thirty years. Every improvement in weapons, every new discovery bearing upon warfare during that time has been hailed by the laity (and occasionally by individuals of the profession gifted with more enthusiasm than judgment), as revolutionary and yet the game goes on in the same old way as played by Alexander, Hannibal, Cæsar, Napoleon, Lee, Grant, VonMoltke and Oyama.

Warfare takes the new thing makes use of it, assimilates it we may say, then goes on in its same old course, undisturbed—not a principle changed—not a single function of any arm more than slightly modified.

Improved means of communication meet the increased extent of battlefields; the increased effectiveness and rapidity of fire arms are met by taking greater advantage of the natural cover which the terrain always affords and by the construction of artificial cover when time permits. Cavalry no longer expects to make frontal charges against unshaken infantry on the battlefield, except where a sacrifice may be demanded, but watches for its opportunity to catch them unawares from a flank or when broken or shattered by the fire of its own infantry or when out of ammunition and so on, and then with pistol and saber as of old it reaps its riches harvest. Not a principle has been changed. The Japanese and Russian repeatedly crossed bayonets or yielded in the face of an actual or impending bayonet charge. Clubbed rifles, sticks and stones were used alike on the battlefields of our civil War and Manchuria. Even the hand grenade has returned to its own. Not only did the Japanese and Russians make large use of it, but both of these nations maintain and train their grenadiers.

The aeroplane may become an adjunct, indeed has already become one, but no military man can see in it more than an adjunct—and least of all a substitute for anything that armies have always found necessary. Cavalry will, in common with its sister arms, still be called upon to perform in the

identical way, the same functions that it performed under Stuart, Buford, Sheridan and Wheeler.

And let us not forget that the American cavalryman is peculiarly a home product. He is the linial descendent of the troopers who followed these renowned leaders. His training, his armament, his fighting methods are all fashioned after the models they furnished. These are the men—more than four thousand of them—that Mr. Hays thinks the army can get along just as well without.

Let any military student but look over the map of Mukden and picture to himself what Oyama would have given for even twenty-five thousand cavalry such as Sheridan commanded in the Appomattax campaign. His conviction must be that a Kingdom would have been but a fair exchange for such a body of horsemen.

The text and reference books used at our service schools as well as those authorized for the service at large for all arms of the service, contain no hint or suggestion that cavalry has lost in importance; indeed the most profound students of the military art will be found always the most ready to insist that its uses have broadened and increased rather than diminished.

We need an army. The country wants one—and it ought to have the best, man for man, in the world. We have regiments of infantry, cavalry, and field artillery and battalions and other units of special troops but no unit higher than a regiment; not a brigade or division. We have as it were the individuals but not the team; the parts of the machine, but scattered and disjointed.

We have maintained an army, so-called, of some kind throughout our national history. Though reduced to almost nothing on occasions the necessity for its re-establishment has always been quickly forthcoming and the unwisdom of its reduction quickly demonstrated.

That we will continue to maintain one indefinitely no thinking man can deny. Indeed, it is safe to predict that so long as courts and juries, sheriffs, constables and policemen are necessary to enforce the law and protect life and property, just so long will states find it necessary to maintain armies of some kind. We may come to the Swiss plan as advocated by Mr.

Berger but that is so nearly like conscription, so repugnant to our liberty loving people, that it may be safely set down as too remote for present consideration.

Let our Congress then turn its attention towards providing the country with a real army, properly organized and economically administered. This great public service is not to be accomplished by haphazard means. Let it be commenced at once by providing for a Council of National Defence; this in turn to be followed by a reasonable military policy. Only by such orderly methods may we hope to ever have an army in fact as well as in name.

WATERING THE HEATED HORSE.

BY WILLIAM P. HILL, ^{VETERINARIAN} FIRST FIELD ARTILLERY.

THERE are certain things concerning the horse that have been handed down to us from our great grandfathers and which we have accepted to be "*gospel truth*" without once stopping to think whether they were really a fact or not?

One of these is, "*never water a hot horse:*" or "*only give him a swallow or two,*" and then later give him what he will drink. This is the hard and fast law that we as horsemen have been brought to believe from the experience of our teachers whose theory we have accepted without a doubt.

The idea of letting a horse that is hot have all the water he wants seems to the average horseman madness, and the height of ignorance, simply because he has had it instilled into him that it is almost sure to ruin, if not kill the animal. Is this really a fact? Does the water produce laminitis, colic, congestion of the lungs or any other disease? Perhaps it is not the water but *the temperature* of the water that does it?

Here is the keynote to the whole question, and because dire results have undoubtedly often followed from giving a hot horse large draughts of *cold* water, the unfortunate hot horse is consequently restricted from having what water he wishes when he craves it, and it is what his system especially needs at that time, to restore the healthy balance and condition of the blood which has been depleted by excessive sweating.

What I mean by *cold* water must here be understood; water that comes from faucets in winter weather; streams that have ice on them, or that the temperature is really, chilly in a word I call it too cold for a horse if below 70° F, but the water

of rivers and of streams, and the troughs in the corrals of army stables in the summer time, I claim is absolutely harmless to the hot horse, but on the contrary beneficial.

For Example: According to the usual custom, say, in the month of July, you take a horse out and give him enough exercise to make him sweat freely, he comes in hot and lathered up, you rub him down and stand him in the stable for an hour or so, then take him out to the water trough and let him have his fill of water, after he has cooled off. You feel as if you had done the right thing, but let me say right here that you have done exactly the wrong thing. Your horse has lost by the exercise say three to six quarts of liquids from the skin, lungs and bowels. These several organs are depleted this much from their normal balance. The blood requires that the loss of liquid be restored to it to regain its normal consistency. The horse's body is hot, and this heat can be used to bring the water to a more normal temperature for absorption but no, you perhaps give him a swallow or two, and no more, or often, none at all; tie him up for an hour or so, and then when he has cooled off or rather when he has become chilled from re-action, you take him out and give him all the water he wants; Does this sound sensible?

Water that has no *chill* to it is surely harmless. It is nature's restorative, and the principle constituent of the body. Why not let him have it? We are told to wait until he gets cooled off. Then he is already chilled, and we pour him full and give him a further chill; *this* is what produces the resultant diseases.

Let him have what water he wants when he is hot, only don't let him have *too cold water*; this is all you have to guard against. In the summer time, the time when we have the hot horses, the water available is usually of the proper temperature. It will never cause any trouble if it is not really cold. If I have shown that water is harmless to a hot horse, why not in the winter time, when we have few heated horses, add enough hot water to a bucket of cold water and then let them have it, rather than stint them of the very thing they at that moment most need and desire.

The practice of walking a horse after letting him drink, is, I think, useless, as long as the water is not chilly. It is the *cold water* that makes this advisable or necessary.

I have been so convinced of the fallacy of withholding water from the hot horse that for the last two years I have been letting all in my care have all the trough or river water that they will drink on coming in from drill or practice marches. I have repeatedly watered my own horses, when white with sweat, and have yet to produce laminitis or any other disturbance. When one sees a horse in the morning with laminitis or congestion of the lungs, the first question asked is: Did you bring him in hot? Did you water him immediately? If answered in the affirmative, it is at once laid to the water.

Have you ever stopped to think of the other causes of laminitis or congestion of the lungs or perhaps colic? Is water the principal cause of these diseases? Could not some other cause have produced it? There are dozens of other likely causes far out stripping in possibility the water, but yet we swallow the water theory hook, bait and all, without stopping to consider the pros and cons, simply because it has been so thoroughly grounded into us.

Man drinks as much water as he cares for after severe exercises, and often ice water at that. Do you think he could ever hurt himself by drinking from the faucet water in the summer time? Then why does it hurt the horse? Some may answer, because the horse has no sense in regard to the limitations of his food and water. I have yet to see a horse drink enough water of *proper temperature* to be able to say positively that it was the cause of consequent disease, or injury.

All the troubles are caused by the *coldness* of the water or by many of the other likely causes that produce disease after excessive exercise.

How often we see horses in the army brought in hot and tied on the picket lines until cooled off. They may have come in from a long dusty march, and may not have passed a stream where they could be conveniently watered for per-

haps the last five miles or more. They are all craving water, but are considered too hot and have to wait. Is this right?

In March, of this year, the First Battalion, First Field Artillery marched from Fort William McKinley to Camp Stotsenburg. The heat was excessive and the dust in such clouds that only artillery can really stir up. These 388 horses were watered immediately on reaching camp and it is certain that they were heated. I did not treat a horse for laminitis or colic on the trip. This method of watering was first brought to my attention by a small book written by Mr. Caulton Reeks, F. R. C. V. S., entitled, "The Common Colics of the Horse." He is considered one of the best Veterinary authorities on the horse in England to day and I earnestly advise all officers who have not read it to obtain a copy.

DAILY DIARY OF EQUITATION WORK AT THE MOUNTED SERVICE SCHOOL.

FEBRUARY AND MARCH, 1912.

TRAINING CLASS.

Schedule February 1st to February 8th—one hour per day.

1. In hall: Work out. Canter at will on both hands, turning small circles in the corners. Work at will 15 minutes. Individually, lateral flexion left on left hand and lateral flexion right on right hand at the slow trot.
2. In hall: Work out at trot. Canter and slow trot alternating on both hands. Work at will 15 minutes. Individually, down center of hall at a slow trot with swing of haunches to right, straighten and swing haunches to left. "Haunches In" on both hands at walk and slow trot.
3. In hall: Work out. Work at will. Drill through the exercises which have been taken up so far.
5. In hall: Work out at trot. Canter at will on left hand. Work at will. Individually, down center of hall at slow trot swinging haunches to right and left. "Haunches In" on both hands. Canter in column on right hand, by the flank in line, and by threes down center of hall. On right into line, horses stand at attention, dismount and mount on right side.
6. In hall: Same as 5th except canter in column was to left. Individually, haunches right on left hand, haunches left on right hand. From head of column, trot, slow trot, school trot and canter to rear of column.
7. In hall: Work out. Canter at will on right hand. Work at will 15 minutes. Individually, haunches in and haunches out on both hands.
8. No riding on account of examination.

Schedule February 9th to March 30th—1½ hours per day.

9. In hall: Work out. Canter at will to right. Work at will 15 minutes. Drill at canter to left. Outdoors for 40 minutes.
10. In hall: Work at will on both hands. Drill in platoons. All colts in this class arranged in line in order of their progress.
12. In hall. Work out. Canter at will to right. Drill in canter to left. Work at will 20 minutes. Individually haunches out.
13. In hall: Work out. Drill at canter by platoons. Work at will 20 minutes. Drill at slow trot. Individually "Fore hand in", (out).
14. In hall: Same as 13th. In addition from the head of the column each rider slow trot, canter left lead, slow trot, canter right lead.
15. In hall: Same as 14th, and in addition individually figures of 8 at slow trot.
16. Outdoors: For road work.
17. In hall: Work out. Drill at canter by platoons. Drill by threes in center of hall. Work at will 15 minutes. Individually, slow trot, canter right lead, slow trot, canter left lead.
19. In hall: Work out. Canter by platoons, circles in the end of the hall. Drill in center by threes at slow trot, right and left abouts, on forehand to right and left, by the flank, halts, etc. Individually, forehand out on right hand; haunches right on left hand and haunches left on right hand.
20. In hall: Work out. Work at will 15 minutes. Drill in column at slow trot, haunches right and left, two tracks right and left oblique, individual circles. Individually, down center, swinging forehand to right and left. Canter on circles alternating with slow trot.
21. In hall. Same as 20th, except practice in taking alternate leads at canter from slow trot on straight line. Also jumping a very low brush hurdle.
22. Outdoors: For road work.
23. In hall: Work out. Drill by threes in the center at slow trot, right and left abouts, turns by flank, halts, on forehand to right and left. Move at will 20 minutes jumping low brush hurdle.

24. The schedule for this date was transferred to 22d instant.
26. In hall: Work out. Drill by platoons at slow trot. Work at will 20 minutes. Special work for most backward colts. Jumping low brush hurdle.
27. In hall: Work out. Drill through exercises at slow trot. Work at will 15 minutes. Individually, canter on circle, change circles at slow trot and canter on other circle, both leads true. Two jumps over low brush hurdles.
28. In hall: Work out. Work at will 20 minutes. Individually, haunches in. Canter on circles. Two jumps over low brush hurdle.
29. In hall: Work at will. Individually, collected walk, and school trot; haunches out. Canter on circles on both hands. Two jumps over low brush hurdle at canter.*

March.

1. In hall: Work out. Work at will. Individually, collected walk and school trot at straight line in center of hall.
One platoon at a time on the track, canter at will turning small circles at the ends of the hall. Jumping low brush and bar jumps mounted.
2. In hall: Work out. Canter as for 1st. Drill by threes in center, haunches right and left, two tracks right and left oblique, halts, turns to the forehand, right and left abouts. Individually, figure eight at school trot. Jumping low brush.
4. In hall: 2d platoon in A. M. work out at trot and canter. Drill in two-track work. In P. M. 1st platoon exhibition for Kansas State Agricultural College students showing work done by class to date.
5. In hall: Drill by threes in center. Individually, school canter. Jumping small brush.
6. In hall: Work at will. Drill by threes at a canter. Individually, haunches in, straighten and haunches out at school trot. Cantered over low bar.

*NOTE.—During this month the weather was so bad that but little outside road work could be done. The colts began to get a little sour on the inside work, and constant application of the aids so that the work had to be relaxed to a certain extent. Considerable cantering was allowed and the little jumping, which they seemed to relish, appeared to relieve the situation.

7. In hall: Drill at trot and slow trot. Individually, collected walk, school trot, and down center two-tracks right and left oblique, haunches right and left. Jumped low bar.
8. In hall: Long trot on both hands. Drill in one track movements. Individually, school trot and small circles at school canter.
9. In hall: At end of work out, short extended trot, canter right and individually on circles. Canter left, first trooper front to rear. Slow trot, rear trooper on small circle as called. Individually, down center from school trot, canter right, then school trot canter left, school trot canter right. Jumping low bar.
11. In hall: Work by threes, serpentine and canter left on track. Individually, school trot canter left, school trot canter right, school trot canter left. Jumping bales of hay.
12. In hall: Drill by threes at trot. Canter by platoons and first trooper front to rear. Individually taking the gallop from slow trot. Jumping low brush.
13. In hall: Drill by threes at a trot on both hands, canter on both hands, first trooper front to rear. Individually a half turn on the haunches at a school trot. Jumping low brush at a canter.
14. In hall: Work out at canter on both hands. Individually, half turn on the haunches. Jumping low brush.
15. In hall: Canter by threes down the center. Individually, figure eight on the haunches at school trot.
16. In hall: Drill at canter. Drill at school trot in the exercises. Individually, figure eight on the haunches. Jumping in pairs, tandem and abreast over jump made up of bales of hay.
18. In hall: Work out. Outside for road work. At a walk, over low brush in pairs, tandem and abreast.
19. Outside: Road work at a walk.
20. In hall: Work at will. Individually, forehand in at a school trot. Jumping in pairs, tandem and abreast.
21. In hall: Gaitting at four mile walk. Trot by threes. Canter on track at extended distances and gallop on loose rein, jumping low frame jump.
22. In hall: Work out at trot and canter. Outside. Road work.

23. In hall: Work out at trot by threes. Drill by platoons in the exercises. Gallop by threes. Individually, figure eight on the haunches. Standing horses at attention.
25. Outside 1 hour: Road work at walk. In hall: $\frac{1}{2}$ hour. Canter, first trooper front to rear, canter in pairs tandem from the head of the column twice around the hall. Individually, school trot, canter left, school trot, canter right down the center of hall.
26. Outside 1 hour: Road work at walk. Inside $\frac{1}{2}$ hour: School trot, canter right, school trot, canter left down center of hall. Jumping low bars.
27. In hall: Gaitting at eight mile trot. Individually, down center at school trot, haunches right, straighten, haunches left, straighten, two tracks right (or left) oblique and change, crossing the center line coming back to it by another change on two tracks.
28. In hall: Gaitting at eight mile trot. Individually, down center at school trot, haunches in, straighten, forehand out, straighten. Outside $\frac{3}{4}$ hour, jumping logs and wading streams up to stifles in depth.
29. In hall $\frac{3}{4}$ hour: Gaitting at eight mile trot. Outside $\frac{3}{4}$ hour: Road work, going through woods and jumping logs and low hurdles.
30. In hall: Gaitting at twelve mile gallop. Individually, down the center, school trot taking canter three times, altering leads from school trot. Outside $\frac{3}{4}$ hour: Canter on flats $1\frac{1}{4}$ miles.

SCHOOLED CLASS.

Schedule February 1st to 8th—1 hour per day.

1. In hall: Quiet work, small abouts, and taking the gallop. Talk by Senior Instructor on instruction in general. Horses put through jumping chute.
2. In hall: Review of the first, except that all jumps were taken with rider up. Also practice in taking true lead at the gallop, and changing hands at the trot and taking the new lead at the gallop.
3. In hall: Same as the second.
5. In hall: Long work out at the trot and gallop during which abouts on large and small arcs were practiced. Work at will practicing halting from the walk and resuming the walk, backing a few steps at a time and

obtaining the collection and suppling of the horse. Turning on the forehand not to exceed 90 degrees. Put horses through jumping chute several times without riders, jumps 3 ft. high.

6. In hall: Long work out at trot and gallop. Individually, riding at slow trot on circles and figures eight around stakes, this to require the accurate control of the horse, and the accurate application of the aids.
7. In hall: Same as the 6th.

Schedule February 9th to March 31st—1½ hours per day.

9. In hall: Quiet work out at the trot. Then troopers individually required to ride horses on two tracks right (left) oblique between designated points. Horses jumped through chute with rider, two low jumps used.
10. In hall: Work out a trot and gallop, circles, spirals, figure eights, etc. Individually, practicing "forehand in." Individually, practicing riding on straight line between marked points and on two tracks right, (left) oblique between marked points, this at the slow trot.
12. In hall: Long trot at will, spirals and work by threes at trot and gallop. Practice in leaving column and riding on straight lines at trot and canter, care being exercised to keep the horses perfectly quiet. Horses without riders put through jumping chute with two three-foot jumps.
13. In hall: Usual work out. Work by threes, by flank, abouts, halting, and two tracks. Collected canter and slow trot on straight line up and down hall. Jumping small jumps in column of troopers with long distances so as to get timid horses to follow other horses and jump boldly.
14. Same as 13th except jumping done individually.
15. In hall: Usual work out. Exercises by abouts and by threes. A little two-track work. Special attention to individuals riding horses on circles around stakes at canter.
The proper set, cadence and collection of the horse being sought.
16. In hall: Quiet work out. Usual work by threes. Special attention to riding horses on designated points, and executing various movements between these points. Jumped a few low jumps.

17. In hall: Work out and work by threes at halting, backing, and by the flanks. An effort then made to have the individual troopers take a canter on the track and go to the corner of the hall, execute an about, and return to the track by a "on two tracks right (left) oblique." This with an object of working up to the change of lead at the gallop. The result was not good at the gallop, the movement was then practiced at the slow trot.
19. Long work out at the trot, the gallop, and extended gallop. Special work at taking the canter on the inside track from a slow trot, and doing this several times while going around the hall. Also practice on "forehand in." Put horses through jumping chute without riders, two jumps 3 ft. 9 in.
20. In hall: Usual work out and work by threes. Special work of having individual troopers take the different gaits between designated points, halt, back, and turn on the forehand. Smoothness and precision of movement sought. Talk on the two methods of teaching the horse to take the gallop. 1st by extending the trot until the horse of his own free will breaks into the gallop. 2d. By taking the gallop from the collected trot. The advantages and disadvantages of both methods were explained.
21. In hall: Usual work out. Special attention to work by threes, halting, backing and work by the flanks, this at all gaits. Continuation of talk on the two methods of taking the gallop.
22. In hall: Usual work out. Work by threes same as the 21st. Individual troopers riding around stakes at canter. Jumping with rider at the gallop, jumps 3 ft. high.
23. In hall: Very quiet work out. Long work by threes at the slow trot, practice at halting and moving by the flanks. Individual exercises at taking the walk, slow trot, canter between designated points, and in halting backing, and turning on the forehand at designated points. Jumping same as the 22d.
26. In hall: Work at walk, trot and gallop simply for horse exercise. Teams busy hauling snow out of the hall so that regular instruction was interfered with.
27. In hall: Usual work out with practice in taking the canter. Jumping at the gallop over four 3 ft. jumps

on the track. Jumping poor with a number of horses falling.

28. In hall: Usual work out. Long drill at the slow trot in work by threes and in taking the canter from the slow trot. Horses put through the jumping chute. Talk on the two methods of teaching the horse to make the change of lead at the gallop. That is, from the extended gallop and from the collected trot.
29. In hall: Work out at walk and trot. Talk regarding incorrect work done by the class when executing two track exercises, explanations and corrections of this work given. Practice in carrying these out while executing "haunch in" at the slow trot. Continuation of talk regarding change of lead in the gallop. Horses put through jumping chute.

March.

1. In hall: Same as the 29th ult. with continuation of same explanations.
2. In hall: Long work out at walk, trot, and gallop. Continued practice on two-track work, and riding horses on a straight line at a collected trot.
4. In hall: In the morning one hour. Principally horse exercise. In the afternoon in hall 20 minutes in a ride given for the Kansas State Agricultural College students. Exhibition of the work of the class had done to date.
5. In hall: Long work out and quiet work by threes with special practice at halting, backing and moving to the front promptly. Continuation of talk regarding change of lead at the gallop. Horses put through jumping chute.
6. In hall: Long work out and work by threes at all gaits. Commenced practicing the change of lead at the gallop by taking the gallop on the right hand, changing hands and applying the aids for the gallop left as the horse took the curve to the left at the extremity of the diagonal of the hall. Horses put through jumping chute.
7. In hall: Long work out. Work by threes at walk, slow trot, trot and gallop. Exercises on two tracks in column at slow trot. Practice in change of lead the same as the 6th. Horses put through jumping chute.

8. In hall: Usual work out and work by threes. Execution of two-track work in column at slow trot. Talk on the gallop and change of lead at the gallop to clear up points on which students officer were confused.
9. In hall: Usual work out, exercises by threes, on two tracks, and practice at change of lead at the gallop.
11. In hall: Bit and Bridoon bridle put on. Long talk on adjustment of the bit and curb chain. The action of the bit and the various methods of holding the fore reins with an explanation of the advantages and disadvantages of each method. Horse exercised one-half hour at the walk and the trot.
12. In hall: Usual work out. The organized work included the walk, trot, and gallop on both hands. Exercise by threes, individual abouts, by the flanks, on two tracks, backing, turning on the forehand, halting from the trot; first trooper from front to rear on large circle at the gallop; individual riding on straight line at the trot; from front to rear at the trot to outside between column and the wall. Work was with double bridles with curb reins hanging rather slack. Put horses over two jumps in chute, one jump 3 ft. high, the other 3 ft. 6 in. high. Explanation and demonstration of the use of the whip dismounted causing the colt to yield the haunches to right or left upon application of the whip at the point where the leg would act.
13. In hall: Review same as the 12th, except that horses were ridden over two 3 ft. hurdles instead of being put through the chute without riders, curb chains unhooked.
14. In hall: Review same as the 13th, except that no jumping was done. Advance practice on change of lead at the gallop, also explanation and demonstration of the direct flexion of the jaw by use of the curb bit while working dismounted.
15. In hall: Review same as the 13th. Advance flexion of the jaw dismounted by use of the curb and snaffle reins.
16. In hall: Work out on track on both hands at walk, trot, and gallop. During work out students practice holding the double reins in one hand, both right and left. Sets of threes executed by the flanks, abouts, on two tracks, halting from the trot, backing and turning on the fore hand. Executed serpentines and large

circles, trotting on straight line, also taking the gallop with lead left on the straight line.

Rode over 3 ft. jumps, first by having each student go over alone and later by riding in column at gallop with distances of 20 ft. Curb chains unhooked.

18. In hall $\frac{3}{4}$ hour: Usual work out at walk, trot, and gallop. Jumped two 3 ft. jumps in column with extended distances. Practice at demanding direct flexion dismounted.
Outside on road $\frac{3}{4}$ hour at walk and trot.
19. Outside 1 hour: Over hills for about six miles at walk, trot and gallop.
In hall 20 minutes: Putting horses through jumping chutes, two three-foot jumps without riders.
20. In hall: Usual work out. Work by threes, by the flanks, backing on two tracks, haunches in, forehand in, halting at designated points, and changing the lead at designated points when moving at the gallop. Explanation and demonstration of the methods for obtaining a good carriage, collection, and the direct flexion while the horse is moving to the front and the rider working dismounted.
21. In hall: Work out on both hands at will. Work by threes at all gaits, taking both leads from the slow trot while passing on a straight line through the hall. Correcting and setting of the head and the direct flexion by use of the curb reins and whip while the rider is working dismounted and the horse is moving to the front. Horses put through jumping chute without riders; over two hurdles, one 3 ft. high and one 3 ft. 8 in.
22. In hall: Work by threes, practice in riding around stakes making the stake the center of the curve at the walk, trot, and canter, also the change of lead at the gallop in passing between stakes. Explanation of how to carry and use the riding whip. Practice at direct flexion dismounted with the horse between the rider and the wall.
23. In hall: Usual work out. Work by threes, by the flanks, backing, turning on the forehand at taking both leads at the canter and change of lead at the canter. Horses put through jumping chute with riders, two 3 ft. jumps.
25. In hall 20 minutes: Then on road at walk and trot for 55 minutes. Returned to hall and jumped in column

with 20 ft. distances over two 3 ft. hurdles, also jumped individually. Executed direct flexions and placed the head and neck by use of the whip dismounted with the horse between the rider and the wall.

26. In hall: Work out on both hands at trot and gallop. Work by threes in executing abouts, by flanks, two tracks, halt from the walk and slow trot. Explanation and demonstration of "shoulder in." Practice with whip in changing grasp from that of carrying position to that of using position and vice versa. Explanation of how to hold and use the reins while riding at the gallop, keeping the horse straight and steady, if he is pulling too hard, the ordinary methods of holding.
27. In hall: Usual work out. Executing movements on circles, movements by the flank, halting from the trot, facing to the flank and backward. Took the gallop at slow trot on straight line. Jumped over two 3 ft. jumps several times in column.
28. In hall: Work out on track on both hands for 10 minutes.
Work by threes, including change of lead with change of direction.
Work between designated points requiring the rider to halt, turn on the fore hand, execute haunches right or left at designated points. Practice whip exercises.
29. Outside 1 hour: Rode over jumps in woods across railroad.
In hall one-half hour: Explained how to execute half turns on haunches and demonstrate the same. Executed individually half turns on the horehand and figure of eights. Practice on taking lead on straight line through center of the hall, changing as often as possible with smooth work by coming to the slow trot.
30. Outside $\frac{1}{2}$ hour: At will on road in pairs.
In hall 1 hour: Long work by threes at various exercises. Practice in changing lead at gallop while in column and in working by threes. Whip exercises. Individually practicing at "shoulder in."

JUMPING CLASS.

Schedule February 1st to 8th—One hour per day.

1. In hall: Suppling exercises for horses; jumping, 6 jumps on track, one trooper at slow trot at each jump

on circle tangent to inner end, taking jump at same gait when horse goes quietly, then change jumps till all are taken, alternating hands on circles. Jumps 2 ft. 3 in. high, no wings.

2. In hall: Suppling exercises for riders and horses; galloping in 2's, 3's and 4's; riding and jumping without reins or stirrups, jumps 2 ft. 3 in. high, 20 ft. apart.
3. In hall: Suppling exercises for horses and riders with and without reins or stirrups; jumping six jumps 2 ft. 3 in. high scattered through hall parallel to sides, taken at a walk and slow trot by executing serpentines the length of the hall, two horses lengths between troopers, no wings.
5. In hall: Suppling exercises; jumping pig pen, in at gallop and out at trot, jumps 3 ft. 4 in. high.
6. In hall: Same as 3d.
7. In hall: Same as 1st. Outside: 15 minutes walk.

Schedule February 9th to March 31st—1 hour 20 minutes per day.

9. In hall: Suppling exercises; galloping in pairs; jumping without riders in chute, jumps 3 ft. 4 in. high, 3 ft. 6 in. broad, about 30 ft. apart.
10. In hall: Same as 3d.
12. Same as 9th except last jump 4 ft. 3 in.
13. Same as 2d.
14. In hall: Suppling exercises; jumping four jumps 3 ft. high, 16 ft. apart, without reins.
15. In hall: $\frac{1}{2}$ hour, over a 3 ft. "in and out" at slow trot. Outside: 1 hour, walk and trot over varied ground and $\frac{1}{2}$ mile gallop.
16. Outside: 1 hour walk through woods over small jumps on slippery ground. In hall: $\frac{1}{2}$ hour over jump 3 ft. high, 4 ft. wide at quiet trot.
17. In hall: Same as 3d, except all work without stirrups.
19. In hall: Work out, galloping in pairs; jumping in and out 3 ft. to 3 ft. 8 in., halt 10 yards beyond, turn and over in opposite direction.
20. In hall: Suppling; jumping three jumps 3 ft. high on one side hall, continuing gallop around hall till taken twice. No wings.
21. In hall: Same as 19th.

23. Outside: Up and down cañons at walk, galloping in between.
24. In hall: Same as 20th, except one jump 4 ft. high with wings.
26. In hall: Quiet work suppling.
27. Outside: Trot and gallop through woods over a few small jumps.
28. In hall: Same as 2d, except all jumps 3 ft.
29. In hall: Same as 9th.

March.

1. In hall 1 hour: Work without stirrups. Outside $\frac{1}{2}$ hour: Walk and slow trot on road.
2. Outside $1\frac{1}{2}$ hour: Walk, slow trot on road.
4. In hall A. M.: Work out 45 minutes. P. M.: Exhibition in hall for Kansas State Agricultural College students. Suppling exercises for riders without stirrups or reins; jumping with both at gallop twice around track, two 3 ft. 8 in. bar jumps on one side, three 3 ft. jumps on the other about 20 ft. apart; without reins or stirrups over the three 3 ft. jumps; without stirrups once around at gallop over all jumps.
5. In hall 1 hour: Work out; twice over double jump and back in pairs at trot; over same, one by one from column at trot; same at gallop. Outside $\frac{1}{2}$ hour: Walk and trot on road.
6. Outside $1\frac{1}{2}$ hours: Short gallop through woods. Through hill pasture over 7 jumps 3 ft. 6 in., walking in between, troopers about 75 yards apart.
7. In hall: Work out; suppling exercises for riders at gallop; jumping from column of troopers at trot; same without reins, arms folded; same without reins or stirrups, arms folded. Three jumps 3 ft. high, 20 ft. apart, used throughout.
8. In hall: Suppling; jumping through chute without riders up to 4 ft. 3 in. high, 6 ft. broad.
9. In hall: Suppling exercises and riding and jumping with and without stirrups and reins; 4 jumps 3 ft. high, 20 ft. apart, over three times, arm folded.
11. In hall: Suppling; five jumps on track, 3 ft. to 3 ft. 9 in. high, no wings, around twice at gallop.

12. In hall: Gaitting 6 and 8 mile trot, 1 mile at 15 mile gallop, after 5 minutes repeat on other hand, then $\frac{1}{2}$ mile same rate. Jumps same as 11th taken on other hand.
13. In hall: Suppling exercises; gaitting; other work same as 9th, except jumps 16 ft. apart, first and second time over reins in right hand at first jump, left hand third jump, no reins second and 4th jumps; third time over arms folded at all jumps. Throughout other work reins held in outer hand, whip in inner.
14. In hall: $\frac{1}{2}$ hour suppling; outside $\frac{3}{4}$ hour: Walk and trot and over a few small jumps.
15. Same as 13th, except 5 jumps.
16. In hall: Gaitting; 1 mile slow trot and trot; 1 mile at 15 minutes gallop and after 5 minutes 1 mile at 12 mile gallop. Outside $\frac{1}{2}$ hour: Road work.
18. In hall: Gaitting; $\frac{1}{2}$ mile slow trot; $\frac{1}{2}$ mile trot, 1 mile 16 mile gallop and after 5 minutes repeat. Jumping five jumps on one side of hall 3 ft. to 3 ft. 8 in., on other side triple bar 3 ft. wide, 3 ft. 9 in. high, twice around. Riding with reins in one hand. Outside: 15 minutes.
19. In hall: $\frac{1}{2}$ hour gaitting, $\frac{1}{2}$ mile slow trot, $\frac{1}{2}$ mile trot, practicing at the 12 and 16 mile gallop. Outside 1 hour: Leaving hall by trooper one minute apart, walk for one mile, slow gallop 1 mile over Republican jumps; walk home.
20. In hall: Suppling exercises; riding without stirrups or reins; over 6 jumps 3 ft. high, 20 ft. apart, reins in one hand, changing hands at each jump.
21. Same as 18th.
22. In hall: 1 mile at 15 mile gallop, repeat in 2 minutes. Outside: Walk, trot, gallop and hill climbing.
23. Same as 20th.
25. In hall: Work out at walk, trot, gallop; on one side of hall, 4 ft. stone wall, triple bar, first bar 2 ft. 6 in. high second bar 3 ft. 1 in., third bar 3 ft. 9 in. and combined jump. 5 ft. wide; on the other side 3 ft. jumps 12 ft. apart, over all three times.
26. Same as 19th.
27. In hall: Work out in pairs at trot and gallop; suppling exercises; 6 jumps 2 ft. 8 in. high, 12 to 22 ft. apart, once over, changing reins from one hand to other between jumps.

28. Outside: Weighed horses; through ravines at a walk.
29. Outside in pairs at walk and trot $\frac{3}{4}$ hour. In hall: Enter one at a time, once over at a gallop, 3 ft. 6 in. stone wall, 3 ft. 9 in. triple bar, 3 ft. jumps, all on track and two 3 ft. 8 in. bars in center of hall.
30. Outside: Leaving hall by trooper $\frac{3}{4}$ minute apart; walk $\frac{3}{4}$ miles then for $1\frac{1}{4}$ miles walk and gallop at will across country, over 5 post and rail jumps 3 ft. 6 in., and 3 ft. 9 in. high; walk home.

SECOND TRAINING CLASS.

Schedule February 12th to March 31, 1912— $\frac{3}{4}$ hours per day.

In order to give the student officers an opportunity to train two horses during the school year this additional class was taken up. Twenty-one of the horses were thoroughbred colts coming four years of age. The other six were backward horses turned back from the regular training class. Most of the colts had been bought in Kentucky or Virginia and had been handled more or less. The fact that they had been running loose in the pasture for a number of months necessitated their being treated, however, the same as green horses. Due to the practice that the student officer has had to date it is expected that three months' work will make these horses a very fairly well trained cavalry mount.

12. Horses quietly bridled in stalls by student officers and led to the riding hall. Very little difficulty experienced in doing this. At the hall the horses are handled, patted and rubbed with the riding whip. After they seemed to be quiet an effort was made to lead them, the rider walking along side of the shoulder, and the horse induced to move to the front by the use of the *tongue* and gentle taps on the side with the whip where the leg would be used. This work was done on both hands.
13. In hall: Same as 12th.
14. In hall: Same as 12th with the addition of putting on the cavesson and commencing longeing. In this, small longeing pens are made and horses started in these. When the horse went well in the pen he was longed in the open hall.
15. In hall: Same as the 14th. Student officers are changing horses daily.

16. In hall: Same as the 14th, except that longeing pens were made slightly larger.
19. Temporary assignment of horses to officers made. Horses longed both inside and outside of longeing pens. Work continued of officers leading horses by walking along side of shoulder. An effort made to keep the horse light up against the bit, the head well carried.
20. In hall: Same as 19th except pens made larger and surcingles put on such horses as went quietly.
21. In hall: Same as 19th with the addition that first surcingles were put on and then the surcingles and blankets.
23. In hall: Same as the 21st.
26. In hall: Same as the 21st.
27. In hall: Same as the 21st.
28. In hall: Same longeing as usual. After 15 minutes longeing saddles were put on and longeing continued. Near the end of the lesson most of the horses were mounted and a few were ridden short distances.
29. In hall: Same as the 28th.

March.

1. In hall: Same as the 28th with the addition that all horses were mounted and ridden a short time at the walk.
4. In hall: $\frac{1}{2}$ hour in the morning: Horses longed and saddled and most of them mounted and quietly ridden. In the afternoon, in the hall 20 minutes for an exhibition ride given for the students of the Kansas State Agricultural College. Work with this class such as to demonstrate progress to date.
5. In hall: Horses longed as usual. All saddled and ridden at walk and slow trot.
6. In hall: Horses longed as usual. All mounted and ridden at walk and jog trot in column.
7. In hall: Same as the 6th.
8. In hall: All horses longed without use of pen. All mounted and ridden in column. Different horses in turn placed at the head of the column, this in order to accustom all to go without the help of a leader.
11. In hall: Same as the 8th.
12. In hall: Longed and ridden as usual. Exercise commenced of making horses yield to the haunches by

- the application of the whip while the rider is working dismounted. The rider must demand only the yielding of a step or two at a time.
13. In hall: Same as the 12th.
 14. In hall: Same as the 12th with the addition that horses were worked in column in a little and turns made by the flanks by opening out the inner rein and applying the inner leg.
 15. In hall: All horses longed. Mounted and ridden at will in column at extended distances. No particular effort made to maintain *regular distances*. A little work in turning by the flank at both the walk and slow trot. Dismounted work of teaching the colt to yield the haunches to the application of the whip.
 18. In hall: Same as the 15th.
 19. In hall: Same as the 15th.
 20. In hall: Same as the 15th except that the time spent in longeing is being decreased, and the time spent at riding increased. Also a little more work by the flank being given.
 21. In hall: Same as the 20th.
 22. In hall: Same as the 20th.
 25. In hall: Same as the 20th.
 26. In hall: Usual longeing and riding at will at walk and trot. Work in column at the walk and trot with practice in moving by the flanks. Commence requiring the horse to yield to the leg by executing "On forehand half turn in reverse" for a few steps.
 27. In hall: Same as the 26th.
 28. In hall: Same as the 26th, with a little more work by the flanks and at the trot. Also an increased amount of practice as on turning a few steps on the forehand half turn in reverse.
 29. In hall: Same as the 28th.

STABLE MANAGEMENT, GROOMING, CONDITIONING AND CARE
OF EQUIPMENTS.

Schedule February 12th to March 30th— $\frac{3}{4}$ hour per day.

12. Talk on grooming, articles used and quality of them, exhibit of best on hand. Care of these articles and purpose for which used. Object of grooming and effect on the horse. Cooling hot horses.

13. Practical demonstration of grooming, proper use of implements and method of cleaning different parts of the horse.
14. Bandages and thier use: Demonstration of putting on working bandage, and practice by student officers on front leg of horse.
15. Practical: Student officers put on working bandgaes on front and hind legs of the horse.
16. Demonstration of bandages for work, put on with cotton wool, cotton quilted pads, and shaped felt pads. Talk on rest bandages, demonstration of how to put them on.
19. Practical: Student officers put on rest bandages on front and hind legs of the horse.
20. Talk on use of hot and cold bandages, and demonstration.
Practical: Student officers put on various bandages.
21. Talk on usual methods of protecting young horses where given first lessons over jumps, exhibition of the various articles and demonstration of putting them on.
Practical work in bandaglng by students.
23. Demonstration in braiding the mane in a continuous braid.
26. Practice by student officers in braiding mane as demonstrated on 23d.
27. Demonstration of three ways to braid the tail.
28. Practice by student officers in braiding tails.
29. Lecture: Stable vices and ususal methods for overcoming or avoiding harm from them; precautions to be observed against vices; effects on grooms and their treatment of the horse; cribbing, wind sucking, weaving, kicking, pawing, biting, pulling back, tearing clothing, etc.

March.

1. Lecture: Stable vices and bad habits of horses, gnawing walls and woodwork, rubbing tails, gorging, throwing out grain, eating filth, kicking, biting while being groomed, bruising hock and knees, eating bedding, etc.
5. Lecture: Care of a horse as to work when shedding, feeding, grooming, and how to secure a good coat.
Practical work in braiding tails as on February 28th.

6. Lecture in clipping: Advantages and disadvantages, proper time; various methods; how it should be done and care of tools.
Practical: Pulling manes on 2d training colts.
7. Lecture: Watering, feeding hay, and evidence of good grooming and proper feeding.
Practical: Same as for 6th.
8. Lecture on shipping horses: Clothing and protection necessary, feeding and care en route, emergencies; exhibited articles for protection, knee boots, bell boots, hock boots, tail guards, etc.
11. Lecture: Care of feet in stables and in the field; effects of improper care and discussion of the various methods employed.
12. Demonstration: Of method of tying up tails for muddy weather and parctice at same by students.
13. Demonstration: Decorative braiding mane in "nubs" with needle and thread and practice in same by students.
15. Lecture: Fundamental principles of conditioning and training horses for hard work or unusual effort as for racing.
18. Each student officer began "finishing off" his own to training colt, i. e., pulling manes, forelocks and 29 tails, training ears, fetlocks coronets and place for the except crown piece. The manes were trimmed by pulling, 21. or if thin by breaking the ends, so that the ends were paralell to the crest showing a clean throat latch. Tails were trimmed by pulling and the ends broken so as to hang just above the hocks when in action. Forelocks pulled to get rid of short upstanding hairs and to show a smooth lock ending just above the eyes. At the coronet overhanging hairs were trimmed so as to show the wall clean. Fetlocks clipped close. The worn place on the poll from crown piece of halter or bridle was clipped out. The edges of the ears were held together and all projecting hairs trimmed off.
21. Lectures on the importance of maintaining the health of the horse during preparation for fast work and the evidences or signs that it is becoming impaired.

PRINTED EXERCISES.

Only such exercises as have been given in printed form to student officers are reprinted with this diary.

FOREHAND IN (out).

Purpose:

This exercise is a combination of work on the circle, the flexions, and of haunches right (left), and is preparatory to "Shoulder In." It is also a preparation for the gallop, for the counter gallop, for bringing a horse to the trot from the gallop, and for preventing him from taking the gallop when it is not desired. The horse is suppld in the poll and asked to bend in the body while moving on a straight line. The inner hind is asked to stride a little further under and pick up more weight. It is therefore suppld and developed. In this exercise, the demands on the horse are so slight that resistance should not be encountered. At the same time, the horse is so prepared for "Shoulder In" that the latter should not present a serious difficulty.

Execution:

Being on the right hand, to execute "Forehand In (Out)." Lightness, cadence and balance are first demanded. The horse is then required to yield a very slight lateral flexion to the left rein only so that the rider sees the edge of the nostril and curve of the eye. The forehand is then moved a short step inward (maintaining the flexion) so that the left fore will be traced by the right hind. Moving in this manner, there is a slight curve throughout the horse around the left leg, but in the neck the bend is in the poll joint.

Aids:

The rider's left leg is at the girth, pressing lightly inward to get the bend in the body and to help to keep the forehand over.

The right leg is back of the girth and guards the haunches holding them to the straight line.

The left rein secures the lateral flexion (as already given), and is always light and steady in its place near the withers.

The right rein leads the forehand to its line and guides it in its direction. Half halts are made, principally, on this rein.

Both legs maintain the forward drive and both hands the collection.

The balance of the rider is over the center of the saddle.

Faults:

The principal faults are:

I. The flexion not correctly made; i. e., with the nose stuck out to one side and the top of the head tilted to the other.

Correction:—Raise the hand on the side opposite to that toward which the nose is thrust.

II. The neck bends in the middle too much.

Correction:—More tension on the opposite rein and this rein pressed on the bulge of the neck.

III. Neck bends at the withers to the leading rein (in the case above, the right rein).

Correction:—Straighten on the track. Secure the correct lateral flexion, and bring the forehand in again, with the left leg and right rein.

As in other exercises, this one should be given first at a walk and thereafter at a school trot.

To execute "Forehand Out" the reverse aids are applied.

SHOULDER IN (out).

Purpose:

The two main purposes of this lesson are the bending of the horse and the development of the power in the hind legs to carry a greater portion of the load and at the same time to thrust it energetically forward. This lesson together with the other various bending lessons have for their final objective the straightening of a horse so that he goes "true" without loss of direct drive from behind. By bending the horse in his body, and driving in a sidewise direction, each hind leg as it performs the duties of the inner receives a double portion of the load to carry, and in consequence develops muscle rapidly. The back and loins are bent laterally to both sides, and from the thrusting under of the hind legs acquire the ability to flex vertically—in other words, to form an arch.

The yielding to one rein at a time leads to a more certain yield to both reins directly. The shoulders are suppld and acquire more freedom. This work with a horse in a bent position stretches the entire layer of muscles on the convex side and correspondingly contracts those on the concave side. This alternate extending and contracting has a tremendous effect in developing the entire muscular system.

The practical results obtained are therefore, an increased ability, 1st, to carry weight, from the arching of the back; 2d, to execute sudden turns in any direction on the haunches; 3d, to increase the stride due to the increased thrust-under of the hind feet and the freeing of the forehand; 4th, to shift the balance from front to rear, or vice versa, thereby making easy the increase or decrease of pace, or changing of gaits; 5th, to come to a sudden halt from any gait. Furthermore, the increased power behind is ready for use in jumping or in heavy going. And not least important of these most essential results is that when a fault is made in front, as in stumbling, or stepping in a hole or blind ditch, one hind foot is always ready to slip under and lift the whole mass out of the difficulty. This finished execution of these lessons is a matter of weeks or months, and even a year or more may be required, depending upon the aptitude and willingness of the horse, and the ability of the rider.

Execution:

Being on the right hand at a school trot the horse is required to yield a slight lateral flexion to the right rein. While maintaining this flexion the forehand is carried to the right until the left fore is tracked by the right hind. Moving in this manner the horse goes forward on a straight line, but is bent around the rider's right leg, the hind feet on the track, the fore feet on an inside line parallel to the track. Balance, cadence and lightness must be maintained.

Aids.

The right rein secures and maintains the flexion and leads the forehand to the inner track. In moving the forehand this rein is opened slightly to assist the left which is closed. It also assists in maintaining the bend in the horse's body.

The left rein is closed to displace the forehand. It guides the forehand on its inner track parallel to the wall and is responsible for the elevation of the head and neck. Half halts are made principally on this rein. It also prevents the shoulder from falling out.

The rider's right leg on the girth assists the right rein in maintaining the bend in the horse, drives the horse forward into his bridle, and working in harmony with the horse's right hind leg keeps that leg up to its work.

The rider's left leg in rear of the girth assists in maintaining the bend throughout the horse, guides the haunches on the track and guards against their falling out.

There is a slight carrying of the rider's balance to the right.

Faults.

1. By a considerable bend of the neck in the middle of the inside, the horse may deceive his rider and avoid the bend in the pole and in the body so that the right hind does not have to pick up any extra weight; the left rein against the bend in the neck, the left leg back of the girth with the right leg firmly placed at the girth will demand the bend in the body and the straightening of the neck.

2. Loses collection and goes slouchy; more leg and hand.

3. Croup falling out (To the left); increase use of left leg and left rein.

Shoulder out.

Executing "Shoulder Out" on the right hand the above aids are reversed, the forehand being carried to the left.

SYNOPSIS OF PRINCIPAL TALKS.

THE GALLOP:

There are two general methods of teaching the horse to take the gallop. The first, we will call the Collected Method, the second we will call the Extended Method. While these methods start from opposite directions, they both seek to

reach the same result. That is, a horse which will promptly take the gallop with either lead upon the proper application of the aids. They both have their advantages and disadvantages, and while starting from opposite directions they gradually become merged together in the thorough training of the horse.

In the first, or the Collected Method, the horse should have already been well schooled in the collected trot. The horse being at this gait on a circle on the right hand, the aids for gallop, lead right, are applied and an attempt made to induce the horse to spring into the gallop right. This is continued until the horse takes either true lead on the circle, and then he is gradually taught to do the same while working on the straight line. In this method the horse goes into a rather slow collected gallop and afterwards he is gradually taught to take the more extended gallop, or to take the canter. This method has the advantage that the horse is always under the control of the rider and therefore learns discipline as he gradually goes from the collected trot into the collected gallop and at no time is out from under control. It has the disadvantages that the horse must be well trained in the collected trot before he is put into the collected gallop; that, in the hands of the average rider it is difficult to have the young horse well schooled in the collected trot. Also for the outdoor horse you want a long, free swinging gallop in order to cover as much ground at each stride as possible, and in this method the horse has a tendency to learn to take a short collected stride. Of course, this disadvantage should be gradually obviated by inducing him to take a more extended gallop as his training progresses. You will find, however, that this is the method laid down in most books on equitation because the writers of these books are masters of equitation and are seeking for a highly trained horse and one which is thoroughly disciplined, they also sufficiently expect to take advantage of its advantages and to guard against its disadvantages.

In the second, or Extended Method, we will put the horse on a circle on the right hand at the trot. Gradually increase this trot, at the same time applying the aids for

gallop right, until the horse of his own free will in order to maintain his balance springs into the gallop right. During the time that he has been in this extended trot he has more or less gotten out from under the control of the rider and in springing into the gallop is probably more or less from under the rider's control. He is gradually brought under the rider's control and brought into a well regulated gallop. The horse, having learned to take the gallop from the extended trot, upon the proper application of the aids, is gradually taught to take the gallop from the slower gaits whenever the aids are applied and thus is brought back from the extended method to the collected method of taking the gallop. It will be seen that the two methods gradually merge into each other. The advantages of this second method are that it can be put into practice very early in the training, that the horse learns to take a long extended gallop at the very beginning, that it can be used by more or less indifferent riders as the horse will naturally break into the gallop if the gait of the trot be extended. It also has certain disadvantages which are, the horse loses discipline during the time which he is at the extended trot and on taking the extended gallop as he is more or less out from under the control of the rider. Also he learns that when the trot is uncomfortable for him he can ease himself by springing into the gallop. He also may acquire the habit of rushing on taking the gallop. These disadvantages must be guarded against and gradually overcome as the training progresses. The horse is gradually brought to the perfected condition which is a horse that will take either the extended or the collected gallop from any gait upon the proper application of the aids. This second method, even with its disadvantages, is probably more suitable for the training of the troop horse in the hands of the average rider.

CHANGE OF LEAD AT THE GALLOP.

In order to understand how to make the change of lead at the gallop it is necessary to know the analysis of the gait. The horse takes the gallop from the halt, the walk, or the trot, by placing the weight upon the forehand, and by then planting a hind leg under the center of gravity; and from the

time the hind leg is planted the horse is in some form of gallop. The gallop is a pace of three or four beats (depending upon the state of the collection of forces and upon the rate of speed), with a leap from a fore-foot at each stride. The horse goes into the air from a fore-foot, which is the right for lead right, and then plants the opposite hind leg, or the left; he then brings the right hind leg to the ground and at about the same time or afterwards (depending upon whether it is a three-tempo gallop or one of four beats), he plants the fore foot (left) opposite to this second planted hind foot; he then brings the fore foot to the ground (right) from which it went into the air, and from this last leaves the ground for a new stride. That is, in gallop right the horse goes into the air off the right fore foot and at this time has all of his feet in the air, he then plants the left hind foot, the right hind foot, immediately afterwards the left fore foot, then the right fore foot from which latter foot he then springs into the air for a new stride.

There are also two methods of teaching the horse to make the change of lead in the gallop, similar in many respects to the two methods of teaching the horse to take the gallop from the trot. Both of these methods have their advantages and disadvantages and gradually merge into each other and both seek for exactly the same end.

The first method we will call the Collected Method. In this the horse should have been well schooled to take the gallop from the trot, that is, either lead right or lead left. The horse being at the gallop, lead right, is brought to the trot for several strides; the aids for gallop left are then applied and the horse induced to take the gallop with that lead. The horse is then again brought to the trot, and, after a few strides, the aids for a new lead applied again and the horse induced to take the gallop with the new lead. Gradually the number of strides at the trot are reduced to three, to one and finally to simply a semi-halt. As the semi-halt is made the aids for the new lead are applied and the horse induced to take it from the semi-halt. Gradually the semi-halt is done away with and while the horse is in the gallop the aids for the new lead are applied and the horse makes the change of lead

while in the gallop. This method has the advantages that the horse is always under the control of the rider, is light, supple and collected, and does not have the tendency to rush when you make the change of lead. It has the disadvantages that the horse must be well schooled in the collected trot, and the rider must be skilful enough to obtain the semi-halt and apply his aids for the new lead without producing resistance on the part of the horse; that the horse in making his change of lead is likely to have it cramped and choppy instead of long and swinging as is desired in the outdoor horse; that the horse in feeling the change of lead is to be demanded is likely to take a few strides at the trot before springing into the new lead. As the training progresses the rider seeks to obviate these two last disadvantages by merging this method into the extended method which will now be explained.

THE SECOND, OR THE EXTENDED METHOD.

It is of course assumed that the horse will take either gallop right or left upon the proper application of the aids. The horse being at the gallop right on a circle on the right hand is made to change circles and upon entering the new circle, that is, a circle on the left hand at the other end of the hall, the aids for gallop left are gently but firmly applied. The horse if he does not make the change of lead upon the application of the new aids, is pushed into a more rapid gallop until of his own free will probably makes the change of lead in order to maintain his balance. If he has been well trained in taking the gallop right and left he will likely make this change of lead very shortly, if he does not, however, he will have to be brought back to the trot and the aids for gallop left applied. This method of changing circles is continued and the new aids applied as the horse changes the direction of the curve until he learns that upon the application of these aids he is to make his change of lead. The size of the circles are gradually increased until they become straight lines. The speed of the gallop is gradually decreased until it becomes a canter. This method has the disadvantages that the horse has a tendency to rush as he makes the change of lead, also that while he is being pushed into the extended

gallop in order to induce him to make his change of lead he is to a certain extent, out from under the rider's control and therefore loses discipline. It has the advantages that it can be taught with a relatively low degree of training, that it can be applied by more or less indifferent riders, that the horse has no tendency to come to the trot in making the change, and he learns to make a long swinging stride in the change as desired in the outdoor horse. Of course, its disadvantages must be guarded against by gradually merging it into the collected method. The collected method is the one laid down in most books on equitation for practically the same reasons that were given in the talk on teaching the horse to take the gallop. The extended method is better, I believe, for the average troop horse. All that you desire of him is that he will take the gallop right when on a circle to the right, and the gallop left when on a circle to the left, and make the change of lead as he changes the direction of his curve. With this method the horse, in the hands of the average trooper, can be readily taught to make his change of lead as he changes the direction of his curve.

Carrying the training further as it should be with the officer's charger the question now comes, when to apply the aids in order to obtain the change of lead at any given stride. We will assume that the horse is in gallop, lead right, and it is desired to obtain the gallop, lead left. Remember that in gallop right, the left hind first comes to the ground, then the right hind, then the left fore, then the right fore, and the horse springs into the air off the right fore, all four feet then being in the air. In order to have a gallop left behind the order in which the hind feet are to strike the ground must be reversed and the right hind must strike the ground before the left hind. In all our work we have followed the principle that to advance a horse's hind leg the muscles on that side must be excited by the leg of the rider on the same side. Remember we assumed the horse in gallop right and in the natural order the left hind foot is to be planted before the right hind foot. To get the gallop left behind we must change the order in which those hind feet are being planted and cause the right hind to be planted before the left hind. To do this

we must suddenly excite the muscles on the right side and cause that hind leg to be jerked to the front and the foot placed on the ground before the left hind, if this happens we will have the order of gallop left behind. You must also bear in mind that the horse is moving rapidly to the front all of the time, and try to picture that this change is made while he is thus moving and not standing still. As his right fore leg is extended and coming to the ground his hind legs are coming up under him to be placed in the order for the gallop right. If the rider, as the right fore leg is coming to the ground, applies his right heel to the horse's side he will excite the muscles of the right hind leg and cause it to be brought to the front and the foot placed on the ground before the left hind foot, thus giving him the order of gallop left behind. The horse's right fore foot in the meantime has struck the ground and he has gone into the aid, all four feet being in the air, the hind feet coming to the ground with their order reversed (right-left), he then reverses the order of his fore legs by extending his right fore leg planting that foot before the left fore foot, bringing the left fore foot to the ground last and going into the air off this left fore foot. He thus then has the gallop left both in front and behind and has made a true change of lead at the gallop, the change being made in one stride. In short to obtain the change, being at the gallop right, and the gallop left is desired, as the right fore leg is being extended to come to the ground, apply the aids for gallop left. In order to obtain the gallop right from the gallop left, apply the aids for gallop right as the left fore leg is being extended to come to the ground.

The above where the hind legs are changed before the fore legs gives a true change of lead as it is done in the same stride and the horse at no time has a false (disunited) gallop. The method often seen of throwing the forehand from side to side and causing the horse to change the fore legs before the hind legs does not give a true change of lead. The reason for this is that as the horse's fore legs are in the air the hind legs are committed to a certain order and have either come to, or are about to come to the ground. If the order of the fore legs is then changed the hind feet have struck the ground

in the old order the fore feet will strike the ground in the new order giving the horse at this time a disunited gallop. The hind legs will change their order in the next or some future stride when the weight is on the forehand, but there has been a portion of a stride where the horse was disunited which is not the case where the hind legs change their order first as described above.

THE WHIP.

While etiquette requires the riding whip to be carried the reliance of a good horseman should be his hands and legs. The whip is usually carried in the hand which holds the reins. If the reins are held in both hands the whip may be carried in either hand unless in the riding hall when it is carried in the inside hand. It is grasped at the handle, butt up and point down, passing in front of the knee or across the thigh. The rider should be capable of using it equally well with both hands, and to do this requires a great deal of practice. In racing it must be used so as not to foul a horse along side, in unison with the horse's stride at the gallop, and if practical it is better to use it on the side opposite to which the horse is leading in the gallop in order not to cause him to make the change of lead. In jumping the last two considerations must be taken into account and also the horse's tendency to shy away from the obstacle. These points show how necessary it is for the rider to be able to use it equally well in both hands.

The reins being held in both hands, and it is desired to use the whip in the hand opposite to which it is being held slip the reins into the hand holding the whip, grasp the handle of the whip with the hand in which it is to be used in the same manner as you would grasp the handle of the saber on drawing it from the scabbard, then draw the whip the same as you would a saber and deliver your blow or blows.

Use the whip in the same hand in which it is being held; slip the reins into the opposite hand, give a quick throw of the point of the whip so as to move it a short distance from rear to front, at the same time opening out the forefinger and allowing the whip to come between the forefinger and

the middle finger supported by the thumb, then with a quick throw downward drop the point from front to rear, twirl it between the fore and middle fingers until the whip reaches a vertical position, point up, then slip the fore finger so that the whip is in full grasp and in a position to deliver a blow. Or give a quick throw of the point of the whip from rear to front, at the same time opening out the fore finger and allow the whip to come between the fore finger and the middle finger, twirl it between these fingers until the whip is nearly vertical, point up, slip the fore finger outside the whip when the whip will be in full grasp and in the striking position.

After the blow has been delivered to return the whip to its regular position; open out the fore finger so as to grasp the whip between the fore and middle fingers, then with a quick throw of the point from front to rear allow it to twirl between these fingers until it has reached the vertical position, point down, then by grasping it between the thumb and fore finger the last three fingers can be slipped outside of the handle and the whip is again in the hand in its normal carrying position.

In order to transfer the whip from one hand to the other; slip the reins into the hand which is holding the whip, grasp the handle with the hand in which it is to be held, back of the hand out, draw the whip across the horse's neck, then retake the reins desired in the hand desired in the hand which now holds the whip.

If one will practice twirling the whip in the manner described above while walking dismounted or while moving at slow gaits mounted, efficiency will soon be attained.

CONDITIONING AND TRAINING FOR LONG GALLOPS.

To prepare or condition a horse for any unusual exertion is a much more complex problem than would appear at first sight. There can be no prescribed or fixed scheme of work laid out except in a general way. No two horses can be prepared in exactly the same manner. The nature of the test, the character of the horse, his breeding, and his aptitude for the work, all enter into the problem. Whatever the test, the preparation of the horse must be such that he can absolve

it without injury to himself, whether physical or by the impairment of his nervous organization.

The thoroughbred can race steadily through season after season, and improve in every way. On the other hand the cold blooded horse may become a savage or a nervous wreck in one race. The length of time and the amount of work required to fit a horse for a given test cannot be definitely prescribed. The physical condition of the horse, the internal and external fat, the lungs, the blood, the digestion, all must be considered at the beginning and observed during the entire preparation. When a danger signal shows from any of these sources the work must cease until the damage is repaired.

The state of perfect health must be maintained throughout, or damage will be the sure result. The conditions in general are: the coat should be glossy, and the hair be close to the skin, which should move freely under the hand; the eyes should be bright and the ears alert; the legs should remain clean, and no undue heat be evident; the droppings must be normal and indicate good digestion; the appetite must be good and every feed cleaned up. The horse should be keen for his work and always want to do more than is asked of him. The sweat at first lathery, should become as clear as water and dry quickly as conditions improve. In the gallop the breathing should not become labored or gasping and should return quickly to the normal afterwards.

The work and feed must be gradually increased in proportion with due observation of the above conditions. The actual work consists of slow work and gallops. By slow work is meant the walk and easy trot. By gallop is usually meant the swinging stride at which a horse will go along on his own courage, *i. e.*, without driving, urging, or undue exertion to himself. When he is in company, this is not in the run, but a swinging gallop. In the gallops are included the sprints for short distances to extend the lungs or "to open his pipes." Horses do their work best in company, and better results are secured than when they go alone.

The present test in which some regiments are engaged, is to make four miles in twelve minutes. There are some jumps but these are so low and few in number that they do not enter very largely into the problem for any horse which has jumped at all. This distance in the required time, with the horse in proper condition, is an easy problem for any fair thoroughbred, or any good horse with thoroughbred blood in him, even with the heavy weight to be carried. On the other hand, for cold blooded horses of coarse type and poor action it is a serious task. To some of these it will be a serious undertaking to gallop at the rate of twenty miles an hour for any distance at all.

However, the best of the troop horses when in proper condition should be able to perform this task easily and it is assumed that the officers entering are at least as well mounted as if on their best troop animals. It is assumed that the horses to be worked with are as our average horse is at the beginning of spring, *i. e.*, soft, over fat, with a heavy coat and absolutely no wind. Before a horse is put to work he should be clipped, if his coat is heavy and thick. Select a suitable day, with sunshine and no cold wind. The horse should be washed after the clipping with soap and slightly warmed water. The soap should be thoroughly washed out, the horse scraped quickly, and given a good rubdown with cloths. Cover him warmly and put flannel bandages on all four legs, and walked until he is thoroughly dry. He should then be dressed down (use a soft brush) and well rubbed all over, and have the bandages removed. Naturally a little more cover should be used, but if he is not exposed to direct draught there is no danger of cold.

FEED.

In the beginning of the work there need be no unusual change in the feed unless the digestion seems disordered. If this occurs the grain should be reduced and one bran mash with a small handful of flaxseed meal given daily if necessary, until order is restored. Of course, if the grain is divided into four feeds spaced as far apart as convenient the results will be better. As long as a horse sweats freely he should not be

denied water. As his condition improves he will demand less. In this connection it may be remembered that horses become very thirsty before midnight, and if water is not left in the stall they will appreciate very much being watered about ten o'clock. About one-third of the hay allowance should be fed during the day, and two-thirds at night; and if very dry, as the prairie hay generally is, it should be slightly dampened. Needless to say, deep fresh beds and clean feed boxes all tend to improve the condition and good grooming is absolutely essential.

WORK.

As for the actual work of training, if the horse can be brought gradually to the point where he can gallop about five or six miles at his own pace—say at the rate of fourteen or fifteen miles an hour—without distress or exhaustion, it may safely be assumed that he will do the four miles in twelve minutes with ease. This six-mile gallop need be demanded only once, and that some two or three days before the test. The day before a good trot, and the morning of the test (after the morning feed), a short canter, a good rubdown, no more hay or grain, a half bucketful of water shortly after the canter, and he is ready.

As a rough outline of work, to serve only as a suggestion, the following is offered: Let the horse go twice each day morning and afternoon. The morning work should be given by the officer himself, and most of it may be done in connection with the regular drills—two hours' drill being the equivalent of about one hour's systematic work. The afternoon work can if necessary be done by a trooper and should consist of about 1½ hours walking outside, either ridden under light weight or led, but the gait should be brisk and lively, not slouchy. After this the horse should be dressed down for the night. The principal work should be done in the mornings, not sooner than one hour after feeding, and this is where the gradual increase of work must be made. The time, as stated, should be from one to two hours. Begin with long walks and short trots and gradually increase the proportion of trot to walk to a ratio of about two to one. In this

work the sweat should be brought out on the neck each day, but the horse back of the saddle should not be wet. This will serve as a fair guide to what the horse is easily equal to. Walking in sand, mud, plowed ground, or up hills, and finally trotting over the same will put on muscle and improve condition very rapidly, and make good lungs, without being as liable to injure the legs as fast work even on the level would be.

The tentative schedule below of gallop work is drawn more with reference to the underbred horse than to one of good quality, and in it one should note that there is very little fast work prescribed.

SCHEDULE.

	Tuesday.	Thursday.	Saturday.
1st wk.		1 mi. (canter)	1½ mi. cant.)
2d wk.	1½ mi. (14 or 15*)	1¾ mi. (14 or 15)	2 mi. (15)
3d wk.	2¼ mi. (15)	2½ mi. (15)	3 mi. (15).
4th wk.	2½ mi. (15) ¼ mi. (20)	3 mi. (15)	4 mi. (15).
5th wk.	2½ mi. (15), ½ mi. (20)	1½ mi. (15), 1 mi. (20)	4 mi. (15)
6th wk.	1 mi. (15), 1½ mi. (20)	1 mi. (15), 2 mi. (20)	5 mi. (15).

On gallop days a half hour of easy walk and trot should precede the gallop, and the horse should be brought back to the stable cool and dry. If he does come back wet, scrape down, rub over once to get the water out, cover and walk him after giving him a half dozen swallows of water. Flannel bandages put on the legs are very beneficial. Sponging the nostrils and dock help in the process of restoring normal conditions. A few swallows of water at intervals while walking will cool the horse internally, and thus he will not drink a great deal very greedily later on which would probably cause him to break into a second sweat after he is groomed and put away. If the horses tend to become nervous over their gallops, vary just as often as possible the locality in which they are to be worked at that gait. It is also well to return to the stable by a different route from that taken on going out to work, as the horse will thus come home more quietly.

*The figures in brackets indicate the number of miles per hour, or the pace thus: (20) means at the rate of 20 miles per hour.

It is believed that if the above schedule is followed with judgment the horses should attain to such a measure of good condition that the four miles in twelve minutes can be accomplished without, at least, any *permanent* injury to the horse. The horse having once reached this condition can easily be held there during the open season, for gallops of this kind, by systematic exercise and care, and with probably one good gallop per week.

OUTLINE OF A SINGLE RANK MOVEMENT SYSTEM FOR CAVALRY.

ADAPTED TO A TWO RANK LINE.

BY BRIGADIER GENERAL F. K. WARD, U. S. ARMY, RETIRED.

IN a short article by me which appeared in a recent issue of the CAVALRY JOURNAL, the idea was advanced that, for cavalry mounted, a two rank line as there described, would be stronger than a double rank and that since a double rank movement system does not lend itself to the formation of such a two rank line while a single rank system does, we should hold a single rank movement system for our cavalry service. The purpose of this article is to submit to the judgment of the cavalry service an outline of a single rank system which it is believed would be well adapted to the purpose. Without going to the length of writing out the system in full, enough of the details will be given to place it in its entirety clearly before the mind and enable officers to form a judgment satisfactory to themselves regarding it. This statement is made because it is recognized that the men who will have to use the system which is finally adopted, who may have to stake their reputations and their lives upon it, should have the first and last say about it while it is under consideration and that with them should rest the final decision regarding any system which may be proposed.

Legislation on any subject relating to the army is very difficult to obtain and when we ask for it we can never be sure what we will get, because we can never go to Congress unanimous as to what we want. The system here proposed can be put into operation without any legislation. It requires but one change in the present organization and that is one for which legislation is not necessary, namely: That the

maximum strength of a troop be fixed at about seventy-two enlisted men.

Following what was formerly the usage in our own and is still the usage in all the large foreign armies, we will, in the system about to be described, call the smallest tactical unit a squadron. It will be made up of two troops united to form the squadron. That gives us a regiment composed of six squadrons. There has been considerable discussion as to the best size for a regiment. Some put it at four, some at six, and some at eight squadrons. In the European services, I believe six is the maximum and four the minimum. Without attempting to decide which is best, we will consider a regiment of six squadrons because our present legal organization of twelve troops for the regiment gives us that number by uniting two troops to form a squadron. The system which follows is equally well adapted to a less or greater number of squadrons.

THE SQUADRON IN CLOSE ORDER.

The formation of the squadron in line is shown in Figure I. It consists of two ranks and has a front of sixty-four. The distance between the ranks is platoon distance. Each

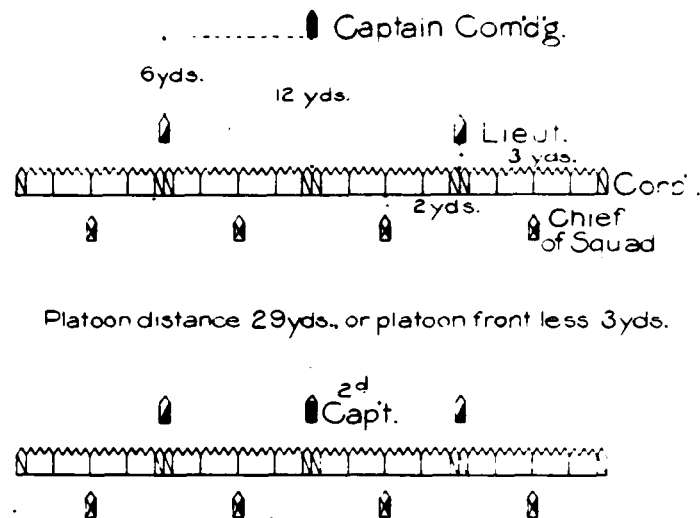


FIG. I.

rank is divided equally into two platoons and each platoon into two squads. The drawing is to scale and all intervals and distances are noted in figures. All the details of the formation can be better understood from the figure than from a description in words. The chiefs of squad are placed in the line of file closers in order that they may be able to supervise the ranks efficiently, keep them closed, correct faults of alignment, etc. When the squad is detached, as in extended order for instance, the natural place for the chief of squad would be in front of and leading it, except while it is deployed as skirmishers. By executing either fours right or platoons right forward fours right, the squadron is formed into what might be called either a line of fours or a double column of fours. The designation, double column of fours, is used here. In Figure II the squadron is shown in double column of fours, intervals and distances noted in figures as in Figure I. It will be noticed that no guidon is shown in either figure. The

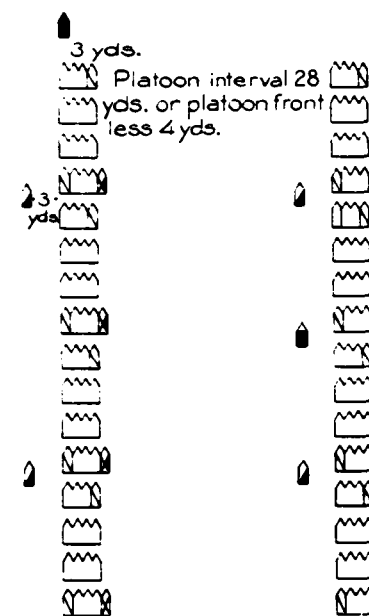


FIG. II.

omission is intentional. The guidon comes down to us from a time when it was considered indispensable to post guides in forming lines in the regiment. By the system here proposed, the need for posting guides at any time for any purpose is entirely done away with. The guidon would therefore no longer be needed. Unlike the regimental colors, it never had any significance. It has always been merely a marker. Should it be thought best to retain it, the provision for it would be precisely the same as in our present drill regulations.

In this system it is proposed that the march, both in line and in column, shall always be by the method of leading; following in trace it is called in our present drill regulations. Consistently and thoroughly applied, this method completely does away with the need for posting guides in forming line in the regiment, gives the squadron commander very much more effective and more accurate control of his squadron both while it is in motion and while at a halt and, most important of all, it is by far the most effective method for the advance to the attack and for the charge. The method is as follows:

Take first the march of the squadron in line. The squadron commander leads the squadron from his position in front of the center usually, because with the guide center the march is easier for the men in one rank and the rank is kept better closed and in better alignment. For short distances he may, for a special purpose, lead from a position in front of either flank, lead by a flank it is called; for instance, when forming line in the regiment, to bring the squadron up to the line with the proper interval. He is placed twelve yards in front of the rank to enable the men in the leading rank to see him at all times by glancing toward him without turning the head. By his own motion and without any commands, he controls the direction, gait and speed of the squadron. He designates the center guide, usually one of the non-commissioned officers in the center of the rank.

The second captain designates the center guide of and leads the second rank from a position in the line of the chiefs of platoon, by the center or by a flank conforming to the position taken by the squadron commander. He maintains

from the leading rank a distance that will give the second rank platoon distance. The reason given for placing the captain commanding twelve yards to the front does not obtain in the case of the second captain. The men in the second rank receive warning from the rank in front, of changes in the speed or direction and if the second captain were placed twelve yards to the front he would, when the squadron became much reduced in strength, have to move too close to the leading rank.

The platoon commanders of the leading rank keep approximately in front of the centers of their platoons and as accurately as possible six yards less advanced than the squadron commander. They mark a line from which the men in the rank must keep three yards in rear. The platoon commanders of the second rank move abreast with the second captain keeping approximately in front of the centers of their platoons, thereby marking a line from which the men in that rank must keep three yards in rear.

The guide in the leading rank follows in the trace of the squadron commander, maintains from him as accurately as possible the distance of twelve yards from head to croup, and conforms promptly to all changes by him in the gait and the speed. The guide in the second rank follows in the trace of the second captain, maintains from him the distance of three yards from head to croup, and conforms promptly to all changes by him in the gait and the speed.

The men in the ranks touch and dress toward the guide whose position is continuously shown by the position of the squadron commander and the second captain. No command for a guide would be needed and none should be given. They must never pass the line marked by their platoon commanders. Those in the leading rank observe the squadron commander constantly in order to be able to conform promptly, easily and in good order, to changes by the guide in the direction, gait or speed taken from the squadron commander. Those in the second rank observe the leading rank so as to be able to change the direction, gait or speed in time with their own guide.

The file-closers, and especially the chiefs of squad, must be unremitting in their attention to the ranks, keeping them closed, correcting faults of alignment, etc.

When the squadron is in line at a halt and the squadron commander is in his place in front of the center, a movement forward or back by him (in placing himself accurately on the line of captains in forming line or rectifying the alignment in the regiment, for instance) should carry the squadron forward or back without command and the ranks should dress without command immediately on reaching position.

The squadron in double columns of fours is led by the squadron commander from his place three yards in front of the guide of the leading four of either the right or the left column. The column in front of which the captain commanding places himself is thereby designated as the directing column, guide column would be a better term. No command for a guide is needed and none should be given. The guide of the leading four follows in the trace of the captain, taking the gait and speed from him. The other column regulates by the guide column and maintains its position with respect to it. To avoid obstacles, the interval between the columns would be increased or diminished without command. It may be closed entirely if necessary, or the column, not the guide column, may drop back by direction of the second captain and follow the guide column through a very narrow opening. In all such cases the normal formation should be resumed without command as soon as the obstacle is passed, increasing the gait for that purpose if necessary.

When the squadron is drilling alone, the squadron commander may need to be elsewhere than in place to lead. In such case the second captain should take his place as squadron leader. The squadron should be thoroughly habituated to that method of marching and to that end should never be marched by any other.

In close order the changes of formation by the squadron alone or in the regiment are few and very simple. It is believed that the turn by subdivisions in line as prescribed by our present drill regulations, should be abandoned and that the old wheels on a fixed and a moveable pivot should be re-

turned to. It (the present turn) is not as good a movement in practice as it is in theory. And the old wheels were excellent practice for the march in line which is such an important movement for cavalry that anything which contributes to proficiency in it should be retained. It is therefore proposed in this system to use the wheel instead of the present turn. Leaving out of consideration the provisions that must be made for forming a road column (column of fours or twos) and for closing up the road column for camping or maneuver purposes, the squadron in close order whether by itself or in the regiment will always be in line or in double column of fours. In stating the movements and changes of formation considered necessary or desirable, the movement is stated first, then the commands for it are given followed by only such explanation regarding the execution as may be needed by one already familiar with our present drill regulations. In many cases no explanation is needed, the commands alone being sufficient for a thorough understanding of the movement.

The Squadron in Line:—

To gain ground to the right or left: Right (or left) oblique, March: Forward, March.

To change direction: The squadron commander commands, Right (or left) turn, (or half turn), March: Forward, March. This turn is a wheel on a moveable pivot. At the first command of execution the leading rank wheels to the right on a moveable pivot. If from a halt or walk, the center guide moves at a walk. The gait is decreased toward the pivot trooper who moves on an arc of a circle having a radius of half the front of the squadron. The gait is increased toward the marching flank and the trooper on that flank moves on an arc of a circle having a radius one-half greater than the front of the squadron. The touch is toward the pivot, the dress toward the center. If moving at a trot or gallop, the trooper on the marching flank moves at the original gait and the touch is toward the pivot, the dress toward the marching flank. The second rank continues in the original direction to the turning point and there wheels

in the same manner as the leading rank by the same commands given by the second captain.

This is the only case in this system of a wheel on a moveable pivot. It is not a movement much used in changes of formation. The complete wheel would seldom be used except in ceremonies. The partial wheel might be very useful in action.

To form line facing to the rear: Fours right (or left) about, March. The file closer pass between the fours to their new places. The chiefs of platoons move round the flanks.

The squadron commander takes position in front of and immediately commanding the new front rank. The second captain takes position commanding the new second rank.

These rules regarding the positions of the squadron commander and the second captain govern in all formations of the squadron into line.

To form line facing to a flank: For this there are two methods.

First Method: The squadron commander commands, Platoons right (or left) wheel, March. The platoons wheel on a fixed pivot touching toward the pivot and dressing toward the marching flank. If the movement is to a halt the chiefs of platoon halt their platoons at the completion of the wheel. If not to a halt the squadron commander commands: Forward, March, as the platoons join. This is the only case of a wheel on a fixed pivot in this system.

Second Method: The squadron commander commands, Platoons left (or right) forward, fours left (or right), March; and as the columns join, Fours right (or left), March.

There is a third method which perhaps might be preferred for all purposes except ceremonies: For instance, to the right, the squadron commander commands, Fours right, platoons left front into line, March.

To form double column of fours to the front: The squadron commander commands, Platoons right forward, fours right (or left forward, fours left), March.

To form double column of fours to a flank: Fours right (or left), March.

To form double column of fours to the rear: Fours right (or left), platoons column right (or left), March.

To close distance: The squadron commander commands, Close distance, March. If at a walk the leading rank halts at the command march; the second rank is halted by the second captain at the distance of twelve yards from the leading rank. If moving at a trot, the leading rank comes to a walk at the command march and the second rank take the walk at the specified distance by command from the second captain.

This change may be made at an increased gait.

The distance having been closed, to take full distance: The squadron commander commands, Take full distance, March, or Trot, March.

The last two changes find application only when the squadron is in the regiment.

The Squadron In Double Column of Fours:—

To change direction: The squadron commander commands, Right (or left) turn (or half turn), March. This movement is always executed at an increased gait. At the command march the right column executes column right and becomes the guide column during the turn. The left column at the command march increases the gait one degree, turns to the right moving on an arc of a circle of such a radius as to keep platoon interval from the guide column and continues at the increased gait until its leading four comes abreast with the leading four of the guide column at which time the original gait is resumed and the guide becomes the same as before the change of direction began. If marching at a gallop when the turn is ordered, the outer column must move at the extended gallop during the turn.

To form line to the front: For this there are two methods.

First Method: The squadron commander commands, Platoons right (or left) front into line, March. The execu-

tion by this method is always at an increased gait without indication of gait in the command.

Second Method: Platoons column right (or left), March, followed as the columns join by Fours left (or right), March.

To form line to the rear: Platoons column right (or left) March, followed by Fours right (or left), March, as the columns join.

To form line to a flank: Fours right (or left), March.

To form double column of fours to a flank: Platoons column right (or left), March.

To form double column of fours to the rear: Fours right (or left) about, March.

In the direction for the charge there would be embodied a paragraph in effect as follows:

When the squadron is in line advancing to the attack, the second captain as soon as the rapid gait is taken up, will permit the leading rank to gain on the second until the second has halting distance. If the shock does not take place the second rank will be held as a reserve or will join in the pursuit as circumstances may determine.

The Squadron Being in Line, or in Double Column of Fours:

To form a road column: The squadron commander commands, Column of fours to the (right, left, front or rear), "Such" Troop leading, March. At the preparatory command the captain of the designated troop gives the proper preparatory commands, "Such" Troop forward, or fours right, or platoons right forward fours right, or platoons column right, etc., depending upon the formation the squadron is in, and repeats the command march. The captain of the other troop moves his troop following in column of fours at the distance of nine yards.

From column of fours, column of twos would be formed in the usual manner.

The Squadron Being In a Road Column (Fours or Twos):

To form double column of fours: The squadron commander commands, Double column of fours, right (or left) oblique, March. If in column of fours at a walk the captain

of the leading troop halts his troop. The captain of the rear troop obliques his troop to the right until platoon interval is gained, then moves it forward and halts it when abreast with the other column. If in column of twos the leading troop commander forms column of fours and halts his troop. The other troop commander forms column of fours as his head of column reaches its place.

In either case the movement may be executed at an increased gait, that is without halting, by the command trot or gallop preceding the command march.

THE REGIMENT.

The regiment is composed of six squadrons. It is divided into two wings. The squadrons are designated by number from right to left when in line, from front to rear when in column. The numbers are changed when the regiment is faced about. The wings are designated right and left when in line, leading and rear when in column. The interval between squadrons in line is eight yards. The interval between wings in line is the same as between squadrons. The position of the colonel in line is in front of the center and twenty yards in front of the line of captains. He may go wherever he can best command the regiment. The lieutenant colonel accompanies the colonel, on his right with sufficient interval for freedom of movement; he may be assigned to any particular duty. The adjutant accompanies the colonel in a corresponding position on his left. The position of the senior major is ten yards in front of the line of captains and in front of the center of the right wing. He supervises the execution of movements in his wing but does not directly command the wing unless it is by itself, as in column of wings for instance. The second major occupies a corresponding position with respect to the left wing. The majors are not restricted to the positions assigned them. They may go where they can best perform their duties.

The regiment may be formed on a flank squadron or on the center squadron. Take for instance a formation on the right squadron.

The adjutant and sergeant major mark the line. They take positions on the line of captains, facing each other and squadron front apart, the adjutant at the point of rest. The captain commanding the first squadron brings his squadron on the ground in double column of fours, leading it in this case by the right column. He changes direction and moves up to the line from the rear, the turn being executed at such a point that when he, after the turn, moves on a point a few yards in front of the adjutant, the direction of his line of march is perpendicular to the line marked by the adjutant and sergeant major. He forms platoons left front into line in time for the formation to be completed thirty yards from the line. Then leading by the right up to the line, he halts the squadron when he is three yards from the indicated line and placing himself in front of his center guide, he moves up and places himself on the line. He is confirmed in his alignment by the adjutant. His movement up to the line of captains after having taken position in front of the center, places the squadron on the line. The captain of the second squadron places his squadron on the line in the same way with the single exception that instead of having the adjutant to direct his march by as he approaches the line, he has to so direct his march as to give his squadron the interval of eight yards from the first squadron. He is confirmed in his position on the line of captains by the adjutant. The adjutant and sergeant major then leave their positions and the captains of the squadrons already formed mark the line of captains for the completion of the formation. The other squadrons form in the same manner as the second, each captain aligning himself on the line of captains.

This is the method in detail for forming line in all successive formations for the regiment into line.

In first forming the regiment, if the formation is on the center, the adjutant at the point of rest in front of the left of the right center squadron, aligns the captain of that squadron and then turns left about, moves squadron front toward the left, then again left about and places himself on the line facing toward the right. From this position he aligns the captain of the left center squadron. Two captains being

established on the line, the adjutant and sergeant major retire. If considered desirable, as for instance in forming for ceremonies, the adjutant would remain and align all of the captains as they came on the line, whether the formation was on the center or on the flank squadron.

The following general directions are without exception:

In all cases when wheeling fours right or left from line into column or from column into line, if it is the intention to halt as soon as the fours have completed the wheel, the preparatory command for the halt may be omitted. In such cases the command halt should be given immediately following the command march. This applies in the squadron as well as in the regiment.

All successive formations of the regiment into line or into line of fours are to a halt. In such cases if the trot or gallop is sounded it applies only to the rear squadrons.

In successive formations into line or into line of fours, the squadrons are moved the greater part of the distance in double column of fours, each squadron commander leading by the column nearest the point of rest. The march should be so conducted that after the turn to move up to the line there will remain enough distance to form platoons front into line thirty yards from the line after which the squadron is led by the flank nearest the point of rest. After halting just in rear of the line no correction of interval will be permitted. The guide of the leading rank does not move up to the line until the alignment of the captain is completed; he then moves up to a position twelve yards less advanced than the captain but without attempting to place himself directly in rear of him if he has taken position not exactly in front of the guide, this to avoid any necessity for passing to the right or left.

THE MARCH IN LINE.

The colonel commands, Forward, March, Guide center (right or left). The command for the guide is for the captains only: It designates the guide captain. When the regiment is by itself the guide is habitually center because with the guide there the march is easier and the alignment and intervals can be better maintained. When no objective

is indicated to him by the colonel, the guide captain selects an objective in his line of march on which to move. If the colonel desires to lead the regiment, he places himself any desired distance in front of the guide captain who maintains that distance and follows in the trace. The majors move abreast with the colonel and each keeps approximately in front of the center of his wing. When the colonel does not lead, the majors move in their prescribed positions. The colonel may designate the lieutenant colonel or a major to lead. In advancing to the attack, the field officers in front of the line would take places in the line of captains.

The squadron commanders lead their squadrons by the center. They take the alignment from the guide captain, that is they move abreast with him and they take the interval from the captain next to them on the side toward the guide, glancing occasionally at their interval in the leading rank to verify the correctness of their judgment. While they take the alignment principally from the guide captain they also take cognizance of the general line as shown by the positions of the other captains, in verification of their own estimate or judgment and to avoid being too far out of the general line.

The guides in the rank follow in the trace of their leaders and maintain their prescribed distances from them. They have no other duty.

The second captains and chiefs of platoon maintain a general supervision over the ranks and see that the file closers attend to their duties.

The file closers must be unremitting in their attention to the ranks, keeping them closed and correcting faults of alignment, etc.

Too much practice cannot be given in the march in line and after sufficient proficiency has been reached, the practice should be principally at rapid gaits including extended gallop, and for considerable distances.

EVOLUTIONS OF THE REGIMENT.

The Regiment in Line:

To gain short distance to the right or left: The colonel commands, Right (or left) oblique, March: Forward, March.

To face to the rear: The colonel commands, Face to the rear, fours right (or left) about, March. The squadron commanders halt their squadrons as the fours join.

To march to the rear: The colonel commands, Fours right (or left) about, March, Guide center (right or left).

To change front to the right or left: Accomplished by forming double column of fours and then executing front into line.

To change front half right or half left: The colonel commands, Change front half right (or half left), March. By the proper commands from the squadron commanders, the right squadron makes a half turn to the right, moves forward thirty yards and halts; the other squadrons break into double column of fours to the front, platoons right forward fours right when the change is to the right, move forward, make a half turn to the right, then forward to the new line, forming platoons left front into line thirty yards from the line. The adjutant and sergeant major go to the point of rest to define the line it is desired to occupy. The change of front may in this way be made greater or less than forty-five degrees as may be desired.

To form line of fours: The colonel commands, Platoons right (or left) forward, fours right (or left), March; Guide center, (right or left).

To form column of squadrons: The colonel commands, Platoons right (or left) wheel, March; Squadrons, Halt or Forward, March, Guide center (right or left). Or Platoons left (or right) forward, fours left (or right), March, followed as the columns join by, Fours right (or left), March; Guide center (right or left).

To form double column of fours: The colonel commands, Fours right (or left), March; Halt or Guide (right or left).

To form line of wings in double column of fours: Double column of fours is first formed and the colonel then commands, Wings column right (or left), March, Guide (right or left).

To form column of wings to the front: The colonel commands, Column of wings, right (or left) wing, Forward, March;

Guide center (right or left). At the preparatory command from the colonel, the major of the left wing commands Fours right, and repeats the command march. At the command march, the right wing moves forward and the left wing moves by the flank until in rear of the leading wing the major forms line to the left and repeats the announcement of the guide.

To form column of wings to a flank: Accomplished by forming double column of fours and executing wings front into line.

To advance in line with one or both flanks in echelon: The colonel commands, Forward, "Such" Squadrons or Squadrons in echelon, March, Guide center (right or left). The designated squadrons remain at a halt until each has squadron distance from the line or from its preceding squadron, distance measured in the direction of the march. In this manner three squadrons from one flank, or one from one flank and two from the other can be put in echelon.

The regiment marching in line, to put one or more squadrons in echelon: The colonel commands, "Such" squadron or squadrons into echelon, March. At the command march the designated squadrons decrease the gait or halt until they have their echelon distance.

To bring squadrons in echelon into line: The colonel commands, Rear squadrons into line, March, or Trot (or gallop), March.

To form the entire regiment in echelon: The colonel commands, Form echelon, Right (or left) squadron forward, March.

The regiment in echelon, to form line: The colonel commands, Form line on "Such" squadron, March. If in motion the designated squadron halts at the command march. The rear squadron move forward to the line and halt. Those in advance of the designated squadron wheel about by fours, move back, wheel about by fours and are placed on the line.

The echelon is considered a line formation and the squadrons and wings are designated from right to left without regard to which flank is in advance.

The Regiment in Line of Fours:

The line of fours moves forward, obliques, faces to the rear, and marches to the rear by the same command and means as the regiment in line. The squadrons are led by the column nearest the guide.

To change front: The colonel commands, Change front right (or half right, left or half left), March. The right squadron turns to the right, moves forward thirty yards and halts. The other squadrons move forward, incline to the right, make a partial turn to the right when in rear of their places and move up to the line.

To form line: The colonel commands, Platoons right (or left) front into line, March.

To form column of squadrons: The colonel commands, Fours (right or left), March.

To form double column of fours: The colonel commands, Platoons column right (or left), March, Guide (right or left).

To form in mass on a flank squadron: Column of squadrons is formed, distances are closed and fours wheeled right or left into mass.

To form in mass on an interior squadron: The colonel commands, Form in mass on "Such" squadron, fours left and right, March. At the command march the designated squadron and all to its right wheel fours left; the designated squadron immediately closes distance, wheels fours right and halts. The other squadrons close distance in succession as they close on the preceding squadron, wheel fours right and halt. The squadrons which wheeled fours right close in a similar manner on the designated squadron, wheel fours left and halt.

The Regiment in Double Column of Fours:

The regiment in double column of fours moves forward, obliques and moves to the rear by the same commands and means as in line. The guide of the column may be right or left. The distance between squadrons is nine yards.

To change direction: The colonel commands, Column right (or left), March. At the preparatory command the

leading squadron commander commands right turn, repeats the command march and that squadron turns to the right. By the same commands the other squadrons turn as they come to the turning point.

To form front into line: The colonel commands, Right (or left) front into line, March. The leading squadron executes platoons right front into line, moves forward thirty yards and is placed on the line. At the preparatory command from the colonel, the other squadron commanders command platoons column right. At the command march all the rear squadrons form double column of fours to the right. Each squadron commander leads by his left column and as he reaches a point directly in rear of the position the left of his squadron will occupy in line, makes a turn or partial turn to the left, bring his platoons right front into line, leads by the left up to and places his squadron on the line as previously explained. In moving to the point in rear of their positions the squadron commanders incline to the left, especially those farthest from the new line, taking care to leave themselves after the partial turn, enough distance for the formation of their squadrons into line before reaching the new line.

To form right and left front into line: The colonel commands, Right and left front into line, March. The leading wing executes right front into line and the rear wing executes left front into line on the left of the leading wing.

If the command from the colonel is left and right front into line, the leading wing forms left front into line and the rear wing front into line on the right of the leading wing.

To form front into line of fours: The commands of the colonel are "into line of fours" instead of "into line." The execution is the same as into line except that the squadrons are placed on the line in double column of fours instead of in line.

To form line to the rear: Accomplished by an about by fours and then front into line as desired.

To form line to the right or left: Fours right (or left), March.

To form line of fours to the right or left: The colonel commands, Platoons column right (or left), March.

To form on right or on left into line: The colonel commands, On right (or left) into line, March. The leading squadron turns to the right, forms platoons left front into line, moves forward thirty yards and halts. Each of the other squadrons passes beyond the preceding squadron, turns to the right and is formed on the line in the same manner as the first squadron.

By inclining the head of column to the right or left before ordering the formation, the line may be given any desired direction. In such case the rear squadron commanders as they come in rear of the right of the line should be careful to incline so that they will have after their turn, the necessary distance for their formation on the line.

To form on right or left into line of fours: Accomplished by the same modifications as in front into line of fours.

To form line by two movements: Take for example a case where a part of the regiment has executed a change of direction to the right: The regiment is first halted by the colonel as one of the squadrons is about to begin its turn. The colonel then commands, Fours left, Rear squadrons left front into line, March, Halt. At the command march the squadrons which have changed direction wheel fours left and halt in line at the command halt. At the command rear squadrons left front into line, the captain of the leading rear squadron commands, Platoons column left, and repeats the command march; when his rear fours have the eight yard interval from the left of the preceding squadron, he forms line to the right, moves his squadron up and places it on the line. The execution by the other rear squadrons is the same as left front into line from double column of fours.

To form column of squadrons: The colonel commands, Platoons right (or left) front into line, March.

Or by the other method, Platoons column right (or left), March, and then as the columns join, Fours left (or right), March.

To form column of wings in line, or in line of fours: The colonel commands, Wings right (or left) front into line, or line of fours, March.

The Regiment in Column of Squadrons:

Squadron distance is platoon front plus five yards. The regiment in column of squadrons moves forward, obliques and moves to the rear by the same commands and means as in line.

To change direction: The colonel commands, Column right (or left), March. At the commands march the leading squadrons turns to the right. The other squadrons turn to the right as they come to the turning point.

To form front into line: The colonel commands, Right (or left) front into line, March. At the command march the leading squadron moves forward thirty yards and halts. At the preparatory command the other squadron commanders command fours right and at the command march all the rear squadrons break into double column of fours to the right. The remainder of the execution is the same as in front into line from double column of fours.

With the same modifications as from double column of fours, line to both fronts would be formed.

To form line to the rear: The column is faced to the rear and front into line as desired is then executed.

To form line to the right or left: Accomplished by the same commands and means as for the squadron in line.

To form line of fours to the right or left: Fours right (or left), March.

To form on right or on left into line: Double column of fours is first formed with the guide right (or left), and on right (or left) into line is then ordered.

To form double column of fours: Platoons right forward, fours right (or left forward, fours left), March, Guide (right or left).

To form column of wings: Wings right (or left) front into line, (or into line of fours), March.

To form close column: The colonel commands, Close distances, March. The leading squadron closes distance at the command march and halts. The other squadrons close distance as they reach their places.

This may be executed at an increased gait.

In close column the distance between ranks and between squadrons is twelve yards. The position of the squadron commander is in line of the chiefs of platoon of his leading rank.

The Regiment in Column of Wings:

To form line to the front: The colonel commands, Form line, leading wing fours right (or left), March. The leading wing moves by the flank until it gains the necessary interval from its original position: The major then commands, Fours left (or right), March, Halt. At the preparatory command from the colonel, the major of the rear wing commands, Forward, and repeat the command march, adding Guide right. The major halts the wing on line with the leading wing.

To form line to the rear: The regiment is faced to the rear and line is then formed to the new front.

To form line to the right or left: The wings are first formed into double column of fours and front into line then executed.

To form double column of fours: The wings are first formed into double columns of fours and the colonel then commands, Wings column right (or left), March.

The Regiment in Close Column:

The close column moves forward to the rear, changes direction, and obliques by the same commands and means as a column at full distance.

To form in mass: Fours right (or left), March.

In the mass the interval between the columns of a squadron and between squadrons is eleven yards.

To take full distance: The column is first halted and the colonel then commands, Take full distance, March.

To form front into line: The colonel commands, Right (or left) front into line, March. At the command march the leading squadron first takes full distance; then moves forward thirty yards and halts. At the preparatory command the other squadron commanders command fours right. At the command march the rear squadrons move to the right: As each squadron gains its interval from the squadron next it toward the point of rest, the squadron commander forms line to the left, immediately takes full distance, moves forward and places the squadron on the line.

The formation may be to both fronts by the same principles and modifications of the commands as from column at full distance.

To form front into line of fours: Each squadron after taking distance, forms double column of fours, platoons left forward fours left when the movement is right front into line, and is placed on the line in that formation.

To form on right or left into line: The column is first halted. The colonel then commands, On right (or left) into line, March. At the command march the leading squadron takes full distance, executes platoons right forward fours right and completes the movement as from double column of fours. As soon as it has room each rear squadron executes as prescribed for the leading squadron, making its turn beyond where the preceding squadron turned.

If the command is into line of fours, the execution is the same except that the squadrons are placed on the line in double column of fours instead of in line.

The Regiment In Mass:

The regiment in mass obliques, moves forward, faces to the rear, and marches to the rear, by the same commands and means as the regiment in line.

To change front: The colonel commands, Change front right (or half right, left or half left), March. The right squadron makes a complete or partial turn to the right, moves forward thirty yards and halts. The other squadrons move forward make a partial turn to the right, then forward again and are placed on the line.

To form line facing to the right or left: The colonel commands, On right (or left) into line, March. The right squadron executes fours right, takes full distance, moves forward thirty yards and halts. The other squadrons move forward and in succession execute fours right, take full distance and moves forward to the line.

To form line to the front on a flank squadron: Close column is formed, full distances are taken and line then formed as desired.

To form line to the front on an interior squadron: The colonel commands, Form line on "Such" squadron, fours right and left, March. At the command march, the designated squadron and all to its right wheel fours right, and all except the designated squadron move forward: The designated squadron halts as the fours join, takes full distance, wheels fours left, executes platoons right front into line, moves forward thirty yards and halts. The next squadron as soon as it has full distance from the designated squadron takes full distance and forms on the line as prescribed for the designated squadron. Similarly for the other squadrons in succession. The execution for the squadrons which wheeled fours left is similar substituting left for right and right for left.

When the squadron next the designated squadron toward the left, wheels fours right after taking distance, it finds itself with an interval of thirteen yards from the designated squadron. The interval would be corrected by obliquing five yards to the right during the movement forward to the line. The other squadrons to the left would make the same oblique.

To form line of fours to the front on a flank squadron: The method is the same as in forming line except that after full distances are taken, the colonel forms line of fours to the right or left.

To form line of fours to the front on an interior squadron: The colonel commands, Form line of fours on "Such" squadron, fours right and left, March. The execution is the same as into line except that as soon as full distances are taken the

fours are wheeled to the left or right and the squadrons are halted.

The Regiment in Any Formation in Close Order:

To form a road column: The colonel commands, Column of fours to the (right, left, front or rear), First (or Sixth) squadron leading, March. The captain commanding the designated squadron forms column of fours in the direction ordered. The other squadrons follow in column in their turn.

Column of twos would be formed in the usual manner from the column of fours.

To close into the maneuver column from a road column: The colonel commands, Double column of fours, right (or left) oblique, March or Trot, March. Executed by each squadron in succession as in "The Squadron," the squadrons closing to nine yards distance.

The regiment being in a road column, to form line quickly to the front, the colonel sends by messengers through out the column the commands, Right (or right and left or left and right) front into line, Trot (or gallop), March. The squadron commanders take the increased gait, form double column of fours at the first opportunity and form line in the same manner as from the regiment in double column of fours.

For convenience in getting a comprehensive view, the following list of all the movements and evolutions embodied herein is given:

THE SQUADRON IN CLOSE ORDER.

The March in Line.

The Squadron in Line:

- To oblique to the right or left.
- To change direction.
- To form line to the rear.
- To form line to a flank.
- To form double column of fours to the front.
- To form double column of fours to a flank.

SINGLE RANK MOVEMENT.

- To form double column of fours to the rear.
- To close distance.
- To take full distance.

The Squadron in Double Column of Fours:

- To change direction.
- To form line to the front.
- To form line to the rear.
- To form line to a flank.
- To form double column of fours to a flank.
- To form double column of fours to the rear.

The Squadron in Line or in Double Column of Fours:

- To form a road column.

The Squadron in a Road Column (Fours or Twos):

- To form double column of fours.

THE REGIMENT.

To Form the Regiment.—General Directions.

The March in Line.

The Regiment in Line:

- To oblique.
- To face to the rear.
- To march to the rear.
- To change front to the right or left.
- To change front half right or half left.
- To form line of fours.
- To form column of squadrons.
- To form double column of fours.
- To form line of wings in double column of fours.
- To form column of wings to the front.
- To form column of wings to a flank.
- To advance in line with one or both flanks in echelon.
- The regiment marching in line, to put one or more squadrons in echelon.
- To bring squadrons in echelon into line.

To form the entire regiment in echelon.
The regiment in echelon to form line.

The Regiment in Line of Fours:

To move forward, oblique, face to the rear, and to march to the rear.

To change front.

To form line.

To form column of squadrons.

To form double column of fours.

To form in mass on a flank squadron.

To form in mass on an interior squadron.

The Regiment in Double Column of Fours:

To move forward, oblique, and move to the rear.

To change direction.

To form front into line.

To form right and left front into line.

To form front into line of fours.

To form line to the rear.

To form line to the right or left.

To form line of fours to the right or left.

To form on right or on left into line, and into line of fours.

To form line by two movements.

To form column of squadrons.

To form column of wings in line or in line of fours.

The Regiment in Column of Squadrons:

To move forward, oblique, and move to the rear.

To change direction.

To form front into line.

To form front into line of fours.

To form line to the rear.

To form line to the right or left.

To form line of fours to the right or left.

To form on right or on left into line.

To form double column of fours.

To form column of wings.

To form close column.

The Regiment in Column of Wings:

To form line to the front.

To form line to the rear.

To form line to the right or left.

To form double column of fours.

The Regiment in Close Column:

To move forward, oblique, move to the rear, and to change direction.

To form in mass.

To take full distance.

To form front into line.

To form front into line of fours.

To form on right or on left into line or line of fours.

The Regiment in Mass.

To move forward, oblique, face to the rear, and march to the rear.

To change front.

To form line facing to the right or left.

To form line to the front on a flank squadron.

To form line to the front on an interior squadron.

To form line of fours to the front on a flank squadron.

To form line of fours to the front on an interior squadron.

To form a road column.

The Regiment in any Formation in Close Order:

To form road column.

The Regiment in a Road Column:

To form the maneuver column.

To form front into line.

It may be that some of the evolutions given could properly be omitted on the ground that they would not be likely to find application in service and that there are some desirable and likely to be useful which are not given. Such defects could easily be remedied. Enough movements and evolutions are given to show clearly the adaptability and capabilities of the system.

It will be noticed that no provision is made for forming a column of platoons. Such a column would be twice as long as the front in line. It would, therefore, be useless for maneuver purposes and the only possible use for it would be in ceremonies. The column of squadrons and the double column of fours, the latter where there is not room enough for squadron front, would be sufficient for all purposes.

The double column of fours is the maneuver column and it serves that purpose most efficiently. Its length is the same as the front in line. It differs materially from the old double column of fours (Column of eights) and, it is believed, would be found much superior to it, not only for maneuver purposes but also for every other purpose for which a double column of fours would be used.

It will be seen that in this system the number of oral commands is reduced to a minimum. This results largely from the thorough application of the principle or method of leading. For instance, the regiment executing front into line; after breaking out of the column into double column of fours the squadron commander need not give a single oral command. No command is necessary for making a partial or even a complete turn toward the side of the guide column, the platoons can be brought front into line at the proper time by a saber signal, and the halt can be by the same means. No directions of any kind are needed for direction, gait or speed. And with all the squadron is placed on a line with an accuracy and ease not attainable by formal commands.

The subjects of extended order and action dismounted are not touched on in this article, but that is not because their importance is underestimated. It is necessary, indispensable, to first arrange the close order system. The provisions for extended order and for dismounted action must then be developed from the close order system as a basis. The development to fit this system would not differ in any essential particular from what is in our present drill book. Dismounted action for cavalry has become more and more important of late years and it will not become any less important in the future. With this system it would be possible to provide for dismounted action from any formation, line,

column, close column, mass, or extended order, by methods with which we are already familiar.

A squadron which is a tactical unit only and is made up of two troops which are separate administrative units, is not an ideal organization. It would doubtless be better to make the squadron the smallest administrative unit also. But the size of the squadron here given is believed to be the best. The troops should be permanently squadroned on the same principle as they now are. A squadron would need a permanent designation: A natural one would be to use the two letters of the troops composing it, "AB" squadron, "CD" squadron, "EF" squadron, and so on.

THE RESTRICTED CLIMATIC ENVIRONMENT OF HORSES.

BY LT. COLONEL CHAS. E. WOODRUFF, MEDICAL CORPS, U. S. ARMY.

FOR many years biologists have been calling attention to the fact that each species or variety of living thing is confined to a restricted environment, and that it perishes if removed to a different climate against whose adversities it has no natural protection, but that if the change is not great or is made slowly, there may be fit variations whose survival creates a new species adjusted to that place. For a long time, anthropologists would not believe this law applied to man, who apparently could migrate safely wherever he pleased, but later observations showed that though our intelligence enables us to escape some adversities of a place for which we are unfit, we are merely postponing the inevitable extinction.

To emphasize the law of adjustment, European anthropologists have recently been calling attention to the fact that each variety of the domesticated horse is also adjusted to a very limited climatic environment. We have been deceived by its apparent ability to survive anywhere and everywhere, but as a matter of fact, it is now discovered that in spite of our utmost endeavors to guard a migrated horse from lethal influences of its new home, the type will die out in time or change to another type. The rapidity of these changes, makes the horse an excellent subject to illustrate the law of adjustment; as we see in the diminutive Java ponies evolved by natural selection in a few centuries from purebred Arabians, or better still the tiny agile basuto ponies of the South African hill country evolved from the cast off Northern European stock of the Boers.

Some recently observed facts prove the prediction (U. S. CAVALRY JOURNAL, Sept., 1911) that it is impossible for us to breed up a military horse fit for campaigning in every climate to which our troops are sent, and the present effort in that line are sure to result in disastrous failure. For instance, I am credibly informed that the French cavalry took to the Boxer campaign of 1900, a lot of Arabian pure-breds, but the horses quickly died and the troops were then mounted on Mongolian ponies. Both kinds of horses have a black skin as a protection from excessive light, and white coat as a rule which, in the case of the Arab, is to reflect excessive heat, but in the Mongolian is to prevent radiation in winter like the polar animals in general. But the Arab has not been exposed to intense cold for some thousands of years and has not that furry hair of the Northern type, nor perhaps has he the same air passages to warm the air breathed in.* Of course if these

*In tropical man the nostril is open and large and the nasal cavities large so as to admit plenty of air, but in cold climates where the air is denser and less needed every respiration, the air passages are narrow and nose prominent to admit the current in a ribbon-like current easily warmed. There is some evidence that similar changes have occurred in the horse. I learn from Mr. R. W. Tully, who is breeding Anglo-Arabs at Arcadia, California, that the Arab has large open nostrils, straight nasal passages, and very large windpipe, while the habit of holding the head high and extended, converts the whole tube almost into a straight one offering no impediments to the air current. The northern horse has smaller nostrils and curved narrower nasal passages to warm the air, as in the Roman nose of the forest breed. This difference will fully account for the fact that the Arab will retain his "wind" under strains which collapse the northern types. It will also fully account for the inability of the Arab to survive very cold air even when blanketed. He has not enough warming surface for the cold air breathed. He might be ideal in our southern States or Mexico, but he or the half-breed Anglo-Arab is unfit for our cold climates. There is some evidence also that the open nostril of the English thoroughbred or hunter is the reason that type will not thrive in bitterly cold climates where such types are worthless for our cavalry, leaving out the question of their delicate organization and need of shelter.

The Arab horse is also said to have much smaller stomach and intestine than other varieties, and thus able to survive on concentrated foods which will give indigestion to the types with large organs designed for less nutritious grasses and plants. In other words, wild species demand rough food and wastes the concentrated, but the higher the domestication the more must the food be concentrated for the rough food is undigested and wasted. The latter cannot "rustle" for themselves in campaign, the more primitive types thrive by it.

Mr. Tully has also worked out the enormous skeletal difference between the Arab and other breeds, which fully account for its long distance speed and endurance, but the details do not concern us here.

imported animals could have had warmed stables and proper blanketing they might have survived as plenty of other far more delicate animals do in our winter even when clipped. But, as pointed out by Carlos Guerrero, of Buenos Aires, in a most excellent article in the 1910 Proceedings of the American Breeders' Association, there are no stables in campaign and the proper military horse must be of a type that can live in the open with little or no shelter and no protection beyond a blanket.

My own investigations in this line have been exclusively as to the significance of coat and skin pigments, but there are numerous other characteristics which must be studied by horsemen themselves. Size, for instance, though seemingly a mere matter of feeding, is a far more vital matter, or there would not be such a great reduction in size in many tropical countries where the huge percherons of temperate Europe are wholly out of place on account of difficulty of keeping cool. In many other wide spread animals it is found that size increases from the tropics to the Northern edge of the temperate zone, but that in the arctics only the smaller animals can get enough food as in the case of the primitive Celtic pony which lives in the northwest corner of Europe, Norway, Iceland, Shetland, etc. Hill horses are always small, as large ones cannot climb. The Korean pony is much smaller than the Mongolian from which it springs, but its ability to climb steep trails with a heavy pack is simply marvelous. The ass is small for both reasons—lack of food and origin in a rough country, and both the Korean pony and ass are invaluable pack animals in mountains that our big draft animals cannot climb at all.

Then there are such matters as shape of bones, size of heart, lungs, nostrils, digestive tube and many other requiring investigation of the experts, for all these points are of great survival value. Even the kind and amount of digestive fluids exert an enormous influence on an imported horse's ability to subsist on the forage of the country. These matters are of much importance in man, and must be in horses also. For instance, Albert Churchward states (*Brit. Med. Journal*, May 20, 1911) that the lower races of man have

large colons and caecums containing swarms of cellulose-digesting bacteria, and that they can really subsist on certain unhulled grains which pass through the intestines of higher races unchanged. Through long ages of evolution, due to the use of the more economical prepared grains, which have more available nutriment per pound and per dollar's worth, there has been an enormous economy in our growth, and there has been a survival as fittest of those without the large organs necessary to digest rough food of less nutriments. We, therefore, cannot possibly subsist on the dietaries of lower races, a complete reversal of the old medical dogma to eat as the natives wherever we go.

There is no doubt that the higher evolved domesticated horses have passed through similar stages, and have long lost the power to digest the foods on which more primitive types thrived. The divergence between the horse and ass is so great as to be observed by every child, but the minor differences between breeds of domestic horses and between them and the wild stocks has not been given the attention it deserves. There are delicate types of European horses and their descendants in America, which require the most exquisite care in feeding and which would promptly die if turned out to forage for themselves, and this exists to a minor grade in all military horses. Their digestive powers limit them seriously and if taken to lands where the climate will not permit the growth of the grains and grasses by which their organs have evolved to their present state of adjustment, then they must be fed on foods from their place of evolution or domestication. Native foods demand native stock. The army which "lives on" an invaded country or buys its supplies there, must use the local stock or find themselves dismounted.

According to H. K. Bush-Brown, of Washington, D. C. (*Amer. Breeder's Magazine*, No. 2, 1911) the European draft animal is not bred up from ponies but is descended from a big forest species whose primitive fossils are known. It is one of the four families of primitive wild horses, and through subsisting on leaves and shrubs its skull is set at a right angle to the neck vertebra, while the Arab and plains types

have the head more in line with the neck. The big draft horses, therefore, are not fit to forage for themselves in a grazing country of short grass. The Arab in addition is the only horse with five lumbar vertebrae, the others having six, and this shortened back may partly account for the Arab's endurance under a heavy rider, and the unfitness of other types for similar work. But all these points must be left to the veterinarians to investigate, as our present purpose is with color.

In a recent trip through Japan and Korea, it was found that coloration is much more limited as to environment than was believed possible, but the facts are all explainable on the laws laid down in the article appearing in the September issue of the U. S. CAVALRY JOURNAL. It is there proved by numerous illustrations that pigment is for three distinct purposes which occasionally conflict so as to force a compromise partly serving both ends in a survivable way, but not perfect for either. These purposes are protection from light, heat and enemies. Color in the skin is almost exclusively to keep out the harmful light rays. When there is little or no coat of hair the black pigment serves a second purpose of assisting heat radiation in temperatures below body heat, but these animals cannot survive higher temperatures and cannot be exposed for any long period to the direct rays of the sun, as they die of thermic fever. The lighter hair colors are either to reflect heat in hot weather as in the Arab white horse or the yellow ponies, or is to prevent radiation of body heat in cold weather as in the Mongolian horse and arctic animals.

The dark colors are therefore beneficial for heat radiation in mild temperatures of climates with no extremes to cause undue radiation in winter or overheating in summer.

White or a light color is the best where the temperature at noon is high and at midnight low, for such animals are comfortable at both times whereas the black horse will die of heat strokes at midday or be chilled into pneumonia at night. It is remarkable to see the comfort of the white ones under these conditions and the very evident sufferings of the blacks.

Overheating and not confinement seems to be the main reason why young Zebras in our zoological gardens do not survive if housed, for they thrive in the open. As in all other matters, the young are more injured than the adults. All tropical animals have guards against the occasional cold air they encounter, and even are benefited by it, but nature seems to be extra careful as to overheating. Indeed our northern summers which are much hotter than the tropics are particularly deadly to tropical animals in our zoological gardens for they have no such defenses against great heat as animals which come from northern latitudes where there is a short very hot period each year. Northern stock is like the white man who stands these changes better than the negro. Consequently we find that as a protection against heat, hair color is a most vital matter. As previously suggested, unsuitable colors may be found entirely responsible for the dreadful mortality in cities during "hot waves." Indeed the slight change from England to the hotter climate of Japan is found disastrous to "thorough-breds" and "hunters," and such stock is no longer imported for breeding purposes. The slight difference between the heat of Northern and Southern Japan is largely responsible for the great differences in the horses described later.

The wild or primitive horses needed concealment most of all, by resemblance to the back ground, and if they lived in tawny temperate plains they took on a tawny or red-brown color like coyotes and foxes or grey like the ass in more arid lands, for these are fair reflectors of summer heat and conservers of body heat in winter cold. In tall grass they become striped with black to imitate the shadows, but these zebras change upon migration, though it is a slow process of centuries probably, as they are still fairly well protected in the open in some plains.

When man began the domestication of the horse there was no longer need of concealment, and the fittest were then of other colors which protected from heat and light better than the tawny. The Arab stock by this survival of the fittest is now largely white. White does conceal somewhat on arid soil but is not as good as closer approximations and is

therefore found only in domesticated horses or escapes from domestication, though the other colors may never entirely disappear as the animals are more or less protected artificially. Similarly, the Manchurian ponies, the best of which are said to come from Llama Miau in Mongolia, are largely white, to conserve heat in the severe winters and to reflect the dreadful summer sun. The minority are of the lighter solid colors and there are a few bays. The blacks are very rare, but as they are quick and nervous, like blacks the world over as a rule, they are prized as racers and bring high prices. But they must be coddled to survive in good condition.

These Mongolian ponies are undoubtedly the ancestors of the Korean, but, as there are no such extremes of heat and cold in that peninsula, and there has been little mixture for fifteen hundred years or more, a different evolution occurred. There are cold snaps to be sure, but the average winter weather is delightful. Similarly the summers though hot at times are not stifling. Consequently there is less need of white and black, both of which are rare. The colors are solid, the lighter tints prevailing.

According to Osgood of the *American Museum of Natural History*, the small, weak wild pony of the steppes of Central Asia (Prejevalsky's) is identical in form and size with the prehistoric pony pictured by primitive man in Europe, untold thousands of years ago, and a remnant still lives in Europe. It is one of the four primitive families, the others being the Celtic, Forest or draft, and Arab. The Tarpan of Russia is an eastern extension of the Celtic according to Bush-Brown and perhaps the Spanish pony is related. The Prejevalsky pony is red-brown, and it is the undoubted ancestor of the Mongolian, Korean and Japanese domesticated forms, it shows what a long time an environment can preserve type, and how quickly a slow migration can change type and color. The Korean horse has less artificial protection and preserves the Prejevalsky red-brown more often than the Japanese or Mongolian.

The Korean is doubtless the ancestor of the pony of Japan where there are no extremes of climate at all, and white is not essential. In the south where the summers are

the hottest though never stifling, there are but few whites. The general color is very light, varying from cream color to light bay—the dark bay being in a decided minority. These colors are not harmful in the mild winter but are essential in the summer to prevent heat stroke. As we travel to the north of Japan it is amazing to note the gradual darkening of the horses, until in the far north the prevailing color is dark brown, lighter variations being very few. A true black is very uncommon among the work animals in the north and so are the white ones, but for carriage use and in the army blacks are more common as they receive more care and can survive. I was informed by Lt. Col. T. Kani, Chief Veterinarian of the Japanese Army, that the white horses are weak by which I presumed he meant both muscularly and in resistance. All these horses, even the cream colored ones, have black skins, as a protection from light, there being the same difference in this respect between the Japanese horse and many of those in northwest Europe as there is between the men of the two places. I have never noticed a white skinned native horse in Japan, though I presume there are such "sports," for there are albino men there as in every other land. It must be repeated that the surviving stock in light countries always has a black skin, even if it is a good absorber and radiator of heat, for heat loss is prevented by a furry coat in cold places, but in hot lands the animals has a reflecting coat or hides in midday.

The cattle in Japan follow the same rules. In the south they are generally light colored with some blacks, but in the north they are dark, the majority being black or nearly so. In Korea as far as I went the cattle were almost uniformly red-yellow; indeed they were so alike that many groups I observed appeared as though dipped in the same paint tub. I am informed that the "Kirin" cattle of Manchuria have this same color. It is evident that in their grazing areas they still need concealment, for this color is about what theory would call for it in a wild species in such surroundings. Korea is still greatly infested with large tigers which are more than a nuisance to the outlying farms. The evolution of domestication has not occurred, and, like

the Prejevalsky pony, the cattle have apparently retained a color they evolved in Southern Asia.

The Japanese pony is too small for military purposes though stronger in muscle than its larger Mongolian ancestor, so the army depends upon imported Australian and Russian stock and the half-breeds between their native pony and imported breeds—mostly Hungarian. This latter selection is very significant, for Turkey, Hungary and Russia are said to be the only nations which have kept their native domesticated stock entirely free from mixture with imported types not adjusted to the local climate. They are all three "pure-bred" of their kind—adjusted to their environment. In no other case, excepting the Celtic pony, Prejevalsky pony and European draft animal, can we find "pure-breeds" dating back perhaps 20,000 years or more, and these three exceptions are unfit for military purposes. Now Hungary resembles Northern Japan in climate more closely than the climate of Turkey and Russia, and the half-breeds between Hungarian and Japanese horses do furnish a hardy strong animal fit for the environment though it is not large. At the military review in Tokyo, on the Emperor's birthday, I saw some thousands of these horses, and was pleased to see how the coloring followed what theory demanded. The white ones could be counted on the fingers, the lighter colors were so few as to be obscured by the dark ones and the whole force gave an impression of dark bays and browns. As the imported stock, particularly some beautiful animals ridden by officers, were mixed in, I obtained permission from the War Office, through our Military Attaché, Lt. Col. H. C. Hawthorn, A. C., to visit some mounted organizations to obtain more accurate figures. As my leave of absence was coming to an end, I had to start for home before the day set for the examination which Col. Hawthorn made alone, and I quote from his most excellent letter, as it shows the facts under discussion.

"By arrangement with the Japanese War Office, I visited the station of the First Regiment of Field Artillery at Setagaya, and carefully examined the horses of this regiment, with result as follows:

No of Battery.	COLORS OF HORSES.							Remarks
	Black	Bay	Slate	Sorrel	Roan	Dun	Grey or White	
1st	18	30		4	1			10 pure Australians, all other of mixed breed.
2d	13	31	6	5				14 Australians, 2 Russians.
3d	13	19	6	6	3			8 Australians.
4th	9	24	5	5	1	1	1	17 Australians. 6 Russians.
5th	10	28	8	5	1	1	1	12 Australians. 8 Russians.
6th	12	21	6	5	1			15 Australians. 2 Russians.
New horses unassigned	14	19	1	9				Recently from breeding farms in northern Japan.
Total exam'	89	172	32	39	7	2	2	

"In this enumeration, all the blacks are real blacks and many of the bays run so dark that they would be called black at home in coloring a troop or battery. For example: In one battery, the fourth, I kept a careful distinction in my notes between the blacks, dark bays and bays. I found them to be 9, 8, and 16 respectively, although in the table, the last two appear only as 24 bays. This proportion approximately holds good throughout.

"The color called 'slate' was a blackish, cloudy, mouse color and is a shade common among the pure Japanese horses. Taking then the blacks, bays and slate colored horses together, we find that 85% of the 343 horses examined are dark, and of the remainder, a few of the roans approached very close to the bay.

"I was assured by the field officers of the regiment that the proportions as to colors was about the same in the regiment of the Guards stationed at Setagaya.

"Even among the small number recently sent from the breeding farms in Northern Japan, this proportion is about the same.

"The slate colored horses were all half-breeds and undoubtedly came from black sires or dams. By adding these

to the pure blacks, this number would constitute nearly 50% of the dark haired horses.

"Again if we add to this last number the dark bay horses, which might fairly be called black, the 'black' horses would approach 70% of the dark haired horses.

"This condition is a matter of common observation throughout Japan, and is certainly my recollection of military horses I have noticed at reviews and maneuvers.

"There was but one black horse with what appeared to be a white skin, and he was an Australian. The Australians ran to bays and sorrels; while the few Russians were bays, blacks and an occasional sorrel or dun.

"Among the entire 343 horses examined there were 76 Australians and 18 Russians, the remaining 249 were half-breeds, bred in Japan at the Government breeding farms."

From the very evident unfitness of white horses to Japan, there is ground for asserting that in such a mild equable climate, the prevention of radiation of body heat by that color is the cause. The horses become overheated where the dark ones are comfortable—the same thing as happens to a white man in the habitat of the negro. All the dark horses seem to be excellently adjusted to their mild environment and also able to subsist on native foods, but they are not fit for other places. Eighteen months or less in Manchuria in the Russian war rendered about one-third unfit for further military service. No observations were kept as to which colors did best, nor whether any colors showed predominant in sun-stroke, but I did learn that pneumonia did not cause more than one per cent. of the deaths. Cold is not as deadly as heat to them. Similarly this stock, adjusted to the mild light of temperate zones since pre-history, is not fit for the tropics, and according to Chief Veterinarian Kani when taken to Formosa suffers unduly from ophthalmia.

There are no American or Australian climates like those of Japan but in places which most closely resemble Japan, the best "native" stock is of essentially the same colors, and equally unfit for other places. The Australian and American stock taken to China by the Germans in the

Boxer campaign did not stand the change, the Americans being the worse of the two. The survivors were sold and the troops were mounted on Mongolian ponies. The prevalence of sorrels in the similar climates of Texas and Australia is proof of color adjustment of heat.

I have been informed that many of the Americans and Australian horses lost their tails in China from a curious form of infective ulceration. This, if true, brings up another point of migration—lack of immunity to new enemies like surra, rinderpest and glanders which can be harmless to stock evolved in the same land with the germs. Some of the naturally acquired immunity of pure-bred local stock is supposed to have some relation to color, but the observation so far show no general law on the subject, beyond the fact that the most unfit colorings among migrants are weakest because the most injured and are the most susceptible.

Veterinary Surgeon W. P. Kelty, of the Quartermaster's Department has kindly sent me all the references he could find in the text books but it is not much as so little attention has been given to the use of coat color. White horses nearly always get melanosis sometimes after eight or ten years of age, and the dark colors very rarely, but this is due to the tendency of such densely pigmented structures as the black skin of white horses, to take on pigment if injured. The skin is evidently irritated by excessive light, for the disease attacks only the exposed places not covered by hair. It is not known why other horses equally exposed are immune. The color does its work but suffers for it; indeed every one of our guards get the blows they ward off from us, and every protective or offensive character gets more or less injured, like the horns of deer and tusks of dogs. Dr. C. W. Stiles (Diseases of the Horse U. S. Dept. of Agriculture) says that Australian horses and white and grey mules are more susceptible to surra than other breeds and colors but Dr. Kelty says this statement is not correct. Our horses in the tropics therefore suffer unduly from local diseases and average a short life. The survivors which escape infection are pitifully weak at an age which would be considered their prime at home.

With regard to inability of northern stock to stand the tropics, it must be remembered that the eye is more or less prominent, but that in tropical horses it is more deep set and overhung by bone, heavy brows and lashes, thoroughly protecting it from the light. In addition the retinal, iris and conjunctival pigment seems much thicker. Our mules inherits this protection from the ass and can stand exposure more than a horse.

Col. Hawthorn informs me that at Vancouver Barracks there was a black horse battery and one of lighter types, and that the black horses were always in poorer health—several dying on a maneuver march which both batteries took together. Some of this may have been due to harder work exacted of the blacks, but it seems to show inability to stand work in an unsuitable climate. The black therefore, is much restricted as to climate, for the Vancouver summers are not tropically hot though the sun can be strong when it does shine. In the milder summers of northern Japan the blacks are more at home, but it is safe to predict that in the long run, the jet blacks will not prove as good as the colors of the native stock,—blackish browns and dark bays. Indeed in a month's search on the streets, I saw but one or two work horses which were black all over, and I did learn that grays were becoming commoner as carriage horses. It is also a matter of observation that gray and white horses are becoming as common in America as they are among the heavy draft animals of central Europe. The hot summer seems to be the reason.

It would seem that on our hot summers a black horse when taken into the sun's rays would be better off for a thin white cover over the back and sides, as it would then imitate what nature does to the Arab. It is worth trying.

The "native" Japanese pony is really an importation of possibly 3,000 years ago but it very quickly changed in type as the prehistoric statuettes show it essentially as it is today; smaller, more slender, narrower in chest and smaller in plevs and buttocks than its present type of Mongolia, but much larger than its immediate Korean ancestor and its remote ancestor the Prejevalsky pony.

The Celtic type, like the asses and zebras, has no callosities on the hind legs, but these remnants of the first toe are present in all the others. In the Prejevalsky pony the callosity is a narrow strip instead of the drop shape common to the forest and Arab families. Now in the Japanese pony, the callosity on the hind leg if visible at all is a narrow strip, as in the ancestral Prejevalsky pony, but generally it is invisible being either absent or covered by the rough curly hair. These ponies are so vicious that it is not possible for a stranger to examine them closely, but in the dozen or so I was able to handle it was always present though small and narrow. Native drivers say it is never absent. This shows that when a character in migrants is not vital it may be preserved millenniums, but if it is harmful like a wrong color, it changes in a few generations or the animal dies out. I have been informed that the callosity is always much larger in the half-breed military horses in Japan than in the native, thus showing the European influence; but, strange to say, in the half-breed Celtic stock of Norway, the callosity is generally absent or very small, according to Professor Stejneger, as though the mother had the greater influence. The mule from European stock always has them.

In the extensive American literature as to breeding horses to a type fit for a particular purpose, there is scarcely a word as to breeding them also fit to survive in various climates. It is falsely assumed that a trotter fit to live in New England is also fit for Texas or Florida. We lead the world in creating trotters mostly because the rest of the world has no use for them and do not try, while they lead in hunters and runners because these types are more useful. The principles of breeding to a type are so simple that a child understands, but no one seems to have realized that there is such a law as adaptation to environment, which makes it impossible for instance to breed hunters or trotters in Iceland. Color has not even been thought to be a factor at all. The result is, that we are constantly hearing complaints that after a type is created in America it shows a persistent tendency to deteriorate. The reason is that there is such a degree of unfitness of the animal to its environment that even

with the greatest safeguards it is sure to be injured. It cannot become a fixed type like those arising in very limited areas in long settled lands. Acclimatization is a matter of creating a physique adjusted and is not possible with a wrong physique. The only way to keep up a type which is useful though unadjusted, is to do as the Danes are doing with their hogs and the Japanese with horses, constantly import proper breeders from similar places where they are adjusted and fixed types. We can then afford to let all the progeny die out and not breed from them at all. But if we can get types adjusted to the climate, it seems a great lengthening of the work-life. If this life is increased from ten years to fifteen it means a fifty per cent. increase of national wealth in that line.

The basic purpose of this paper is to emphasize what European anthropologists are now so often mentioning—man and the domestic horse have wandered all over the world together, and by the process of survival of the fittest have broken up into numerous types each fitted for a very limited area and no type of either animal can be taken to an unfit environment without paying the penalty of decay and eventual extinction either by death or by change to another type. As the horses of northern and southern Japan show great differences in color, and as the Cantonese men and Manchus show equal differences in complexion, we can well see that even minor differences of climate have a very potent effect in the end in the matter of pigmentation even if a migrant adult does not perish at once. Every bit of information on this line which can be elicited by horsemen, will have a reflex effect on the welfare of migrating men, keeping them from places wholly unsuitable and guarding them from adverse factors if they may be compelled to go. This is the main excuse of a physician, who knows little of horses, for entering the field of the veterinarians though incidentally the army may be saved great sums of money, if it finds out what types of horses and mules as well as men are best for each of our climates.

As an illustration it might be shown that there is no place on earth like the British Islands and no place which

could have evolved their inhabitants and civilization, and though at least four and perhaps five distinct types have peopled the islands—one coming all the way from Asia in the bronze age, they have all been so modified that they cannot now live in any other place if it is markedly different, though such minor matters as head-shape remain to identify the types. Similarly Japan has been peopled by four or perhaps five types of men—one coming all the way from southern Europe 3,000 years ago or earlier, and though these types are still distinguishable by characters not essential to survival, the climate has so completely molded them all to a common type in the essentials for survival that they were once thought to be homogeneous and of one race. Thus there is no place on earth which could have evolved such a people and such a wonderful civilization, but the absence of climatic extremes has eliminated types fit for such seasonal changes, and the Japanese are consequently, as experience shows, more unfit for colonization than the British. Both nations must increase at home and be fed from abroad if their lands do not produce enough, and both are becoming bound to the rest of the world for necessities of existence. They both must protect their trade in those essentials of survival or control the sources of supply—and this is the present trend of world events. A few observations on horses may thus assist us in explaining these events.

My thanks are due to Lt. Col. T. Kani and Major K. Saigo, Adjutant to the War Office, for courteous assistance, and to Veterinary Surgeon Hansen, Quartermaster's Department, Iloilo, for invaluable help from his enormous knowledge and experience.

Since the above was written, it has been learned from Gunnery Sergeant Jas. W. Lattin, U. S. M. C., American Consulate, Seone, Korea, that he has examined the native ponies and finds the callosities on the hind legs essentially the same as in the Japanese ponies. They are $1\frac{1}{4}$ to $1\frac{1}{2}$ inches long and $\frac{1}{2}$ inch wide, generally not rising above the skin, and more or less concealed by the hair. The natives burn the callosities to prevent rheumatism. This character,

then, in spite of the persistent mutilation continues to be formed and shows the relationship to the Japanese pony of different size and color, and the derivation of both from the Prejevalsky family.

On the other hand, the pony of southeast Asia seems to be derived from the Arab, as it has the same general form though smaller. The most vigorous are the dun and yellow colors, as in the similar Philippine climates, though there are all other colors in a smaller percentage. The types from northwest Europe do not flourish in India, as the climatic change is too great, so the cavalry is now mostly, if not entirely mounted on Australians. The origin of the Australian is not known to me, but it seems to have been largely if not entirely derived from Arabians of a similar climate. Nor has there been any success in rearing half-breeds between northern European horses and the native Indian, and I have been credibly informed that the attempts have been abandoned.

Major A. J. Roberston of the Philippine Constabulary, reports that the "native" pony of the Islands has large callosities like the Arab, as we would presume since this stock is largely derived from Arabs and Barbs imported by the Spaniards and perhaps from Indian ponies also. Yet the callosities are occasionally very small on the hind legs or entirely lacking as though there were more or less of an infusion of the stock from northeast Asia, in past ages. The Filipinos also have superstitions about the callosities, the absence indicating speed.

It has been learned that none of these tropical horses from the Philippines have been able to survive the cold climates of American, and we presume from the same phenomenon in the Arabs taken to China. It is probably more than a question of housing in these cases for the zebras live out doors all winter in New York, if they have a shelter. In very cold climates, the horses have probably developed different respiratory apparatus, as in men in cold places, permitting the breathing of cold air which is fatal with the open nostrils and wide nose so necessary for survival in the hot rarefied air of the tropics.

Under date of February 12th, Captain A. J. Bowley, F. A., Military Attaché, Peking, writes that he has examined fifteen Mongol ponies and finds the callosities on the hind legs small in ten but fairly large in five. This rather indicates remote affinity to the Prejevalsky. As to color he has heard from men who have visited Mongolia that they have seen "whole herds of horses pure white in color without a mixture of any other color." Horses in Peking are evidently selected for color and survive as they are sheltered, so they do not show the relative proportions of colors found on the range. In one troop of fifty-six there were, for instance, thirty-six bays and twenty sorrels. A dozen of them examined for skins were equally divided between white and black, showing that other blood is mixed in. The predominating colors in Peking at large are bays, sorrels and white, in orders of numbers, as we would presume from the selection of colors for the market.



THE ARMY REMOUNT PROBLEM.*

BY GEORGE M. ROMMEL, CHIEF OF THE ANIMAL HUSBANDRY
DIVISION.

INTRODUCTION.

THE mounting of troops in an army is a most serious problem. Not only must provision be made for a supply of horses sufficient to equip the mounted service for the ordinary routine work during peace, but horses multiply slowly, and a reserve must be provided for use in case of an outbreak of hostilities. In the solution of this problem the European countries, with the exception of England, have for more than a century expended large sums of money in the encouragement of horse breeding, by maintaining breeding farms, by granting subsidies to stallions, by prizes for horses of suitable type, and by grants to breeders' associations, prizes for racing, etc. England has heretofore been content to rely upon the resources of her colonial possessions and the United States for such horses, but her experience in the Boer War ten years ago, when she was forced to drain North America of a large proportion of the horses suitable for military purposes, has compelled her to accede to the demands of the army, and a grant of \$200,000 has been made by the Board of Agriculture to en-

*Reprinted from the twenty-seventh annual Report of the Bureau of Animal Industry, (1910).

courage the breeding of military horses at home. That the United States faces a similar condition is a very wide spread opinion.

HORSE BREEDING METHODS IN EUROPE.

The German Empire.

Germany probably makes larger total expenditures for the encouragement of horse breeding than any other country, and of all the German states most attention is devoted to the subject in Prussia. The Prussian Provinces not only supply horses used in the army in Prussia, but in Bavaria, Saxony, Wurtemberg and other parts of the Empire.

There are five breeding farms and eighteen stallion depots in the Kingdom of Prussia, the farms containing a total of over 20,000 acres. The breeding work of the government is partly to encourage live-stock raising in general, as well as for military purposes, although there are two Provinces in Prussia known as the "remount provinces," where only the military object is considered by the Government. The stallion depots (Landgestute) are most important from a numerical standpoint, and contained 3,315 stallions in 1907. These stallions "make the circuit" from February to June, at fees ranging from \$1.19 to \$4.76.

The Prussian Government does not permit expense to stand in the way of acquiring the services of a valuable stallion. Large sums are appropriated annually for such purposes, and Derby winners are bought if needed. The budget of 1907 for the purchase of horses amounted to \$440,000, with a special fund of \$47,600. Among noted English thoroughbreds which Prussian Government has bought were the Derby winner of 1897, Galtee More, for which \$66,640 was paid, and Ard Patrick, the Derby winner of 1902, for which \$100,000 was paid.

FRANCE.

The breeding system of the French Government is especially interesting to an American on account of the large numbers of French horses which have been exported to this country. Although the work is done entirely by the Ministry

of Agriculture, it is largely affected by military conditions. The French Government has a breeding farm at Pompadour of 1,122 acres where horses are bred, a sheep farm of 619 acres in connection with the agricultural school at Grignon, and the famous sheep farm at Rambouillet. Aside from these the breeding work is done through the medium of the "haras" or central studs, twenty-two in number, from which stallions are distributed throughout the country. In 1906 the French Government owned and used for breeding purposes 3,321 stallions, which covered 161,414 mares at an average fee of \$1.47. The breeds used were as follows:

Thoroughbred.....	229
Arab.....	100
Anglo-Arabs.....	234
Half-blood (Demi-Sang).....	2,208
Draft horses.....	550
Total.....	3,321

The Government also encourages horse breeding by examining and approving or disapproving privately owned stallions for breeding purposes, by giving prizes at horse shows, encouraging racing, and maintaining the studbook for thoroughbreds and half-breds. During the year 1906, \$1,718,129 was voted by the Chamber of Deputies for the improvement of the breeds of domestic animals, but more than twice this amount was spent, the balance being covered by the receipts from race tracks and other sources.

AUSTRIA-HUNGARY.

The efforts of the Austro-Hungarian Government to improve the condition of horse breeding and other forms of the live-stock industry surpass those of all other countries in one respect—the magnitude of the breeding farms—in addition to which large numbers of stallions are placed at convenient stations during the breeding seasons, as in other countries. In Austria proper there are two state horse-breeding establishments, with farms in connection, leased by the Ministry of Agriculture. These are the one at Piber of 1,000 acres and the one at Radatz with 23,809 acres. The entire Government expenditure in Austria in 1907 was \$938,000. This work is very

largely dominated by military considerations. In Hungary are the great establishments of Mezohegyes with over 50,000 acres of land, 2,000 horses, and 6,000 employees; Kis-Ber with over 18,000 acres of land; Babolna with over 10,000 acres; and Fogaras? In addition there are a number of stallion depots and two studs which breed horses solely for the Emperor's stables. With all this great outlay the Government is not able to supply the army, and over half the horses used are bred by private individuals without any assistance from the Government. The privately bred horses, however, are not so uniform in size and gait as those bred under Government supervision. The great estates of the Hungarian Government are not devoted entirely to raising horses, but large numbers of cattle and other animals are raised as well for public benefit.

ITALY.

The Italian Government does not devote so much attention to horse breeding as those already mentioned, but 640 stallions stood for public service in 1906, covering 29,462 mares.

PURCHASING REMOUNTS IN EUROPE.

In purchasing remounts, purchases are almost uniformly made in the open market, the purchasing board presenting itself at localities within a given district at stated times and making selections from among the horses offered. In Germany, for example, in 1910, 27,462 horses were offered of which 13,660 were bought. The prices ranged as follows:

Prussia.....	\$253
Bavaria:	
3-year-olds.....	243
4-year-olds.....	310
Saxony:	
Young horses.....	254
Older horses.....	321
Wurtemberg:	
Young horses.....	253
Older horses from Russian remount depots.....	368

ARMY HORSES IN THE UNITED STATES.

Next to Russia, the United States leads the world in the number of horses which it possesses. These horses, as everyone knows, are the descendents of horses brought from the Old

World after the discovery of America by Columbus, as there were no horses on the American continent at that time. Prior to the Civil War the horses of the United States were of the light type, with one prominent exception—the Conestoga draft horse of Pennsylvania, whose origin has always been shrouded more or less in mystery and whose complete disappearance was a remarkable result of the development of railway transportation. There are also a few minor exceptions. Well-authenticated evidence shows that a few draft horses were imported from France in the thirties, and the draft stallion Louis Napoleon, imported from France in 1851, appears often in the pedigrees of Percheron horses in the United States.

Army Horses of the Civil War.

At the time of the Civil War, however, the horses of the United States contained so little cold blood that it was a negligible factor. The Morgans in New England, Standardbreds in New York and the Middle West, Thoroughbreds in Virginia, and saddle horses in Kentucky, Missouri and Tennessee, predominated and made up the bulk of the splendid mounts of the contending armies of that great struggle. Even the much despised plains horse (the mustang, cayuse, or broncho) was the descendent of warm-blooded horses and doubtless contributed his share in remounting the cavalry of both the Northern and Southern forces in the Civil War. The demands of these troops for remounts were enormous, but there does not seem to have been any insurmountable obstacle to the acquisition of these horses. They were in the country, they answered the purpose, and they were obtained when needed.

The cavalry of the Southern Army was almost as numerous as that of their opponents, and the consumption of horse flesh was probably nearly as great. Yet the Southern troops were even better mounted than those of the North.

The Development of the Draft Horse Industry.

With the close of the Civil War began the rapid importations of draft horses from Europe, and this trade has flourished until the present time, with the exception of the period of depression during the middle nineties.

In the corn belt and in the irrigated sections of the west the draft horse is becoming the farmers' horse almost to the exclusion of horses of the light type, and rightly so. Where conditions of environment are satisfactory a farmer is wise to use draft horses because he can haul larger loads, get greater power for moving heavy implements, and suffers a minimum loss from blemishes when he markets his surplus. In some parts of the country where a prosperous farmer formerly kept a fine team of drivers to get about over the country, the drivers have been discarded and the farmer now owns an automobile of moderate price. Even in the South where the prolonged hot seasons undoubtedly works to the disadvantage of drafter, such horses are gaining a foothold.

The table* shows emphatically that the draft horse is easily the more popular horse in nearly every State where figures are available, the percentage ranging from 24.03 in New York to 88.51 in South Dakota. Even in Pennsylvania, where conditions are not as a rule favorable to draft horses on account of the hilly and mountainous character of much of the State, over 50 per cent. of the purebred stallions are drafters. In Wisconsin, Illinois, Iowa, Kansas, Minnesota, Nebraska, North Dakota, South Dakota, Montana and Utah, where the light horse was formerly the preferred type, and from which section most of the remounts for the army once came, the percentage of purebred stallions of the light type is as low as 11.39, and does not exceed 39 per cent. At the time of the Civil War there probably was not one draft stallion in all this territory, and this remarkable change has therefore been the result of less than forty-five years growth. One can only wonder what the next forty-five years will bring forth.

Military Horses in the United States To-day.

The argument is frequently advanced that if the War Department were to pay sufficient prices for horses it could easily obtain the number needed for the use of the army. This argument is not exactly apropos. Under the remount system

*The table showing the number of purebred stallions in several States is omitted.—Editor.

now in vogue, whereby the Government buys young horses direct from farmers, the supply necessary for the regular army on its present peace footing is being obtained in a fairly satisfactory manner. * * * * * However, the Government is concerned in the encouragement of a supply of horses which will be profitable to those who raise them and which may be drawn upon in case of war. The well-worn dictum that preparedness is half the measure of success in a conflict applies no more to the subject of rifles, guns and fortifications than to that of horses for the mounted service. A supply of horses sufficient to equip a modern army can not be picked up in a few weeks where it does not exist, and suitable horses can not be bred and raised to a usable age in much less than six years. We have already observed the sweep of the draft horse over the United States—a perfectly normal matter, based on sound economic laws. But an army can not be mounted on drafters if it is to use its cavalry and field artillery to good advantage.

Police Remounts.

The success of the police departments of our large cities in providing their mounted men with good horses is always brought up to show that a sufficient price will always provide sufficient horses of good type.

According to the census bulletin of 1907 giving statistics of cities there were in that year 1,106 patrolmen mounted on horses in the various city police departments. Of this number 559 were in the cities of New York, Chicago, Philadelphia, St. Louis and Boston. The total number of mounted policemen in the entire country, therefore, just about equals the enlisted strength of a regiment of cavalry on a war footing.

The authorized number of mounts for the cavalry of the regular army on its present peace footing is 11,970, and on a war footing 17,100. The mounted police are practically comparable to the cavalry on a war footing, and, therefore, the army, on the basis of fifteen regiments of cavalry, requires over fifteen times as many horses as the entire combined mounted police force of the United States.

* * * * *

The information for the New York mounted police is particularly enlightening, as that body of men has a well deserved reputation not only for horsemanship but for the excellent quality of its mounts. The department expects to purchase about seventy-five saddle horses in 1911 at a cost about twice as much per head as the cavalry remounts are now costing the government under the remount system. This contract has been held several years by one firm, which does a very extensive business in all kinds of horses and has buyers in various parts of the country where good horses are found. These buyers are familiar with the specifications of the New York police department and have instructions to buy horses when they find them conforming to those specifications. The horses selected come mainly from Indiana and Missouri, and are said to be principally of trotting-bred stock; some are grade thoroughbreds. Only about half the horses purchased are accepted by the police department, but the supply firm has no difficulty disposing of the others for general purposes. If this statement means anything, it means that, even at a price of nearly \$400, it is not an easy matter to get enough horses to supply New York's apparently small demand of seventy-five head per year; and it is evident that if, under present conditions, the Government undertook to mount the regular cavalry as well as the New York police are mounted, it could only be done at tremendous cost, if at all.

* * * * *

The fact that the police departments of our cities are able to mount their men without resort to any plan to encourage the breeding of horses of the particular type desired has no bearing on the army remount problem, on account of the small number required for the police. The army could by using a plan similar to that of the New York police, place men in various parts of the country to pick up desirable horses as opportunity offered, and this is practically what is now being done in supplying the remount depots. On account of the large numbers required and the inevitable necessity of keeping in mind the supply of good horses in case of war, these officers are strongly impressed with the desirability of educating horse

raisers to breed intelligently and to use methods which will insure as much as possible reasonably profitable results. As Congress has expressly forbidden the War Department to expend any of its appropriation for breeding purposes, the dilemma in which officers find themselves may readily be seen.

Mounted Service in the Militia.

Next to the police in intimacy of contact with the public is the mounted militia, and this subject may be passed briefly. If it is difficult to obtain the proper horses for the mounted police and the regular army, it is many times more so to get satisfactory mounts for the militia cavalry and artillery.

Squadron C (Brooklyn), New York National Guard, has taken quite a step toward solving this problem by maintaining a breeding farm, where some of the remounts needed are bred, and where horses owned by the squadron may be turned out if necessary. Squadron A occupies an armory in Manhattan, where the horses it owns are kept, but these represent only a part of the horses needed by the squadron; some are owned by the members, but many are rented as needed.

The rented militia horse is not only a source of pain and discomfort to his rider, but is an expense to the State, which is usually out of proportion to the service rendered. When the encampment is over, the horses goes back to his owner and the Government has no claim on him if he is needed again. These horses are frequently poor livery hacks, untrained to work in mounted organizations, and would be decidedly unsatisfactory in real warfare. Further, it is only by paying very high rates for their rental that they can be obtained even for the ordinary, peaceful encampment. Anyone who has visited or participated in a militia encampment in which mounted militia were engaged, and has seen the curious mounts provided for such troops, will readily appreciate the difficulty of obtaining really satisfactory remounts for this purpose.

Mounted Service in the United States Army.

The mounted service in the regular army is now being supplied with horses which are bought young, developed and trained in the remount depots, and issued to troops at 4½ to 5

years of age, properly trained and ready for work. The remount depots were first established in 1908, and already the wisdom of Congress is apparent in permitting the War Department to use abandoned military posts for this purpose. As will be shown under the next head, the horses for the depots are purchased by officers direct from farmers, and the middleman's profit under the old contract system is eliminated, the breeder receiving the money which the Government pays for the horse.

The War Department is now paying about \$150 for 3-year-old unbroken colts, and somewhat less for 2-year-olds. The writer is permitted to make the following quotation from a recent letter from the officer in charge of the Fort Reno Remount Depot to the Quartermaster General concerning two lots of 2-year-old colts purchased in 1910 in Texas and Wyoming:—

These colts are now three years old, and have in my opinion made satisfactory growth.

The average height of the Texas colt is 14.3; average weight, 796 pounds; average growth in the year, three inches; average increase in weight, 115 pounds. By the time they are five years old, with the exception of probably eight head, the average height should be 15.1 or over, and weigh 1,000 pounds or over.

The average height of the Wyoming colts is fifteen hands; average weight, 864 pounds; average growth about two inches; increase in weight, 48 pounds. Practically all this gain has been in the last few months. These colts at five years of age, with the exception of probably three, should average well above 15.2, and weigh 1,050 to 1,100 pounds.

The Texas colts cost \$80 per head, and the cost of forage from the date they were received (June 6, 1910) to June 1, 1911, was \$32, making the cost of the colt to the Government when three years old \$112.

The Wyoming colts cost \$100 per head, and it has cost \$25 per head to forage them from August 30, 1910 (date of receipt), to June 1, 1911, making the cost of the colts at three years of age \$125.

Cost of the Missouri and Virginia horses at three years is \$150 to \$164.

The mounted service still contains a large number of unsatisfactory horses purchased under the contract system, and it will naturally be some time before all the horses in the army will have been received from the remount depots. The system is satisfactory and adequate for the present peace footing, but what the country would do in case of war can only be conjectured.

What War Requirements Mean.

The following table gives a slight idea of the difference between supplying the present demand of about 2,000 horses per year and the demands of war. It shows the number of remounts of all kinds required by the regular army and militia on a war footing, excepting draft horses and animals for wagon trains, some of which might be replaced by motor vehicles:

*Total authorized animals, mounted service, Regular Army and militia, war footing.**

Class.	Regular Army.	Militia.	Total.
Cavalry.....	17,100	6,840	23,940
Artillery.....	4,708	9,108	13,816
Engineers.....	249	456	705
Signal.....	425	1,656	2,081
Hospital.....	692	439	1,131
Orderlies.....	620	480	1,100
Officers.....	3,352	2,262	5,614
Total.....	27,146	21,241	48,387

This table shows that on a war footing 50,000 horses (in round numbers) would be required before a shot was fired or a saber drawn, as against 20,000 horses now in the regular army on a peace basis. The number is regarded as conservative, as the figures show the minimum needed. The fact that new mounted organizations are constantly being formed in the militia will soon make these figures considerably under the mark.

On the basis of a ten-year life for a horse in the mounted service, under the remount system there should be available annually at least 5,000 horses to supply both the army and the National Guard, but in war we can not count on a ten-year life. The decimation of horses in war is enormous and must be provided for if a country's mounted service is to be properly equipped. How much this should be the writer does not pretend to estimate. The Federal Government purchased during

*From Quartermaster General's Office, War Department.

the fiscal year ended June 30, 1864, 188,718 horses. Captures reported added 20,388 more, and the number consumed daily was therefore 500 head, without considering those captured and not reported. During eight months of the year 1864 the cavalry of the Army of the Potomac was remounted twice, nearly 40,000 horses in all being required. During his Shenandoah Valley campaign Sheridan was supplied with fresh horses at the rate of 150 per day. In his report for the year 1865 the Quartermaster General of the United States Army stated: "The issue of cavalry horses to the Army of the Shenandoah actively engaged under Major General Sheridan have been at the rate of three remounts per annum. The service of a cavalry horse under an enterprising commander has therefore averaged only four months."

If the 50,000 horses now required by the mounted service of the regular cavalry and militia (excluding those for wagon trains, etc.) were called into active war duty, we could look for a demand of upward of 150,000 horses per annum, basing the estimate on the experience of General Sheridan's army.

The British Army in South Africa ten years ago consumed enormous numbers of horses, over 100,000 being bought in the United States alone, and incidentally, it may be remarked that this exportation of horses went a great way toward causing the shortage of horses of the right type for army purposes which we now observe in the United States and created a situation of which draft horse breeders were quick to take advantage. It is exceedingly doubtful whether a foreign government could now obtain such a supply in the United States. How, then, could the United States itself mount an army? If with draft horses, or horses of draft breeding, how could it meet a hostile cavalry properly mounted?

The Remount System in the United States.

The use of remount stations in the United States as depots where young horses are developed and educated for use in the army has been inaugurated during the last five years.

In a lecture before the Army War College in February, 1907* Major (now Quartermaster General) J. B. Aleshire presented an elaborate plan to improve the conditions under which horses and mules were supplied to the Army, urging the purchase of young horses direct from breeders and developing them at army stations so that by the time they were mature they would be ready for actual service, undesirable ones would be weeded out, those retained would have been given rational development and handling, and a much longer period of usefulness could therefore be expected from them than from mature horses purchased under contract.

In presenting the report of the Quartermaster General for the fiscal year 1907, General Aleshire brought his remount plan directly to the attention of Congress.

*He urged the establishment of "three or more remount depots, to be properly organized, located, and equipped, and the same number of remount districts. . . . To each of the three or more remount depots would be assigned a remount district, and each depot and its tributary district would be in charge of an officer of the Quartermaster's Department, preferably detailed from the cavalry or field artillery and especially adapted for this duty. . . . The officer in charge of each remount depot . . . would personally superintend the care and handling of the horses under his charge and see to it that the horses are well fed and cared for, gently and kindly handled at all times, and properly exercised and broken.

When directed by proper authority, he would purchase young horses, to conform to specifications, within the district assigned to his remount depot, to which they would be shipped.

"He would be required to acquaint himself with and keep a record of the number and class of horses, how bred (if possible), by whom owned, where located, and generally complete data of the horse and mule production of his district, and be prepared to direct a purchasing officer or go himself to the place most suitable for the establishment of sub-depots, in case of an emergency, and where the best horses could be found.

"The average life or period of duration of cavalry and artillery horses has heretofore been 6.4 years, and that of the mule 10.6 years.

"In view of the fact that the young horses to be sent to the remount depots will be carefully selected and be purchased for remount purposes before they are worked down, injured or spoiled by improper breaking, and since the number of remounts to be supplied annually is to be limited, which in time will result in the mount of each organization being composed of horses of ages from four and a half years up, the number of each age being approximately that supplied each year, it is submitted that the average life or period of duration of remounts for cavalry and artillery will be materially increased by this system of purchase and supply, and it is therefore taken at ten years, barring epidemics, etc."

By the increase in the average life of animals purchased under this plan, the estimate was made that the cost of remounts for the army could be reduced one-third. It was also suggested that the development of the plan and the experience gained by officers in connection with it would enable the army better to meet emergencies requiring a large increase in the number of animals required.

Among the advantages of the proposed system were pointed out the following:

The army will be supplied with young, fresh, sound, and well-broken horses, in every way suitable for the service, and that have not been spoiled or injured while breaking, as is often the case under the present system.

These young horses will be fed grain and receive the best of care a year earlier, and therefore be much stronger and better animals when sent to the troops and batteries at from four to five years of age than if wintered by farmers or on the ranges and purchased a year later, as at present.

It creates a market for young horses from three to four years old, and the Quartermaster's Department would have few if any, competitors; the first cost should therefore be less, and the department as a buyer would be in close touch with the horse raisers and breeders.

The average life or duration of the horse will be longer, so that about one-third less number of remounts will be required yearly, with a corresponding reduction in expenditure.

The cost will be one-third less, as the department will be able to select desirable young horses from all over the United States, whereas at present western horses, though in many cases well bred, are not desirable, as they are not broken, gentled, or handled until a week before they are offered for sale as cavalry or artillery horses, and when purchased many of them are never serviceable. This system will afford time and means to properly handle and break these young horses and to accustom them to man from an earlier age.

An opportunity will be afforded for a close and careful observance of all horses for several months before issued, and such as are found undesirable or not suited for the service can be disposed of from the depot. The Government would therefore save the freight to posts on such horses, and, since they are young they should sell at the depot for nearly their first cost.

Horses will be uniform as to conformation, action, etc., and the special type desired will be standardized and understood by breeders and farmers.

Horses can be shipped in first-class condition in every respect and in cars that are sanitary; there should therefore be practically no sickness on arrival at posts.

Requisitions can be filled promptly without waiting for advertising and purchase, as at present, and horses of desired color can be sent to a particular troop or battery at no additional expense.

The Quartermaster General suggested the use of abandoned military posts, such as Fort Reno, where buildings were already available and the plan could be put into effect with-

out extra expense. His recommendations were approved by Congress in the Army Appropriation act for the fiscal year 1909, and under General Order No. 59, War Department, 1908, the military post of Fort Reno, Okla., was designated as a general supply depot of the Quartermaster's Department, and would thereafter be known as the Fort Reno Remount Depot. A year later General Order No. 80, War Department, 1909, similarly designated Fort Keogh, Mont., as a remount depot. Issues from the Fort Reno depot were commenced during the fiscal year 1909.

In the spring of 1910 purchases of horses were begun in Virginia and Kentucky, and an officer was detailed for the purpose, with station at Front Royal, Va. The horses first purchased in this district were sent to Fort Reno, but in the army appropriation act for the fiscal year 1912 an item of \$200,000 was included for the purchase of land in Virginia for a remount station, where the horses in that district will be developed in future. The new station is located at Front Royal, on the Blue Ridge.

The following statement, furnished by the office of the Quartermaster General, United States Army, shows that the horses purchased under the remount system are costing the Government much less than those purchased under contract:

Fiscal year 1909.

Cavalry horses, average contract price.....	\$160 06
Artillery horses, average contract price.....	191 12
Young horses for remount depots.....	146 28

Fiscal year 1910.

Cavalry horses, average contract price.....	\$178 24
Artillery horses, average contract price.....	205 25
Young horses for remount depots.....	127 45

Fiscal year 1911.

Cavalry horses, average contract price.....	\$166 76
Artillery horses, average contract price.....	212 17
Young horses for remount depots.....	134 07

The age at which young horses are being purchased is becoming less than was originally suggested, quite a large number of 2-year-olds being selected. Mainly, however, these horses are 3 years old, and few, if any, 4-year-olds are bought.

It is expected that eventually all the horses supplied to the army will be purchased in this way. In fact, the contract system of buying is even more or less of an exception, the only recent contracts of importance being during the maneuvers in Texas.

The remount plan in itself has everything in its favor and practically nothing against it. The farmer gets a fair price for his colt rather than a poor price on which a middleman formerly had to figure a profit. The army now has a range of selection which it never had before; it is not now necessary to "take the cats and dogs" or go without horses; and, above all, the writer ventures the assertion that the remount system has had a decided influence on the horsemanship of mounted officers in the army, for the simple reason that much more interest will be taken in a better horse concerning whose breeding something is known and whose history is known practically from birth.

Weak Points of the Remount System.

The remount system has two weak points, which are not, however, inherent in the plan itself, but obtained in the conditions surrounding the horse-breeding industry, due to the peculiar developments of horse breeding in the United States during the last forty years and the average man's lack of ability as a horse breeder.

The scarcity of suitable horses.—The scarcity of horses of the light type, from which the army supply must come, has been fully set forth in the foregoing pages. Under the present peace footing the army can and will obtain a fairly satisfactory supply of horses by the remount system; it can keep a staff of officers in the field looking for horses just as a large city firm of horse dealers keeps its buyers traveling, although at greater expense, because the army is looking for only a few classes of horses, while the city firm handles all kinds; the numbers the dealer purchases are therefore much larger and the average expense to be charged against each horse is correspondingly less. It is not claimed that the army can not now find the mounts needed under the present peace footing by means of the remount plan of purchase and development, but it is claimed

that there is no reserve; that a demand for a considerable increase in the number of horses used annually by the army—such, for instance, as would be necessary in case of war—could not be supplied in a satisfactory manner from the supply of horses now in the United States, large in numbers as that supply is known to be; and it is also claimed that in the comparatively near future the developments of the horse industry will be such that unless steps are taken to stimulate a waning industry by Government encouragement the army will be able to obtain its necessary horses only at greatly increased expense. The light type of horse will become more and more difficult to obtain, and the army horse scarcer and scarcer. The army can not be mounted on draft horses, and our farmers are now raising nearly two draft colts to one light colt.

People not closely familiar with the agricultural development of the country are wont to read complacently the magazine articles in which the wonderful development of the west is set forth in glowing terms. They are told that the settler is slowly but surely encroaching on the ranchman, that the saddle and lariat are giving way to the plow and harrow, and homes are building where cattle and horses roamed before. They do not realize that this western country was once the range of thousands of horses which were useful for army purposes, and that the inevitable result of the new development in the agriculture of that section is to make horses and cattle scarce. They read of the wonderful agriculture of the corn belt, the production of cereals, the massive machinery, etc., not realizing that the farmer is compelled by these conditions to get a maximum amount of horsepower out of each work animal, to have his horses as large of frame and as small in number as possible.

The tide in favor of heavy draft animals on farms where topographical and climatic conditions favor their use will not and doubtless can not, be turned. There is no reason why it should be turned. The army must look elsewhere for its supply and it is only plain business foresight and judgment for the Government to encourage the breeding of a type of horse, in suitable localities, that will be useful not only for the army but satisfactory to the farmer as well.

Lack of system in breeding methods.—The remount system as at present established is also incomplete in that it provides no means whereby the breeding of horses of the proper type can be encouraged. Everyone knows the innate fascination for the average mare owner to see how many different experiments he may make in mating. He may own a good, useful type of mare, and he will breed to standardbred, draft, pony, saddle and thoroughbred stallions, hit or miss, and not hesitate to try a jack to see what that will bring. The army buyers will doubtless do all in their power to advise mare owners how to breed, but their advice can only carry such weight as more or less acquaintance between the owner and the officer may effect. The only way to get anywhere in breeding is to be systematic, to adopt a policy and stick to it. The man who is always talking about crossing is usually the man who has more mongrels than his neighbors. The man who can cross successfully is the able breeder who needs no advice or assistance and who breeds horses far above the army standard.

The experiment made in Virginia in the spring of 1911 shows that farmers will welcome an invitation to enter into co-operation with the Government in the production of horses for the army. It appeals both to patriotism and the pocketbook. If such a plan is put into effect, the Government will know where horses are, it will know what they are, and it will be able to find and obtain them at a minimum cost.

A PLAN TO ENCOURAGE THE BREEDING OF HORSES FOR THE ARMY.

With the establishment of direct purchases from farmers in connection with the remount system, army officers almost immediately found that it was not an easy task to find the required number of suitable horses and the matter was soon given consideration by the War Department, with the result that the Secretary of War laid the matter before the Secretary of Agriculture in 1910 and representatives of the two departments were designated to devise means to remedy the situation. The result was a plan for the encouragement of breeding horses for the army. This plan appears in full in the Report of the Chief

of the Bureau of Animal Industry for the fiscal year 1910.* In brief, the plan was drawn so as to provide in time for a sufficient number of remounts annually for the mounted service of the army on the present peace footing. The country is to be divided into four breeding districts and 100 stallions purchased to stand for service free of charge for approved sound mares, the mare owner to give in return an option on the resulting foal during the year it is three years of age. The localities suggested for breeding districts are those where conditions are especially suited for horse raising, where the prevailing type of mares is most likely to approach that desired for the army, where a light type of horse will always in the long run be the most profitable to the farmer and draft horses least likely to obtain a firm foothold, and where mares are sufficiently numerous to give the stallions maximum service.

Fifty thoroughbred stallions, twenty-five standardbreds, fifteen saddle stallions, and ten Morgans are suggested.

Arguments for and Against the Plan.

Two arguments have been advanced against this plan—the first, that it is unnecessary because horses of the desired type are plentiful; the second, that by adding the amount suggested for the breeding appropriation (\$250,000 the first year and \$100,000 in succeeding years) to the amount now appropriated for the purchase of horses for the army, and thus adding \$50 to \$100 to the average price paid for horses, the necessary number could easily be obtained.

The writer believes that the figures shown on page for the relative numbers of purebred draft stallions in various States effectually answer the first argument.† It must be again plainly pointed out that there are now probably enough horses annually available for the requirements of the present peace footing of the army. The country should in wisdom, however, provide for a reasonably sufficient supply in case of war; and it should take steps to check the unquestionable decrease in the breeding of light horses. Cavalry is of the utmost importance in warfare, and we must sooner or later either encourage the

*See Circular 178, Bureau of Animal Industry.

†Table omitted from this reprint.

breeding of horses for the mounted service of the United States Army or dismount the cavalry.

The second argument voices a popular appeal which carries considerable weight, but it is very doubtful whether it would in any measure bring about the desired result. Let it be repeated that the army is now paying good prices to farmers for the horses it buys. Officers claim that they are paying somewhat more than farmers have usually received for such horses. One hundred and fifty dollars for an unbroken 3-year-old colt, or \$125 for a 2-year-old, are not starvation prices as farmer's colts run. The purchasing officers are buying in the face of the competition of other buyers. For the Government to add gratuitously \$50 or \$100 to the price now paid would be reckless and wasteful extravagance. This argument has been advanced by persons who do not seem to realize the difference between the direct system of buying young horses for the remount stations and the old system of buying by contract mature horses for direct issue to troops. The former eliminates the middleman's profit and gives the farmer a fair price; the latter gave the farmer a price which was far below what a good mature horse was worth, and the whole system worked against getting good horses. If the contract system only were considered, adding \$50 to \$100 to a minimum contract price might have some effect, but the contractor would probably be the principal gainer. The price paid by the army for horses is now governed by supply and demand, just as that of any other commodity.

Again, if a given sum were added to the average purchase price and the country were plunged into war where large numbers of horses were needed, \$50 to \$100, nor twice those amounts would not supply the demand unless horses of draft breeding were taken. Witness the New York police department, with a contract price of \$372.50 per head, scouring the country for seventy-five saddle horses per year of certain definite specifications.

Lastly, the Government would be no further ahead than before by adopting such a policy. The Government would have absolutely nothing to show for the added expenditure. The horses would be no better and would last no longer. The

same unsystematic methods now prevailing would still prevail. On the other hand, with the expenditure for breeding recommended by the Agricultural and War Departments, the Government would be able to develop a systematic and economical system of breeding; it would know what was wanted and would get it. It would also insure a reserve supply of horses if needed. It would not be worth while for the Government to pay \$50 to \$100 per head as a bonus or gratuity to the owners of colts, but it would be well worth that much for the Government to know what it was getting when a colt was purchased as a remount, to know that the horses bought for the army were bred for that purpose, and that there were others to select from if needed. A further advantage which would accrue to the Government's profit would be that the exact location of available young horses would always be known, and no time would be lost in hunting for them; much of the incidental expense which is now necessary for traveling could therefore be saved.

What to do with horses bred under this plan on which the Government does not exercise its option is not a difficult problem. It is proposed to use only first class, sound stallions with good conformation and action. These stallions would be better than the average, and it is reasonable to suppose that their get would be also. Such being the case, those of the get which were not taken by the Government would be suitable for various uses as general-purpose horses, for farm work, saddle, etc. If the breeding plan is once put into complete operation there is no doubt that European buyers would be ready to take whatever they could obtain. It is also reasonable to suppose that on account of the high character of the stallions the percentage of unsound get would be below the average.

The effect which the plan would have on horse breeding in general would be decidedly beneficial. It would in the first place call attention to the advantages of certain localities for horse breeding and the suitability of certain breeds to certain localities (which has been neglected in the United States in all lines of stock breeding), and would therefore encourage specialization in horse breeding. It would give system in breeding where little now exists; and above all, it would direct immedi-

ate attention to the objection to the use of an unsound horse for breeding purposes, for no unsound stallion would be used nor an unsound mare bred.

THE PRESENT HORSE-BREEDING WORK OF THE DEPARTMENT OF AGRICULTURE AND ARMY
HORSE BREEDING.

Shortly after the presentation of the army horse-breeding plan to Congress, Mr. August Belmont, of New York, offered the Government the use of two of his best known thoroughbred stallions, Henry of Navarre and Octagon, to be used to encourage the breeding of army remounts. These horses stood during the season of 1912 at Front Royal, Va., and were available for public service on the terms outlined in the Governments' plan. About fifty mares were bred, and options were taken on the colts at \$150 each at three years of age. The agreements were so drawn that the Government would waive its option on horses promising to mature over sixteen hands. Half-breds over sixteen hands in Virginia furnish the most of the high-class hunters from that section, and a concession on that point was deemed desirable.

Mares bred were required to be straight-gaited trotters without faulty conformation, such as curby hocks, and free from the following hereditary unsoundness:* Bone spavin, ring-bone, side-bone, heaves, stringhalt, roaring, periodic ophthalmia, lameness of any kind, and blindness, partial or complete.

The experience of the department in this case has demonstrated that the army horse-breeding plan is practical. Mare owners willingly enter into the agreement when they realize that it is one of mutual advantage. No difficulty whatever was experienced, and a much larger number of mares would

*This list was compiled several years ago by the Bureau of Animal Industry for another purpose, after consultation with members of the American Veterinary Medical Association and successful horsemen in various parts of the country. A Morgan stallion loaned by the bureau to the Massachusetts Agricultural College stood during the season of 1911 on similar terms, with satisfactory results.

have been bred had the horses reached Virginia somewhat earlier and had Octagon not had a serious attack of distemper shortly after his arrival.

The expense of this trial have been slight, but such as have been incurred have been paid from the appropriation for co-operative experiments in animal feeding and breeding, in the act of Congress making appropriations for the Department of Agriculture, which provides authority for such experiments. It is really only an experiment, but so far as it has gone it is satisfactory. It should now be followed with a general introduction of the breeding plan.

The work in carriage-horse breeding in co-operation with the Colorado Experiment Station may have some bearing on the work of breeding army horses, as the stallions bred in that project should make useful sires of artillery remounts; and the Morgan Horse Farm may produce some of the stallions needed for the New England district of the army horse-breeding project. However, it should be specifically stated that neither project was outlined with army demand in view. The army horse project, if provided for by Congress, will have no effect whatever on the purpose, plan or methods of either the carriage horse or Morgan breeding projects, but horses bred at those stations may be used incidentally in the army work.

SUMMARY.

1. All modern countries, except those in America, have found it necessary to encourage the breeding of horses suitable for military purposes.

2. Little or no difficulty was experienced in mounting the armies of the Civil War with suitable horses.*

*The statistics bearing on this subject would indicate doubt as to this statement:

In 1863 there were in the Army of the Potomac thirty-six regiments (cavalry), whose effective strength varied during the six months from May to October between 10,000 and 14,000 men. This body of cavalry requires a monthly average of 5,850 horses.

This is equivalent to a loss of two and one-half horses per man, or a rate of five horses per annum.

The report of the Secretary of War, in referring to the above, stated:

"If a similar state of affairs existed through all our cavalry, its 223 regiments would require 435,000 horses annually."—(EDITOR.)

3. The draft-horse industry has been developed in the United States since the Civil War, and in several States there are now more than four times as many purebred draft stallions as purebred, Standardbred, Thoroughbred, and coach stallions, notably in Iowa, Minnesota, Nebraska, North Dakota, South Dakota, and Utah. In North Dakota the ratio is nearly eight to one.

4. The difficulty and expense of obtaining suitable military horses is illustrated by the mounted police of our cities, whose mounted patrolmen combined would not equal a regiment of cavalry on a war footing. The New York police department buys only about seventy-five horses annually for its mounted police, and has to pay nearly \$400 each for them.

5. The militia requires good mounts for its cavalry and artillery, but must depend on the holdings of livery stables and what can be picked up in other ways. Very little systematic work has been done in breeding horses for the militia.

6. The mounted service of the army is now being furnished in a satisfactory manner with horses purchased and developed under the remount system.*

7. An outbreak of war would necessitate at once more than twice the number of horses now in the regular army, and hostilities would probably require complete new issues every four to six months.

8. The remount system is working satisfactorily, but it will never be completely effective until steps are taken to alleviate the present scarcity of horses of the type needed for military purposes and to produce such horses in a systematic manner.

9. The plan devised by the Agricultural and War Departments to encourage the breeding of horses for the army is necessary, because horses of the proper type are not sufficiently numerous to supply the army in case of war, and the time may soon come when it will be difficult to supply those needed in peace; it is economical, because the expense of the plan, averaged on the colts purchased, would be met by value re-

*Many officers feel that in spite of the great improvement in service horses due to the remount system, the animals received therefrom are, in general, not yet of proper type and quality.—EDITOR.

ceived, in the better quality of the colt, the fact that he was bred for the purpose, that the Government would know what it was getting, that the horses needed for the army would be more readily found, and on account of the beneficial effect on horse raising in general. It is practical as has been shown by the experiment in Virginia during the season of 1911.

10. To add \$50 or \$100 to the price now paid for remount would be wasting money. The farmer now receives as good price for his colts from the army as anyone else pays. If this plan were pursued, the Government would make no progress whatever toward the solution of the breeding problem, for it could have no influence on the methods used except in an indirect and futile way.

11. The general effects of the plan on horse breeding would be decidedly beneficial. It would tend to specialize horse breeding, it would discourage the breeding of unsound horses, and it would open up the market for horses of the army type by creating a supply that foreign buyers would soon take to their advantage.

12. The horse breeding projects of the Department of Agriculture now in progress may lend somewhat to the army horse project, but they were not designed with that in view, and it would not be proposed to alter their purpose on account of the army project.

THE FIRST AEROPLANE UNDER RIFLE FIRE.*

IN November, 1911, the Italian daily papers had much to say about the successful dropping of explosive grenades from an aeroplane. It is very remarkable that since that time nothing has been printed about any repetition of this matter. However, very lately some Italian papers printed a letter recounting a similar trial, the writer of which, Lieutenant Rossi, states he made in company with Captain Montu. In this letter

*Translated from *Militar Wochenblatt* No. 35, 1912, by M. S. E. HARRY BELL, U. S. Army.

he reports that but one grenade was dropped and that the aeroplane received a hot fire, several bullets hitting the machine and one hitting Captain Montu.

According to the letter, the aeroplane started at 7:00 A. M., rose to a height of 600 meters, followed the coast line for about fifteen kilometers and then turned toward the Arab camp. When the turn was made some rifle shots were heard, but no attention was paid to them. After covering an additional fifteen kilometers, the aeroplane flew over the Arab camp and at the same time received a hot rifle fire. Undaunted, Lieutenant Rossi steered direct for the Turkish tents and gave Captain Montu, sitting behind him, a sign to hold the bomb in readiness to drop. Immediately thereafter the captain dropped the bomb and the machine was quickly turned to watch the effect. A dense cloud of dust was seen, as well as a number of camels and horses scattering in all directions. Now the rifle fire became so heavy that all haste was made to get out of the danger zone. A bullet hit the aeroplane; the trial to ascend higher miscarried. When the aeroplane was turned to the left flank of the camp, Captain Montu was wounded and at that very time the motor gave out. Just as the pilot prepared to glide, the motor suddenly resumed its work. Hardly had the former altitude been reached again when the aeroplane was struck by two bullets. The motor did not now work regularly; it emitted a peculiar noise. In addition, the wind strengthened and also was now in the face of the aeronauts. The situation was very precarious. The Arabs, estimated by the writer of the letter at more than 2,000, kept up a hot fire; the aeroplane pitched, being thrown by the wind first to the right and then to the left; the motor might be expected to give out at any moment and the aeroplane might lose its equilibrium easily by the movements of the wounded captain. Twenty-five kilometers had still to be covered before a landing could be attempted in security. Fortunately the rifle fire soon ceased. As the motor worked badly, the altitude of 600 meters could not be preserved and, in order to avoid hostile patrol, a material detour had to be made.

Five minutes before 8 o'clock, that is after an hour's journey, a landing was made in the zone occupied by Italian troops. It was then ascertained that the captain was not

dangerously wounded, the bullet having pierced the iron seat and thus losing most of its penetrating force. Two bullets had pierced the propeller, without having caused much damage.

It is impracticable to ascertain the truth or falsity of this letter. In any case it is remarkable that no official reports thus far published, make any mention of any bombs having been thrown from airships.

As a matter of fact, there exists an entirely unjustified opinion as to the great effect caused by such bombs. In Germany for instance, it is the general opinion that the effect of a shell is good, if at least one piece of the shell falls on each square meter of the beaten zone. The number of pieces of shell decreases with the decrease in weight of the bomb. It is calculated that the 15 cm. shell (40 kg.) covers a zone of approximately 2,000 square meters; the shell of the light field howitzer (15.7 kg.) thus would cover about 700, that of the field gun (6.85 kg.) about 300 square meters. The weight of the bombs carried by aeroplanes is generally given as from 1 to 2 kg.; thus a space of from 50 to 100 square meters should be endangered. Even if we double that space, the smaller pieces, which are unimportant when the shell bursts at long range from the target, might still do considerable damage when dropped from an airship at close range, the beaten zone would then be about 100 to 200 square meters, while the Italian newspapers of last November stated that zone to have been 800 square meters, *i. e.*, four times as large as is possible. This shows that the effect of the bomb is greatly over estimated, is even estimated to be greater than we attribute to our light howitzer shell.

THE MOUNTED TROOPS OF THE EXPEDITIONARY FORCE *

A SUGGESTED REORGANIZATION.

From article in London Times, Friday, February 16, 1912.

(By our Military Correspondent.)

VERY notable progress has been made during Lord Haldane's administration of the War Office in the organization and preparation for war in our regular forces at home. So far as the cavalry and mounted infantry are concerned, it must however, be admitted that neither for the infantry division, nor for the expeditionary force as a whole, have we hit upon an organization which is of a completely satisfying character.

The question of cavalry effectives was fully dealt with by this journal on the three occasions during the last four years when the cavalry division was assembled for training. It was demonstrated with facts and authentic figures in support, that we could not mobilize our cavalry promptly with trained horses up to the standard of our war establishments, and it was also represented that the system of boarded-out horses, though useful in its way and certainly much better than nothing, was not completely satisfactory for a cavalry division liable to be thrust into the war furnace by the fourteenth day of mobilization, if not sooner.

The crisis of last autumn completely justified these criticisms. We found that we were very short of trained horses; it is not necessary to name the deficit. The boarded-out horses were called in, and it was found that not more than forty per cent. of them could be regarded as fit for the field within a fortnight. Several hundred horses were hastily purchased, but only a very small portion of these were fit to be placed in the

*Furnished from War College, Director General Staff.

ranks at once. Had war broken out in July our cavalry would not have been able to take the field at once absolutely complete. Time has now been allowed us to train the purchased horses, and nearly all regiments at home are in a pretty good position. Could we hope to see an addition made of fifty horses to the permanent establishments of each cavalry regiment at home we might rest satisfied that, so far as the cavalry were concerned, we were in a relatively favorable position. We owe a debt of gratitude to the Germans for helping us to put this matter right, but one of these days their valued co-operation may be lacking.

Peace strengths, vital though they are to cavalry, are, however, only one side of the question, and there is another, namely organization. It is of course recognized, at all events by soldiers, that we are imprudent to send cavalry regiments on service with only three squadrons to fight hostile cavalry regiments which will almost certainly have four, and nothing is easier than to suggest that the number of our squadrons or of our regiments, or of both, should be augmented. But when we study ways and means the prospect of effecting any useful purpose by such suggestions becomes less bright. The restricted resources of our military finance and the far from favorable statistics of recent recruiting render it quixotic to press at present for such additions. Neither the money nor the men can readily be found for them, and it is therefore better, or at all events more practical, in any proposals that we may make for reform, to respect the bounds set by our present establishments and expenditure, and to limit ourselves to the consideration of how we can make a better use of our existing resources. It can be shown that, even within such limits, much can be done.

PRESENT ORGANIZATION.

The general public cannot be expected to carry military organization in their heads, and it may therefore, be well to explain briefly the manner in which the cavalry and mounted infantry allotted to our expeditionary force are distributed and arranged. There are, broadly speaking, three categories of mounted troops, each with its own functions, though of course,

a commander will group and distribute his cavalry as he pleases. First there is the cavalry division, variously described as the army, strategic, or independent cavalry, of which titles the latter is apt to mislead. This is the arm of the Commander-in-chief and is destined to obtain for him, in co-operation with the aviators, such information as he requires, by pushing into the zone separating the bulk of the army from the enemy, and in the direction in which it is desired to reconnoiter. Obviously, the more cavalry and the more aviators that we possess, the better can this very important mission be carried out.

Secondly, we have two mounted brigades, composed of cavalry and mounted infantry, and known as the protective or screen cavalry. These brigades do not exist as such in peace, and are only formed on mobilization. They, also, are under the direct orders of the commander of the army to which they belong, or to such part of it as he pleases to allot them. They are intended to give timely information of the enemy's approach and to protect the infantry columns behind them, but their use in support of the army cavalry is not excluded, and the chances are that they would frequently be drawn into the orbit of the army cavalry and would share in its adventures. Third and last comes the so-called divisional cavalry, composed in our case, but in no other army, of two companies of mounted infantry with each division of infantry, directly under the orders of the divisional commander, and intended to assist the infantry in the immediate protection of the division when halted, on the march, or in battle.

THE CAVALRY DIVISION.

A rapid examination of these several parts of our mounted troops will show the advantages and disadvantages of our present arrangements. Our cavalry division has four brigades, each of three regiments of three squadrons, besides two horse artillery brigades, four field troops, signal units, train and ambulances. It has become an undeniably formidable instrument of war, thanks to the modern revival of our cavalry, to the initiative of a few choice spirits in the arm, to the hard work of all, and last, but not least, to the facilities granted by Lord Haldane for the annual exercises of the division as a whole.

But the division, good as it is, is on the cumbrous side. It has thirty-six squadrons compared with the normal foreign type of twenty-four squadrons, and it has 5,000 sabers to the German 3,700 and the French 3,600, which are considered by some soldiers to be quite as many as one man can control. It is of course, our ewe lamb, for while foreign powers can place in the field a dozen cavalry divisions or more, we have but one at home. The character of our islands is not very favorable to the employment of a cavalry division of such exaggerated strength, while, as we have only one division, there is the further disadvantage that no opportunity ever arises for it to measure itself as a whole in peace against a unit of similar strength. For all exercises other than those against a marked enemy, our practice consequently is to split up the division into two smaller divisions, which we call half divisions, and thus to deprive ourselves of the chance of practicing in peace the formation which we shall adopt in war. Could any solution be found which would enable us to create a second cavalry division without rendering the service of protection less efficient, and without much additional cost or increased numbers, it would certainly be very advantageous. We should then strengthen the offensive power of the expeditious force and provide foemen worthy of the other division's steel in the usually bloodless exercises of peace. Cavalry is the arm, *par excellence*, of the offensive, and cavalry relegated to a defensive role is cavalry misused.

MOUNTED BRIGADES AND DIVISIONAL CAVALRY.

Next we come to the mounted brigades, which are looked at askance by most of the best officers in our army. These brigades have no permanent existence in peace. In war they are dissimilarly constituted, and the troops composing them are unequal in efficiency. One of them has one cavalry regiment and two battalions of mounted infantry, while the other has two regiments of cavalry and one battalion of mounted infantry. It is unnecessary to remark that the tactics of cavalry and of mounted infantry are different. Our regular mounted brigades are never seen in the field. No one knows how to handle them, and the handling of one of them would not suit

the other, since this other is differently constituted. It must not be supposed that our general staff is not fully aware of the disadvantages entailed by our reliance upon mounted infantry in European warfare against a regular army. Our mounted infantry are the cavalry of poverty, and they are merely used as an expedient to make up for the weakness of our cavalry. Our mounted infantry are stout fellows, admirably led by the pick of the young officers of our infantry, but it would be dangerous to employ in first lines at the outbreak of war, and against highly trained troops permanently organized, a force like our mounted infantry, which does not possess the solidity and assurance arising from continuous training and permanent existence. The same criticism applies to the two companies of mounted infantry which form the wholly inadequate and very unsatisfactory divisional cavalry of our infantry divisions. The leading principle that our expeditionary force is organized to fight a civilized enemy in a European country has been completely lost to sight by the inclusion in this force of troops which are not of the first quality.

THE MOUNTED INFANTRY.

The good service performed by mounted infantry in some of our recent colonial wars need not prevent us from questioning its utility in a war with a European power. Were the mounted infantry battalions and companies of our war organization given a permanent existence in peace they would quickly become extremely efficient troops, but in this case they would cost nearly as much as cavalry without possessing the cavalry advantage of shock tactics. Trained as they are, and flung into the field as they must be with a jumped-up organization, they are troops of inferior worth, and it is high time that we should recognize the fact and act accordingly. The sections of each mounted infantry company are filched, on mobilization, from the ranks of our infantry at home, and are commanded in war by an officer who will be unknown to the greater number of his men, while they will be unknown to him. It will be the same in the mounted infantry battalions. Having no permanent existence in peace, the mounted infantry companies allotted to our infantry divisions in war are not able to work

with these divisions during the training of the year. They will be ignorant of the commanders and troops whom they will serve and of the whole of the divisional machinery. Our modern infantry divisions figure up to some 20,000 men with 1,200 wheeled vehicles and over 7,000 horses. They cover a considerable area of ground on the march, at rest, and in battle. Their service of immediate protection is a serious and onerous duty which cannot be efficiently performed by an improvised body of some 300 mounted infantry, hustled together and shipped off to war after a confused process of mobilization which is the despair of every one who examines it.

The effect of these arrangements upon the infantry of the line is perfectly deplorable. For the eighty-four mounted infantry sections and three machine gun sections which make up the mounted infantry of our war establishments we have to draw upon seventy-four infantry battalions on mobilization, thus depriving these units of nearly 4,000 of their best officers and men at a moment when they can least be spared. If we draw these men from the army reserve we take men who have probably lost all the little they ever knew of horse management and of riding; if from the men with the colors, we deplete the already too attenuated nucleus upon which the reserve has to form. We must certainly keep back at our depots enough men trained in mounted infantry duties to make good casualties in the mounted infantry at the front, so that by the procedure to which we are committed we deprive the arm which wins battles of not less than 5,000 of its most valued bayonets. On these grounds alone our present system is indefensible, for the balance in our infantry between serving soldiers and reservists already inclines unduly to the side of the reservists, and we have no right to impose upon our infantry this additional strain. If, then, any other means can be suggested for the provision of the necessary protection of our infantry divisions, and for the performance of the duties now allotted to the mounted brigades, there would be much greater profit than loss in ruthlessly cutting out the mounted infantry from our war organization.

It may seem illogical to suggest at the end of this argument, that the present training of the mounted infantry should be

continued, but nevertheless it would be prudent to do so for several reasons. Longmoor is probably destined to become the high school of training for our Yeomanry so long as this force is not armed with the cold steel, and so long as its tactics must consequently and necessarily have more affinity to that of mounted infantry than of cavalry. The mounted infantry course is a splendid training for young infantry officers, N. C. O's. and men, as it opens their eyes and widens their horizon. For colonial campaigns we may very likely require mounted infantry in the future as in the past. For the internal security of certain of our possessions, and for various wars which need not now be discussed, we may require very large numbers of mounted troops, and it would therefore be prudent from many points of view to continue the Longmoor course at present, and provide ourselves with a large number of men who have done the training and will be able in course of time and after hardening with practice to take the field and render efficient service.

REFORMS SUGGESTED.

If we were to create a second cavalry division, and to devise improved protection for our infantry divisions, we might very well abolish our regular mounted brigades. A second cavalry division would be better value to support the existing division in the field, and better value as screen cavalry—if a commander decided to employ it for this purpose—than the mounted brigades. The chances are that a commander would not often desire to fritter away his cavalry upon defensive duties, for a second cavalry division would give him increased chances of smashing the hostile cavalry, in which event the defensive role of our mounted brigades, which already tends towards supersession by aviation, would become still further diminished in importance.

We have thirty-six squadrons in our present cavalry division. We have nine squadrons in the three cavalry regiments allotted to the mounted brigades. If we were to bring home three of our cavalry regiments from South Africa—as seems to be legitimate in view of the South African Defence Bill—we should possess the fifty-four squadrons required for

two cavalry divisions each of three brigades or twenty-seven squadrons. The division of three brigades would be a more handy command than the present one of four brigades, and the offensive value of the expeditionary force would be much enhanced by the inclusion in it of a cavalry corps of fifty-four squadrons as good as any in the world and better than most.

There remain the infantry divisions to be considered. The principle should be accepted that whatever protective troops we allot to the infantry divisions—whether cavalry, mounted infantry, or cyclists—they must be permanently organized and must form a permanent part of the divisions and be continuously trained with them. This principle must be held to tenaciously, for nothing short of it will enable the duties to be satisfactorily performed. We might, of course, if we liked, take three regiments from South Africa and three from the mounted brigade division. This would, however, deprive us of the offensive value of six good regiments and would prevent us from forming a second cavalry division and from reorganizing the division which we possess. It is common knowledge that cavalry hate to be tied to the apron-strings of an infantry division, and it is one of the most difficult things in the world to make people understand that the cavalry attached to a division of infantry forms an inalienable part of it, and to present the constant abstraction of the cavalry for some other service. In peace, again, it is not easy to obtain the continuous service of such cavalry in the training of the infantry division, for it is necessary for all cavalry to take part in cavalry brigade and divisional training. There are many good reasons why each infantry division should have a cavalry regiment permanently attached to it, but if we recognize that in this imperfect world the attachment is not absolute, but quite the reverse, and that this solution debars us from carrying out other reforms, we must be content to cast about for some alternative plan.

If mounted infantry are unsatisfactory, cyclists suggest themselves. For all campaigns in the British Isles and in Western Europe cyclists would serve our purpose uncommonly well. In all countries where good roads abound cyclists are in many respects as useful as cavalry for the immediate pro-

tection of an infantry division, and in some respects they are more useful. They are more tireless, cover more ground, and when firmly led have more tenacity. They can stable their steeds anywhere, and a little oil is all the forage they need. We have, it is true, no regular battalions of cyclists, but we have six battalions of infantry at home which do not enter into the composition of the expeditionary force and might very well become divisional cyclist battalions during their tour of service at home. The rifle battalions of the army naturally suggest themselves for the rôle. It would neither be necessary nor advisable to alter their character in any way. Infantry they are, and infantry they should remain. But they might be supplied with cycles, be trained to their use, and be taught their rôle throughout the exercises of the year. They could form centers of instruction for our territorial cyclists and enable us to ascertain what the latter are worth, a subject not devoid of difficulty without a regular model with which to compare them. Our regular cyclist battalions might be able to take the field 600 strong without reserves, and would in this event be double the strength of the present divisional mounted infantry and far more efficient. Our divisions would then have an improved and enlarged service of protection, highly trained, very efficient, and ready on the first day of mobilization.

This latter advantage is not to be despised whether from home defense or for war on the continent of Europe. The advantage for home defence is too obvious to need remark. In the case of war on the continent of Europe our infantry are ready before the cavalry, and would probably be the first to reach the theater of war. Without mobile troops our infantry might be without light and air and would be liable to be surprised and smothered. It would be a very great advantage to our six divisions to have with them 4,000 good cyclists, able and ready to take over at once the service of immediate protection. These cyclists could, at need, support the cavalry corps, and companies of them could be used as a screen in any direction for purposes of security or deception. In battle when their protective duties were ended, they would form a reserve which could be despatched rapidly to any part of the field. We scarcely know the services that cyclists could render, because,

with our stubborn conservatism, we have not given the idea a working trial with regular troops on a sufficiently large scale.

It only remains to say a few words about despatch riders. An infantry division requires a few mounted men, say a squadron of four troops each twenty-five strong, for the purpose of despatch riding. These might very well be supplied by the Yeomanry, who could easily find us 600 well mounted men who could get over a country better than any cavalry in Europe and would be alert and intelligent.

CONCLUSION.

By making the changes proposed we should lose the mounted brigades, but we should add eighteen squadrons to the army cavalry, improve its mobility, handiness and organization, double the strength of the protective service of the divisions, make this service permanent, and restore some 5,000 bayonets to our infantry, which has need of them.

The only additional and recurring cost would be the expense of a second cavalry divisional staff, and of the purchase and upkeep of the cycles for the infantry. Against this expenditure must be set the saving in the upkeep of paraphernalia for the mounted brigades, and the further saving caused by bringing home the cavalry from South Africa. The provision of barracks for these regiments at home would not be a direct consequence of the changes advocated, for these barracks will have to be found in any case when the regiments come home.

MACHINE GUN TACTICS.*

ABOUT thirty years ago the American Engineer Maxim succeeded in inventing the machine gun, i. e., the construction of an independent and continuously firing small arm. As in the case with nearly every new invention the machine gun was regarded with distrust by all states. The somewhat

*Translated from *Militär Wochenblatt*, Number 28, 1912, by M. S. E. HARRY BELL, U. S. Army

complicated breech mechanism and small faults inherent to the new machine gun as well as all new creations was the cause of doubt being expressed as to its suitability in war. Only after Maxim had succeeded through hard work to overcome the minor faults and to simplify the mechanism materially, a number of states decided, at the close of the late eighties, to introduce the new arm in fortresses, war ships, and for colonial service. The large majority of the states declined to equip their field armies with it because of supposed unsuitability.

The machine gun received its baptism of fire in England's colonial wars in 1893 against the Matabeles; in 1895 it was used against the mountain tribes in East India and in 1898 in the Sudan Campaign. In these cases of course, there could be no question of war experiences. But in the South African war from 1899 to 1902 both sides employed numerous machine guns under the most diverse battle and terrain conditions. The Boers were masters in the art of utilizing the machine guns' great fire power in the defense.

Still all these successes could hardly overcome the original general distrust. But few states, Germany among them, came to the right conclusion, based on these war experiences, as to the value of the new arm in a campaign and introduced it into their field army, even if only sparingly in the start.

The Russo-Japanese War finally brought about a complete reversion of the original opinion. The machine guns justified their utility in war in that conflict and proved their value in the most diverse situations. They proved themselves to be a powerful almost invaluable auxiliary arm for infantry as well as for cavalry and finally took their proper place in the series of arms used in warfare.

At the beginning of the Russo-Japanese War there were but few machine guns of different models with the fighting troops, but the number was rapidly increased. Russia had five machine gun companies of eight pieces, four of them in Europe, one in East Asia. As the value of the new arm was soon recognized however, new machine guns were purchased in all haste and as soon as independent companies could be formed they were assigned to the infantry divisions and rifle brigades, attached to a certain regiment in each. Eighty

machine guns participated in the battle of Liao-Yan in September, 1904.

During the second part of the war the larger cavalry commands had machine gun detachments of six guns, Madsen model, attached to one cavalry regiment; later on each cavalry and cossack regiment received a detachment of two pieces.

Japan had made trials with machine guns before the outbreak of the war, but there was no regular machine gun organization in its army. But as the first few contacts with the enemy showed the excellent value of the gun, the arsenals at Tokio worked with feverish haste to produce machine guns, Hotchkiss system, which were sent, together with what could be purchased in Germany of the Maxim models, to the infantry division in the field in the shape of detachments, battalions. As that method of organization proved unsuited during the course of the campaign, and after more machine guns had been procured, small detachments were assigned for trial to each infantry regiment. Concerning this organization and conclusions drawn by Germany from the result of the war, we will speak later. It is now the intention of Japan to attach a detachment of four machine guns to each infantry battalion and cavalry regiment, partly the Madsen system, but for the greater part the Maxim system. The Hotchkiss machine gun has not yet proved its value; still, France and Japan are engaged in perfecting the system.

In the following we will illustrate our system of tactical employment of machine guns based on the experience gained in the Russo-Japanese War.

No matter whether organized into companies or battalions, machine guns can never replace the artillery, neither can they carry on a prolonged fire fight. The peculiarity of the arm, especially in its enormous consumption of ammunition in a short time, precludes the possibility of that arm carrying a fire fight to the finish. The employment of machine guns should be confined to important phases in the battle and they should take only well paying targets under fire.

In Germany we have sixteen machine gun battalions and one hundred and eight machine gun companies. The main difference between them is their mobility, which also governs

their employment. By reason of most machine gun battalions having four-horse teams and because all men serving the guns are enable to ride they are so mobile that they can follow the cavalry into any sort of terrain. In time of peace they are, as a rule, attached to Jäger battalions; in time of war they are attached to the cavalry divisions, giving the latter a very great addition in fire power. Many opinions have been aired as to the suitability of the peace arrangement; some hold that in peace time the machine gun battalions should be attached to the troops whom they are to accompany in war; a number of states, as Russia, Japan and Austria, already have a permanent machine gun organization attached to cavalry regiments and the experiences of the struggle in 1904-5 seem to uphold the correctness of that procedure; with us, however, our cavalry has the use of the machine guns only during the very few maneuver days.

Together with the horse batteries and cyclist companies our machine gun battalion will be the backbone of the cavalry division. Where the question is of reaching or holding important points, the great fire power of the machine guns will be efficiently felt. In a future war machine guns will be indispensable to cavalry either in dismounted fights or other exploits of the cavalry.

All machine gun companies are attached to infantry regiments and in battle are under the immediate orders of the regimental commander. In general their mobility is no greater than that of the foot troops, as only a part of the personnel can ride on the pieces, which are drawn by two-horse teams. The smallest battle unit is the two-gun platoon; the latest regulations absolutely prohibit the splitting up of the platoon. The trot can be used only when the object of battle can be reached no other way. It is left to the discretion of the regimental commander whether to hold the entire machine gun company at his disposal or whether he divides it for assignment to the two battalions. If the regiment acts alone or on one flank of a larger body, it will be found advisable to hold the machine guns as a mobile reserve to insert them at some decisive point and save their power for important moments in the battle.

If a *rencontre* is expected it will be advisable to attach the machine guns to the advance guard; the latter to be able to quickly occupy and hold important points, thus giving the main body time and room for deployment. In this case machine guns can perform invaluable service. If the task is completed and if sufficient infantry is on the firing line, the machine guns will be drawn from the advanced position and held in readiness for other tasks.

In an attack on a fortified position the place of machine guns is in the most advanced line, there they will facilitate the infantry's advance; regulations require them to participate in obtaining the fire superiority and in carrying forward the attack. Regulations also caution against premature employment of machine guns, in which case the commander easily loses the opportunity of their better employment. Regard for the consumption of ammunition also demands machine guns to open their fire only at effective range and against tactical important targets. A good example of achievements of machine guns held in reserve in the start is furnished by the following episodes of the Manchurian War. In the battle of Haykontai in January, 1905 the Japanese had approached the Russian position up to 200 or 300 meters and considered the defenders so much shaken that they decided on the assault. Suddenly the six Russian machine guns, thus far held in concealment, opened fire and the Japanese attack came to grief; the attacking troops fled in all haste. In the end the Japanese declined, wherever possible, to attack that part of the position where machine guns were supposed to be.

Machine guns are intended to augment the artillery fire at infantry ranges. Such method of employment is found especially in the Japanese army. For instance, at Mukden, March 1st, the machine guns of an entire division were inserted against a Chinese farm which served the Russians as a rallying point for their trenches. As soon as the machine guns opened fire the Russian fire ceased, but again broke out when the former became silent. The Japanese infantry utilized these forced pauses in the fire fight to advance, by rushes, on the hostile position.

Three machine guns of the Tenth Japanese Infantry regiment acted in this manner against a field work on the 2d of

March. On March 5th, in the battle of Mukden, the Japanese guard division had fourteen machine guns in action to support the infantry attack.

Although our regulations for machine guns state that the best position for them is one higher than that of the infantry and in the rear of it, they also authorize the procedure mentioned above.

After the attack has succeeded a part of the machine guns must quickly be at hand in the captured position, to effectively take part in the fire pursuit from there and to guard against probable reverses.

If on the other hand the attack should fail, the machine guns which have been held in reserve, must in conjunction with the artillery, provide a rallying point for the retreating troops. The moral effect of their fire, which is said by eye witnesses of the Russo-Japanese War to be superior to that of artillery fire, will soon enable our infantry to again make a front.

Concerning the employment of machine guns in defense, no hard and fast rules can be laid down which would cover all eventualities. It will depend on circumstances whether the machine guns are taken into the position at the start or kept in rear to be employed according to need.

Requiring but little space, machine guns are especially suited to cover with their fire important lines, frontally or flanking, and to reinforce the infantry fire with celerity and force on threatened points.

Cover for machine guns should be provided in advance in places where their employment appears to be certain. This was done in the battle of Mukden. A part of the 17th division occupied Iphoto and took a position surrounding the town on three sides. Positions for machine guns were prepared in advance at nine different points. It would have taken three times the number of machine guns available to occupy all these points at once. It was not yet known from which side the attack would come, and it would have been erroneous to chain the guns down to a certain place in the start.

The position of machine guns should be kept secret from the enemy as long as possible. At points where there is no doubt that they must be used they should be posted at once.

Such points will be projecting points of the position where with their fire they can cover the field of attack from a flank. If they are posted in front of the position, they will require infantry protection or especially constructed guarding obstacles.

In the defense machines should never prematurely open fire, but should hold their fire for tactically important targets and decisive battle phases. In the engagement at Waughthiano-peng a Japanese company attacked Schaschan. Four Russian machine guns opened fire on the thin skirmish lines at a range of 1,000 meters, causing no loss whatever. The attack continued and the moral effect of the machine guns was entirely lost.

Employment of machine guns by both sides in a fortress warfare will be found of great advantages. We have but few actual experiences in war to go by, however, as during the investment of and assaults on Port Arthur machine guns were employed only in the last stages of that fortress war. They undoubtedly will prove of value in the defense of as well as in attack on outworks. But their main role probably will be at the short range fighting and assaults, especially in the case where the artillery has to cease firing for fear of hitting its own troops.

Machine guns will undoubtedly perform excellent service to the besieged troops in the defense of sectors, in sweeping roads and in flanking ditches, etc. Machine guns posted in daylight to fire on routes of approach and obstacles can achieve good results in firing by night, the more so now as they can be assisted by the use of searchlights and illuminating rockets.

In sorties machine guns are indispensable, especially due to the fact that in such undertakings artillery can not be taken along.

It has been shown that machine guns, when protected by hinged shields, timely placed into position and served by an experienced personnel, can defeat an assault at the very last moment. The useless assaults of the Japanese on Port Arthur and the erroneous losses suffered by them therein furnish instructive examples of the fire power and effect of machine guns.

MORGANS AS ARMY HORSES.*

BY MAJOR F. A. BOUTELLE, U. S. A., RETIRED.

IN an article in the January *Bit & Spur* upon the Subject of the retirement of Mr. James R. Keene from the breeding of the thoroughbred, Miss Kate Greenleaf Locke almost appears to sound a swan song. "Thus did men love horses only a decade ago." Have men lost their love for thoroughbred horses? I hope not. If they have American manhood has lost very much:

"For if you efface the charm of the chase,
From the land, and uproot the stud;
Then good-bye to the Anglo-Saxon race,
And farewell to the Norman blood."

Rascality, of course, killed the sport of gentlemen, but it seemed hardly necessary to let it die in such a way. Surely, if other sports can be and are so protected as to remain popular, horse racing could have been.

Why the honest thoroughbred should have been so far controlled by thieves is hard to understand. Many good men have abandoned the race track, as good men periodically desert politics in many of our large cities, because the atmosphere which has enveloped the situation has become intolerable. In politics this has invariably worked its own cure, for good men found it necessary to return to the political arena for public protection. Let us hope they will again take up the thoroughbred before he has disappeared. About the only use suggested for the thoroughbred, at present, is the cavalry service. I love the thoroughbred, I like to say "thoroughbred." It leaves a good taste in my mouth. I ride a thoroughbred and the spirit

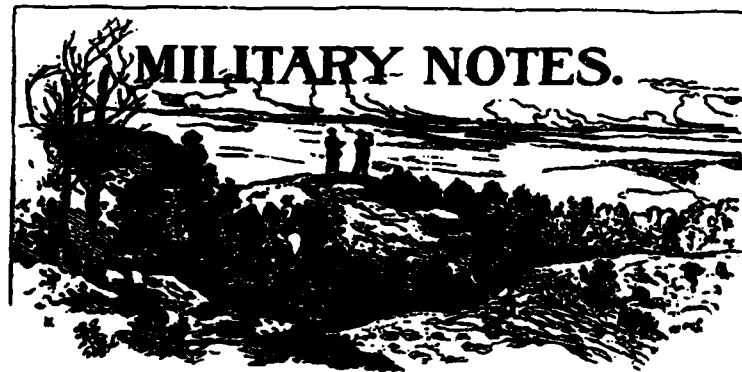
*From *Bit and Spur* of April, 1912.

which emanates from him makes my old weather-beaten body almost young again. I cannot bear the thought of his being practically eliminated from our lines of horses. I think, however, it would be a great mistake to adopt him as a type of horse for cavalry purposes. He is too hot tempered to be controlled in the ranks and is too fine skinned and generally delicate to endure the rigors of bad weather, without the artificial covers which have made his skin as thin as parchment. He cannot, at all times, find his regular grain, and he cannot do without it, as can his coarser cousin. He has a better "thinker" than the scrub, and when he is uncomfortably hungry he worries more.

My duties as a cavalryman kept me on the frontier for many years and I had, in our Indian campaigns, abundant opportunities for observing the different kinds of horses which were furnished in our then haphazard system (?) of purchasing. Our fine, rangy, park-like animals did very well as long as the regular allowance of forage could be obtained, but when there was nothing but such grasses as were available, often very short, the smaller, more compact ones kept in fair condition, when the finer ones were played out and abandoned beside the trail. One of the principal reasons for this was that the big fellow required a large amount of grass and it took him all night to get it; *he got no rest*. while the little fellows filled their little skins in a couple of hours and *rested the remainder of the night* and were ready for business in the morning. It may easily be said that we have no longer a frontier, and that campaigns upon short grass are things of the past. I saw my troop during the Civil War for a week without a particle of hay, and only ten pounds of cold corn per day. All of my blood-like horses looked like magnified greyhounds, the closer, coarser animals were in much better condition. In a letter to that good horseman, General Aleshire, Quartermaster General of the army, written several years ago, I wrote: "My ideal cavalry horse has always been the Morgan. There was a troop in the volunteer regiment in which I served during the Civil War, mounted principally on Morgans. In my own troop, mounted on all kinds of stuff, there was not a horse left after the Gettysburg campaign, in 1863. Quite a number, I do not know just how many, of the

Morgan troop, survived the gruelling campaigns of the Cavalry Corps, Army of the Potomac and Shenandoah (Sheridan's) and were purchased and taken home, good, sound animals. One of those ridden by Captain Hammond, afterwards General Hammond, was used by him when a member of Congress in Washington. In one of his letters to me he wrote: 'I am still riding Pinkie, now thirty-three years old, the finest saddle horse in Washington.' " The Morgan horse goes back to enough good blood to give him all the courage he needs, and he has been used for sober uses so long that the craze of racing has been, to a great extent, eliminated. A good sized (15 hands) Morgan is large enough to carry the authorized 165 pounds man. The forage allowance, when he gets it, is abundant, and when he has to forage for his living, he soon fills his little stomach and is at rest. While not rough coated, his skin is thick, and his hair is almost a fur in cold weather.

The thoroughbred jumper is not a cavalry horse. What is needed for a cavalry officer is a 16½ horse weighing 1,275 pounds. My thoroughbred won in "green hunters" at Portland, Ore., but if I were again young, heading a cavalry troop, I should value his jumping no higher than that of the poorest jumper in my troop. *The officer cannot lead where his men are unable to follow.* I do not wish to make light of jumping, or of cross-country riding, for I believe nothing will develop fearless riding as well as fox-hunting and kindred sports, and I believe this view is being held very strongly in the army by practical men.



THREE VALUABLE BOOKS.

ONE of the greatest debts the army owes directly to the Service Schools at Fort Leavenworth is not generally recognized, or rather is not generally appreciated and accredited. It is their influence for the production of valuable professional books in the original, and of translations of valuable foreign works.

When the "*Kindergarten*" was first started at Fort Leavenworth—and it was not so long ago—no professional text-books of American authorship were available for its curriculum; and so low was the state of professional culture in the service that there was no person well enough acquainted with foreign military literature even to suggest text-books from that source. So the "*Kindergarten*" groped and stumbled along in the dark for several years, trying one English text or translation after another; until at last WAGNER and CARTER and BEACH and ROOT, all instructors at the school, came forth with their books, which are among the household gods of every officer in the army today.

From that beginning the work has gone on, every year seeing useful new books or translations issued under the auspices of the schools there, or by reason of their influence. A list of such books lies before me, but it is too long even to copy here. The last two years, however, have given us three works, which, without comparison with those that have gone before, are, it seems to me, of special interest and value to the service. They have already, and months ago, been favorably reviewed in the columns of the *CAVALRY JOURNAL*, and the few words of praise here to be set down are not offered even as new testimony, but merely as cumulative evidence.

Taking them in chronological order Captain HANNA's "*Tactical Principles and Problems*" comes first. The author begins his preface with the modest statement, "This book has been written in the hope that it may help junior officers of the regular service and militia who are beginning the study of tactics. The word "junior" as applied to officers is an indefinite adjective, and it is hard to say when an officer ceases to be "junior" and becomes "senior;" but I believe this volume may be studied with advantage by most officers, though they may already have begun the study of tactics; provided their rank does not carry them beyond the realm of minor tactics.

With his twenty-six problems and their clear, sensible solutions, the author leads one through the principles of minor tactics by a path so smooth and easy of grade as never to tire one on the way. I do not know any other book in our language which makes the study of tactics so easy and agreeable, and that it is appreciated by students of tactics in both the regular army and the militia is witnessed by the fact that it is already in its third edition.

The next volume I have in mind is Captain GRAY's "*Cavalry Tactics as Illustrated by the War of the Rebellion*." This book is altogether unique in its purpose and arrangement, and withal it is so interesting and instructive that the only complaint it leaves the reader to make is of its brevity. And yet the writer has, by a multitude of actual examples gleaned from official reports, illustrated nearly every principle of cavalry, and shown that American cavalry has proved itself equal to any achievement from riding over breastworks manned by

infantry, or capturing gunboats, to the charge in which horse flesh and cold steel clashed together. And the book is provided with so excellent an index that any one desiring to find examples of a particular kind of action can easily do so; and he can also find the volumes and the pages of the records they are taken from.

The book is an inspiration to every American cavalryman; it is a brief with convincing evidence of our claim that all the best lessons of modern cavalry work can be found in the records of our own great war. This is a truth with which the best cavalrymen of Europe are tardily becoming acquainted. General von Bernhardt says, "The most interesting and instructive campaign for the service of modern cavalry appears to be the American War of Secession, which is, however, almost unknown in Germany where there is lack of opportunities to study it;" and later he enjoins cavalry leaders to act "in the spirit of a Seydlitz or a Stuart." What higher praise could the finest German cavalryman of today bestow upon an American cavalry leader, type of his class, than to place him in the same niche with Seydlitz?

General von Bernhardt should see to it that Captain Gray's little book is translated into German and made available to his officers without delay, for there is no other volume in which they can find a tenth of the cavalry lessons of our war that are presented in its small compass. Every American cavalryman who reads a single page of the book will read to the end, and in his heart will thank Captain Gray for the labor he has done, and congratulate him upon the excellence of his achievement.

The third book I have in mind is Lieutenant Krueger's translation of Colonel Balck's "*Tactics of Infantry*." This is the second translation from the German for which the service is indebted to Lieutenant Krueger, and like the first, it makes one regret less poignantly that one is unable to read German military literature in the original; for not only have we here a translation made by an expert in the German language, one who understands all the fine shades of meaning that escapes the ordinary Englishman or American who has labored for a knowledge of German, but we have a book from the pen of an

expert writer of English as well. This is a rare union to find in an English translation of a German military work. Too often such translations are rendered in English so clumsy that the pleasure the reader gets out of their substance is marred by their form.

No such fault can be found with Lieutenant Krueger's translation. There is nothing literal about it; it is an English composition, not a German structure of English words.

Of the substance of the great work it is hardly necessary to speak. It is the last word on infantry tactics. Its teachings have already been drawn upon by progressive students of tactics in our army, and its influence is plainly to be seen in almost every page of the new *Infantry Drill Regulations*—far and away the best drill book that has ever been written for any arm of our service.

The Cavalry Association has placed us under lasting obligations by putting before us the excellent works of Captain Gray and Lieutenant Krueger.

M. F. STEELE.

THE ADVANCED RETROGRESSION OF OUR CAVALRY.

DURING the past year so many articles have appeared both in service and other papers showing that in organization and equipment our cavalry is of an antiquated pattern that some answer should be made. Every now and then a man comes out with a suggestion for the improvement of our Cavalry Drill Regulations which is actually an improvement but this too has been carried to extremes.

We are said to be behind European nations in the organization of our cavalry. As to the equipment I shall say nothing. The Cavalry Equipment Board is answering that now. As regards the organization however, there is much to be said. For ten years now we have copied, if not blindly at least myopically, everything that appealed to any officer of rank sufficient to

have his voice heard and his opinion considered on his return from abroad. We have adopted hats, caps, ornaments, coats and equipments as blindly as ever Patroclus adopted the arms of Achilles but we neglected to observe that, as Colonel Maude observes: "Blind copying of equipment does not always carry with it the spirit that animated the original wearer."

European cavalry has been studied as a model on the assumption that it alone is perfect and the statement is now made in cold type and by men who ought to know better, that our own cavalry, failing to measure up (or down) to this standard, is defective and behind the times.

Suppose it could be shown that, instead of our cavalry being behind the times, European cavalry has not advanced one inch from the days when Napoleon undertook his Italian campaign? Suppose it could be shown that while the European nations have developed their infantry and artillery tactics, they have been content to allow their cavalry to remain as stationary as the Rock of Ages? Would any one be convinced? I think not. "They have Moses and the prophets, * * * If they hear not Moses and the prophets neither will they be persuaded though one rose from the dead."

If those who advocate the adoption of a two rank formation for cavalry as being progressive and up-to-date are really anxious to get the very best drill regulations of that kind that are extant they will find in all probability in the library of the State Historical Association in Pennsylvania a copy of a little book that will give it to them, with all the original German mold still adhering to its covers, from the sketches of the pig-tailed troopers to the opinions of Chevalier Folard and General De Grandmaison, anent the proper arming of the troops.

I have a copy of it by me as I write and, at the risk of being tedious, I shall copy a few of its progressive pages. It is not often that it is given to a man to literally founder himself on up-to-date ideas a hundred years old in the wood.

The book is entitled: "A Treatise on the Military Art;" in four parts, containing: I. A comprehensive system of discipline for the cavalry of the United States, adapted to the principles of Baron Steuben's regulations for the infantry and the latest Prussian and English treatises on cavalry.

II. Regulations concerning the duty of cavalry in camp in time of war.

III. Directions for the conduct of Partizan corps whether cavalry or infantry in carrying on the *Petite Guerre*.

IV. Maxims relating to the marching, encamping and other general operations of an army in the field, compiled principally from the observations of experienced officers and the most approved writer on the art of war.

The title page shows that the book was by E. Hoyt, an officer in the cavalry of Massachusetts and was printed at Brattleborough for the author in 1798. The title page also shows the following quotation: "The strength of the state consists less in the number than the military virtues of its citizens."—*Vattel*.

In the preface to the book, the author says that "the preparation of this work has been considerably delayed in the hope that some abler hand would undertake the necessary task."

The author seems to have been one of those unfortunates who did not guess his own greatness. He was literally more than a hundred years ahead of his times but even his dim prophetic eye could not penetrate the veil of the future far enough to see the old time cavalry drill regulations of Frederick the Great, which were brought to this country by Baron Steuben, and which had been blindly copied by the up-to-date European nations (who by the way were invariably chased home by the unprogressive Napoleon) revamped and foisted upon the American cavalry of today.

In this new-old book by me, it is laid down: (See Chapter IV.)

"A troop is to consist of one captain, two lieutenants, one cornet, four sergeants, four corporals, one smith, one saddler, one farrier, one trumpeter and forty-six dragoons; to be formed into two ranks at the distance of a horse's length, the tallest men and horses in the front rank. A troop thus drawn up is to be divided into three sub-divisions, the captain to take post on the right of the first sub-division covered by the fourth sergeant; the first lieutenant on the right of the third sub-division covered by the first corporal, the second lieutenant on the right of the second sub-division covered by the second corporal,

the cornet twice the length of a horse behind the center of the troop; the first sergeant a horse's length behind the center of the first sub-division; the second sergeant the same distance behind the center of the third sub-division, the third sergeant the same distance behind the center of the second sub-division: The two remaining corporals are posted on the flanks of the front rank.

"When a troop is drawn up with *open files*, the horses are to be so far from each other as to admit a horse to pass between the files; but when drawn up at *close files* they are lightly to touch each other with their knees.

"The smith, saddler and farrier are to be exempted from detail as privates and from appearing in the ranks when their particular professions call them to their several departments. But when they are not employed in their professions, they may be paraded in the ranks to supply the places of such men as may be absent.

"A troop drawn up according to this arrangement will consist of twenty-four files, exclusive of the officer's files and each sub-division will contain eight files which makes a very convenient number for almost any movement required in the maneuvering of a squadron. This arrangement is adapted to the second method of drawing up a regiment as described in the next chapter and the troop will constitute one division of a squadron. But when a troop is drawn up to take its place in a regiment formed as described in the first method (same chapter) it is divided into two sub-divisions with the captain on the right of the first and the first lieutenant on the right of the second each covered by a sergeant, the other two officers taking post in the rear as supernumeraries; the two remaining sergeants in rear of the sub-divisions and the corporals divided equally to the flanks.

"In this last method forty-four dragoons, with the four corporals, will be sufficient to constitute a troop of twenty-four files and each sub-division will consist of twelve files exclusive of the officer's files."

That is identically the formation of the tentative troop in two ranks that we have been experimenting with except that the author knew what he was about; had his extra men

definitely placed and had clear cut ideas on the subject. That is the advantage of being progressive. A progressive man arrives at his goal while the unprogressive man is scratching for a start. The double column of fours or rather the column of eights of the tentative drill regulations is the column of sub-divisions of Frederick the Great.

In the formation of the regiment we are still behind the European nations for we have the twelve troop, three squadron regiment that no thinking person would use. It is in single rank which has only a dozen advantages over any other and it is *not* formed in the following manner:

"A regiment to consist of eight troops with the following field and staff officers, viz., one colonel, two majors, one adjutant, one quartermaster, one paymaster, one surgeon and a surgeon's mate, one sergeant major, one quartermaster sergeant and one riding master.

The troops to be drawn up in two ranks and posted in the following order from right to left: First squadron—first, sixth, fourth and eighth. Second squadron—third, seventh, fifth and second.

"The regiment is to be divided into two squadrons with an interval of twenty yards between them and one color posted in the center of each squadron, the first major takes post fifteen yards before the centre of the first and the second major, fifteen yards before the center of the second squadron, the adjutant eight yards in front of the regiment before the center of the interval; the sergeant major, quartermaster sergeant and riding master, fifteen yards behind the interval of the squadrons. The colonel's post is not stationary except at reviews at which time he posts himself ten yards in front of the line of majors before the center of the regiment; the trumpeters are equally divided to the wings of the squadrons, the trumpet major on the left of the first squadron.

"Each squadron is to be divided into four divisions and eight sub-divisions. The captains are to remain on the right of their troops except the second who takes post on the *left* of his troop which is the left of the regiment, the first lieutenant of each troop to be posted on the right of the second sub-division of their several troops except the first lieutenant of the

second troop who is posted on the right of the first sub-division of that troop; its second lieutenant is on the right of its second sub-division; the remaining officers and sergeants are posted as in plate one which represents a regiment formed as described in the first method."

At the risk of boring the reader I have copied verbatim. Unfortunately my typewriter is not sufficiently progressive as to include the long s's which are really essential to give the proper flavor to the extracts above given.

We have worked over the proposed scheme—some of us. We have studied the new regulations and those who are antiquarians have provided a certain amount of pleasure from the perusal but when it comes to being asked to seriously consider the new scheme an advance, we hesitate.

European nations have it, it may be for the same reason that they have morganatic marriages, and other off-shoots of the feudal system which was the same reason that led Sinbad to entertain the Old Man of the Sea—He could not get rid of him.

What our real regulations were I do not know. Presumably the official copies went up in smoke when General Ross burned Washington in the war of 1812.

GEO. B. RODNEY,
Captain Fifth Cavalry.

FORAGE.

IN the CAVALRY JOURNAL for January, 1912, an excellent article on forage by Veterinarian Griffin, gives us much interesting information on the different foods that can be and are used in feeding our animals, but I noticed that he does not mention much about the class of hay that are fed in Arizona and California and other southwestern States and in Honolulu, viz: Oat hay, barley hay and wheat hay. In fact, some years ago, these hays were the only kind that people in those sections knew anything about, for when I went to Fort Huachuca, in

1903, the feed there was whole grain barley or corn and a mixture of barley and oat and wheat hays, but people were gaining more knowledge of farming and alfalfa and other crops were being sown, so that soon we were able to get oats and oat hay or wheat hay and dispensed entirely with the barleys.

As there was very little, if any, herding at Huachuca, we found that this dry feed produced constipation in our animals; consequently, to relieve this condition, we bought baled alfalfa hay and fed it in conjunction with oat or wheat hay about twice a week. This method relieved the trouble and had most excellent results, proving an ideal feed and one that I strongly recommend for use wherever these dry hays are fed. The proportion of alfalfa to oat or wheat hay being one-third.

In Honolulu we feed wheat hay principally, but get some oat hay. These hays are naturally very dry and dusty, being grown in California, and we have counteracted their constipating action by contracting for a supply of green forage that is grown on these islands, but I believe the baled alfalfa hay fed two or three times a week would do just as well. These oat and wheat hays are cut while their grains are in the dough and if properly planted, cut and cured, seem to form a fair substitute for good hay, but as a rule they are very dusty and brittle, so brittle that one dare not shake the hay to get rid of the dust for so doing, one would be apt to have principally dust left. Eventually, increased farming knowledge will enable people to grow proper hays in the place of these grain hays.

No doubt when Veterinarian Griffin gave this lecture at Leavenworth, he had learnt all there was of alfalfa as his remarks on it show and I believe that, on its first introduction to the States this great hay was very much underrated and very little understood. I, as an ardent admirer of its excellent qualities, would like to change Veterinarian Griffin's poor estimation of alfalfa and differ from him in regard to its extensive use producing constipation in horses, for I have seen it fed in almost every imaginable way and very rarely has it produced that effect. If alfalfa of a fourth or fifth crop was not cut till some time after it had flowered, it might produce impaction, on account of the large proportion of fibrous matter in it, but most hays will do that. On the contrary alfalfa if fed exten-

sively, does not produce constipation; if anything it causes a too laxative condition of the bowels. Though I have seen animals that did good work for months on alfalfa with a generous ration of barley or oats.

As a grazing plant it is dangerous on account of its liability to bloat animals, especially cattle, but this is caused as a rule by the animals being turned out when the dew is still on the grass, making it cold and wet, thus chilling the stomach and internal parts, checking digestion and producing fermentation.

In California seven crops of alfalfa have been cut in one year to my knowledge. Out here in Honolulu, on the farm of Mr. Paul Isenberg, they cut thirteen crops of alfalfa in one year, a truly wonderful yield. If alfalfa could be cured and baled on this island, it would pay the government to do it as the military reservation here is well adapted for raising crops, having thousands of acres of good rich land and plenty of water for irrigation purposes.

All our Veterinary Hospitals should have at least two or three acres around them where veterinarians could raise green food, preferably alfalfa, for their sick animals and have some corrals for convalescing stock. This green food is especially valuable as a medicine for sick animals and personally I have no doubt that I have saved quite a number of public animals by being able to feed them nice fresh green alfalfa during their illnesses.

In winter good baled alfalfa if soaked or steamed and fed to sick animals is nearly as good as fresh fodder. I sincerely hope that this most excellent feed will be more used in our army than it is at present. I am satisfied that if veterinarians once used alfalfa and reported on its qualities, their reports would be favorable; at least we all would gain in knowledge of forage and therefore I respectfully urge that the matter be taken up by those who can add to it.

R. VANS AGNEW,
Veterinarian Fifth Cavalry.

EXTRACTS FROM A LETTER FROM AN OFFICER AT SAUMUR.

* * * And the secret of the progress that I have made
* * * has been the suppling exercises that I have taken. You must not think that it is too greatly a matter of understanding. Of course one must be told a lot at first—and all the time—but it won't be long until you discover that your understanding has far out-stripped your performance. You know what to do under a given set of circumstances, for hasn't the instructor told you a million times, and haven't you observed your comrades doing the same thing and failing as you have failed, day after day? But why? Because you have not prepared your body in the way of supplings and gymnastics so that it will obey your will. You are told to loosen up, to relax, and you can't. A certain old jumper runs away with you, or pulls your arm off, and the instructor yells at you until you are sick and tired of it. You say that no one can release the reins on that horse—the old fool will run away. And so he will—with you. But the next day you note with surprise and a little chagrin that another man rides him and releases the reins; the horse doesn't pull, but just canters along perfectly contented. Now why? Because one man is supple in the small of the back, and the other is not. The one sits snugly and relaxes from the waist up. The other sits tightly, with a desperation that is known by, and disturbing to the mind of the horse; and from the waist up is stiff—every muscle as taut as a wet guy rope, and so is pounding his horse's back; and the concussion, and the stiffness, and the lack of balance, makes the hands play havoc with the horse's mouth. And so the horse is a puller, and possibly will run away. * * * What shall you do? Take setting up exercises in your room before dressing in the morning. Take them three times a day, if you have the perseverance, of which quality it requires a lot. Do the trunk exercises of the drill regulations chiefly, and some—not much—of the others. And that exercise of lying down on the

floor and raising the legs, and hooking the toes under something and raising the body. Concentrate your mind on your waist, the small of your back, and the belly. Don't do too much. Not over ten or at the most, fifteen minutes at a time. Be happy about it, and don't expect plain and palpable results until the end of say, three months. Don't overdo it and don't be too eager, and you will bring about a marvelous change in your physical efficiency. * * *

This is all dismounted work, now I am going to tell you what to do mounted. Ride a little now and then without stirrups. Take hold of the pommel of your saddle and pull yourself forward and deep into the middle of it. Lower your knees and carry your feet to the rear until you can't see your toes. "Go limber" in the back, loosen up and let your body incline probably a little to the rear of the vertical. If your horse seems unusually rough at the slow trot, relax the back and carry the weight a little to the rear. If your horse, besides being rough, is also playing up and pulling it is because you are stiff in the back through contraction of the muscles and leaning to the front, so that he receives a jolt as well as you and doesn't like it. If you relax and lean back, and get into a balance with him, he will probably relax the jaw, lower the head, and go smoothly, and you will have the pleasant sensation of getting in accord with him.

Now notice that in each case what I have told you refers to your back—both mounted and dismounted. If you will do this—just a little every day—it will help a lot. * * * It is these very supplings of the body, the gentle flexings of the back, legs and shoulders that give the Frenchman his superiority on horse-back. He has it naturally—as a race—more than we have, and in addition he cultivates it. While we have it in a lesser degree and do not consider it of enough importance seriously to cultivate it. Why do our horses run away with us, bolt their jumps, etc? Because we are stiff and contracted, our hands are hard, and the horse receives shocks on his spine from our straight backs, and dreads the effect of the bit in his mouth. We hold him desperately, and the girls think we are very brave and a bit foolish for riding such a horse! The Frenchman comes along and avoids many of the causes which produce the bad

effects, and so it is not put to the necessity of holding his horse—the horse is contented. You can talk and theorize until doomsday, but you won't be able to do it until you gain easy, quiet, and sure control of your physical powers. * * *

MILITARY RACES AND HORSE SHOWS IN FRANCE.

THE official Bulletin, No. 7, of March 4, 1912, contains the latest order on the subject of military horse races, steeple chases and horse shows. It gives the conditions to be fulfilled by officers, non-commissioned officers and horses for the different events and the control to be exercised by colonels of regiments.

For any horse belonging to the government to take part, the authority of the colonel must be obtained. No thoroughbred can run till he is six years old and no half-bred till he is seven. They must have been inscribed in the horse book for at least six months before the race and must have been trained solely by officers or non-commissioned officers of the active list, exclusive of any assistance whatever from persons not in the army.

No prize in money can be run for by an officer, non-commissioned officer or horse belonging to the government. The regulation uniform is obligatory.

The contests for army horses, officers and non-commissioned officers are divided into three categories: 1. Military races in Algeria—officers' class and non-commissioned officers' class. 2. Military Steeple chases—non-commissioned officers' class and three classes for officers. 3. Military cross country—three classes for officers and two classes for non-commissioned officers.

The conditions for each class are given in the order.

T. B. M.

RIDING IN THE ITALIAN ARMY.

I HAVE the honor to invite attention to an article in the February number of the "*Revue de Cavalerie*" entitled "À propos de l'Équitation Italienne." This is a partial translation into French of an article which appeared recently in the Italian magazine "*Preparazione*," from the pen of one of the most undisputed authorities on equitation in the whole Italian army, Gen. Zaremba de Jaraczewski. In this paper the General gives much praise to the zeal, enthusiasm and gallantry of Italian horsemen, but he points out, with an easy mastery to the subject not often met with, the narrow limitations of their favorite seat.

Speaking of the success gained by Italian cavalry officers at many horse shows, jumping contests and sporting events, he says: "It is incontestable that in this field our officers have nothing to acquire from foreign services. On the contrary, these seek to imitate us, as I have already remarked before; but do they ever take us as their model in what concerns *military horsemanship*? There is no doubt in my mind that our style of equitation is more sporting than military. Let us praise as much as we like our brilliant successes at horse shows, at races and in the hunting field, but remember that all these most agreeable sports ought to be the means of making not only hard riders, but passionate lovers of the horse and of equitation in all its forms."

The general then goes on with an interesting technical criticism of the Italian officers' seat and of his method of training the young horse, and above all of placing his head. "The rider should be supple and ready to aid the movements of the horse, but this can only be done by having the thighs sloping to the front and not, as we see them today (in the Italian army) almost parallel to the ground, with the knees clear out of the saddle and the legs cocked up on the stirrups. * * * A combination of all the aids should be always at the rider's disposal, hands, legs and his own weight. Without this a man may be perhaps a fine sportsman or excellent jockey, an intrepid cow-

boy, a remarkable jumper, but not a mounted fighting man, absolute master of his horse, even when saber in hand—that is discharged of all thought of his horse and free to occupy himself with the enemy, or lead the men under his command."

These criticisms from an Italian cavalry officer of the highest distinction and recognized competence in horsemanship, are especially worth the attention of those who are now directing our own education in horsemanship; for if any doubt still exists in their minds as to the value of Italian methods as compared with French methods of training horses and horsemen, this paper should go a long way toward dissipating it.

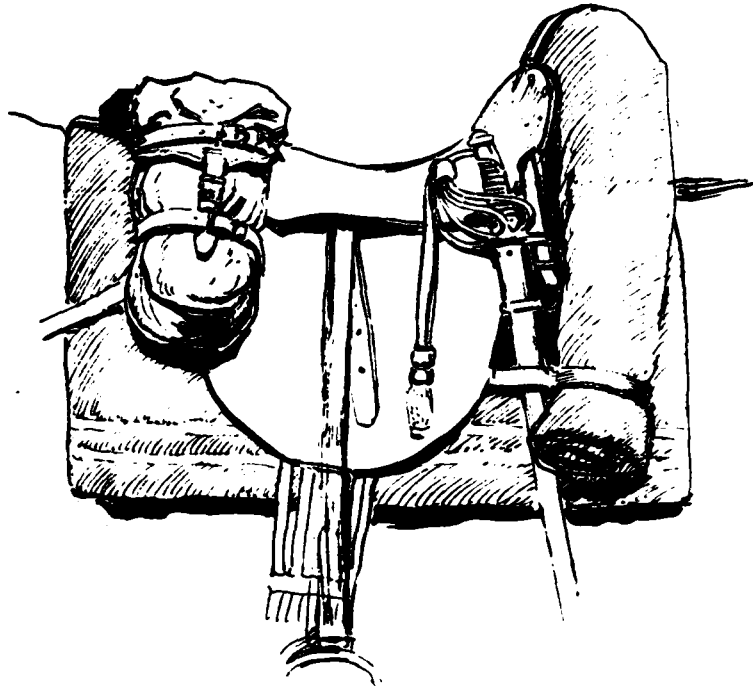
Our army during the last ten years has, with very slight exception, drawn all its inspiration in horsemanship from the French; the two officers we have sent to Hanover may be considered an experiment from which an exact comparison can be established between the German and French methods. If anything superior exists in the former, these men can readily present it in its most favorable aspect to the Mounted Service School, and if approved it can be grafted upon our own adaptation of the French system. But it would seem that the time for the smallest hesitation in choosing our course has passed. We have now at least ten Saumur graduates; three more officers will go to the French school next year. We have taken our line, let us ride it straight. No year goes by, no international event takes place, which does not bring fresh evidence that we have chosen wisely. To send at this time a single officer to Italy, Germany, Austria or England for a course in horsemanship, seems a distinct waste of that officer's time, so long as the French will accept him at Saumur.

T. B. M.

THE FRENCH CAVALRY SADDLE—PACKED.

HEREWITH is an accurate sketch showing the way the French cavalry saddle is packed and the saber held.

The cantle roll is frequently longer, as I recollect it, than is shown in the sketch, but in no way changes the principle of the attachment. You will notice that the strap which supports



the saber passes through a slit in the frame of the seat and is not slung as with us from a ring or staple on the side bar. This brings the saber hilt farther away from the horse's side than would be the case if the supporting strap hung from the side-bar. When the man is mounted, the hilt rubs against his left thigh, and in the field many soldiers wrap the brass hilt with a piece of cloth to keep it from soiling the red breeches.

The saber is steadied in its position by being passed through a loop which is made in the strap attaching the cantle pack to

the girth. The scabbard passes not merely under this strap, but through a loop made in it. This strap has a buckle for cinching it tight around the cantle roll, and for securing the roll as snugly as may be desired to the horse's side. The sketch shows the arrangement of this strap.

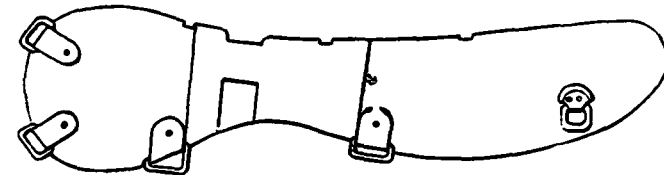


Fig. 1.

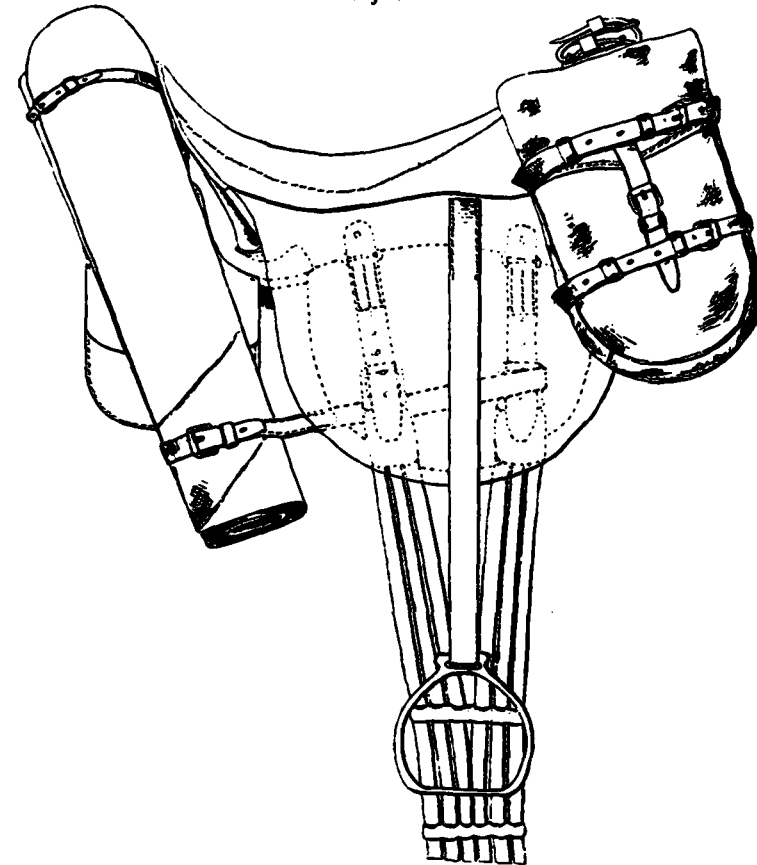


Fig. 2.

OFFICER'S DRESS.

THE following extract from the *Broad Arrow* expresses our ideas exactly as to the question of uniforms for our officers, especially as regards the special full dress and leggings. The former is expensive and gaudy to the extreme and the latter is not only uncomfortable for wearing day in and day out but also, it is believed to be injurious to the wearer when worn continually.

"I think all officers will welcome the departure of the military frock coat, and now that the question of officers' uniform is once more being discussed, the following changes would be popular with a large majority of officers:

"(1) Do away with mess kit altogether, it being an expensive and uncomfortable dress, and officers to dine in civilian 'evening clothes.' This would be one less article of dress to cart about; of course any officer 'on duty' would wear the blue serge jacket for dinner.

"(2) Frock coat already discussed.

"(3) Remodel the 'Service Dress' and do away with puttees, which (a) are most uncomfortable, especially when maneuvering in hilly country, and (b) take a long time to put on and take off. Puttees possess not a single advantage, and I have never heard an officer speak in favor of them; in fact I heard a field officer once say 'that the chief advantage of being promoted to 'field rank' was not having to wear puttees.' When marching one tires much sooner when wearing puttees, and when on duties which do not involve taking exercise they prevent the full circulation of the blood, and 'cold feet' are the consequence. As a substitute for puttees, I would advocate 'woollen stockings' turned over below the knee. Do people like postmen, who have to walk long distances wear puttees? Do runners or footballers wear them? No one ever wears puttees unless compelled to do so. This small reform has the advantage of adding no extra cost to the much underpaid regimental officer. As regards the 'Service dress' jacket, have this made with a low, turned down collar (like a Norfolk jacket), and under this, a khaki *soft* collar and tie to be worn.

"(4) The officer's kit would then consist of: (a) Full Dress, for ceremonials and court-martials; (b) Service Dress, as described above, for all other parades; (c) Blue Patrol jacket for barrack duties and mess when on duty; (d) ordinary mufti evening dress for those not on duty."

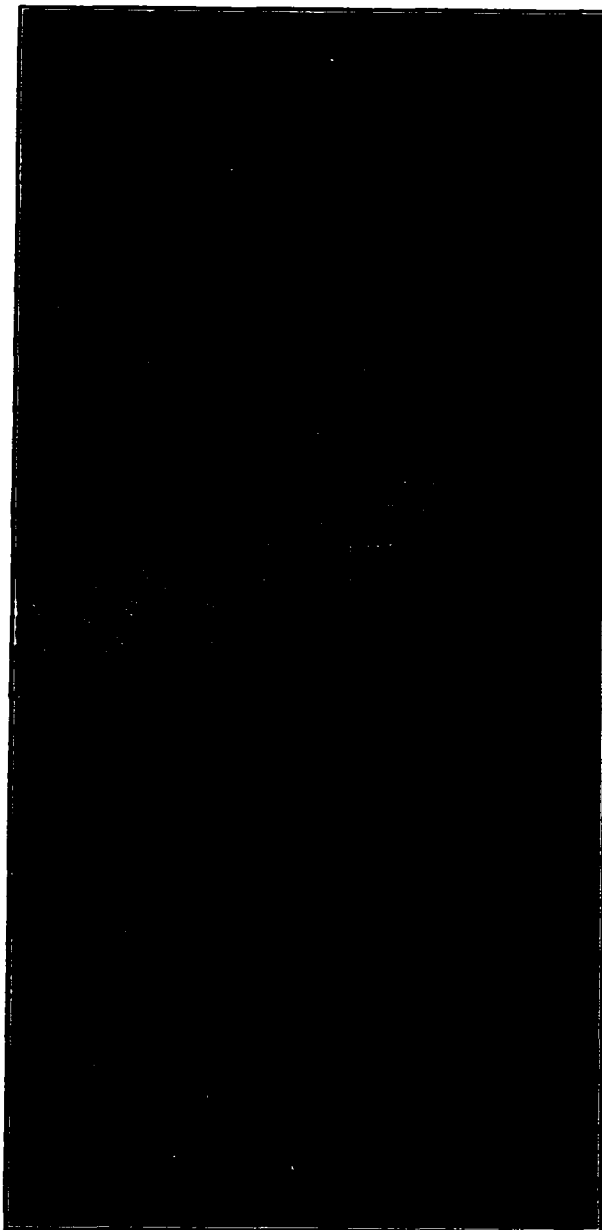
FORT LEAVENWORTH HORSE SHOW.

THE Fourth Annual Horse Show, given under the auspices of the Fort Leavenworth Field Club, was held on Saturday, April 13, 1912, and was a great success, not only on account of the number and character of the entries, but as a social event as well. The three galleries of the riding hall of the Army Service Schools were crowded with officers, their families, and visiting friends as well as by enlisted men, their families and friends, for whom one of the galleries was reserved.



A FEW OF THE ENTRIES IN THE LADIES PARADE CLASS.

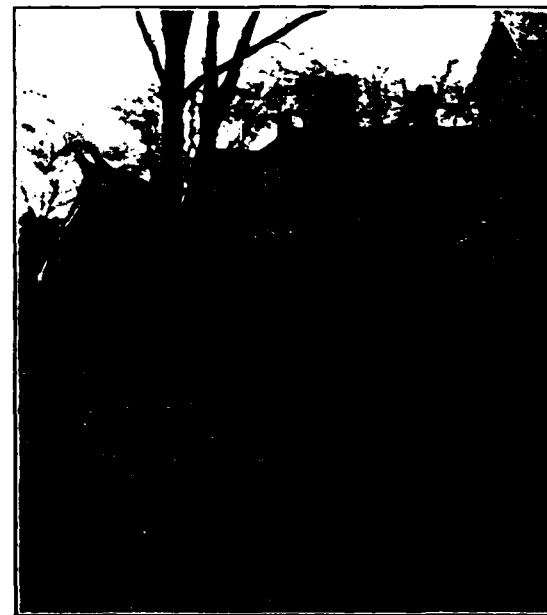
From left to right: Mrs. T. H. HORN, Mrs. R. VAN HORN, Mrs. WM. KELLY, Mrs. A. G. LOTT, Mrs. A. U. FAULKNER, Miss ELEANOR LEINHAN, Mrs. JAMES FROST.



RIDING HALL—ARMY SERVICE SCHOOLS.
(As decorated for the Fourth Annual Horse Show.)

The officers of the field club which has charge of all athletic sports—polo, golf, tennis, etc., for the officers of the garrison and schools, are as follows: *President*—Lieut. Colonel T. H. SLAVENS; *Secretary*—Captain H. B. FISKE; *Directors*—Captain F. L. MUNSON, Captain J. D. TAYLOR, and Lieutenant EBEN SWIFT, Jr.

The Committee on Arrangements for the Horse Show were: Major M. J. LEINHAN, Major W. N. BISPHAN, Captain



BECKY SHARP.

Winner of the second prize in the Light Weight Charger Class and of the second prize in the Class for the Best Trained Mount.

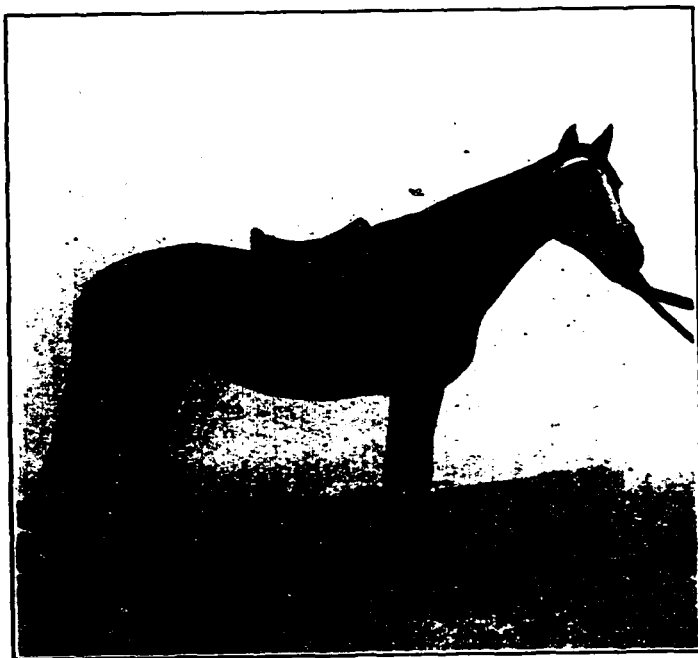
Owned by Captain H. R. RICHMOND, 10th Cavalry, Captain H. S. HAWKINS, 4th Cavalry, up.

PERCY L. JONES, Captain LE R. ELTINGE, First Lieutenant EBEN SWIFT, Jr., and Veterinarian G. E. GRIFFIN.

The judges for the show were all from a distance and were: Major W. S. GUINARD, First Lieutenant GEORGE M. LEE and Dr. ST. CLAIR STREETT, the well known horseman and polo expert of Kansas City, Mo.

There were eleven events all of which were so arranged and pulled off by the committee in charge that there was not a hitch from start to finish. Two of these events, the first and fifth, were in the nature of exhibitions to show the training of the horses entered and for which there were no prizes offered or ribbons awarded.

The following is a resumé of the different classes, the conditions for each and the winners in the several classes:



MOLLIE STARK

Winner of the first prize in the Ladies Astride Class. Ridden by Miss BESSIE GRIFFIN.
Owned by Veterinarian G. E. GRIFFIN, 3d Field Artillery.

Class I. Ladies Parade. Fifteen entries. No awards.

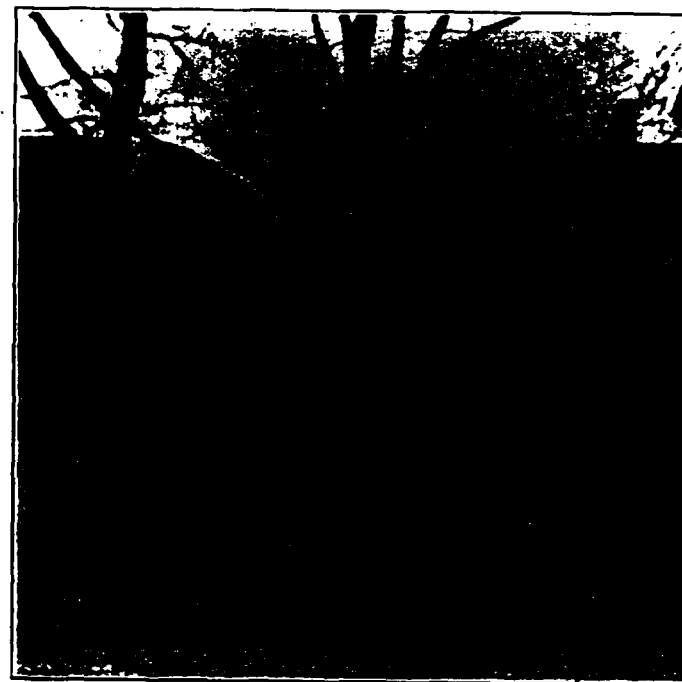
Class II. Officers' Light Weight Chargers. Eighteen entries.

Conditions: Each entry must be the property of an officer and must conform to army specifications. Any saddle may be

used. Conformation to score 50 points, manners 25 points and action 25 points. Required: Walk, trot and gallop.

Prizes: Silver cup and ribbons.

Winners: 1. Lieutenant T. H. Emerson's "Peter Pan;" 2. Captain H. S. Hawkins' "Becky Sharp;" 3. Major W. N. Bispham's "Billy B;" 4. Lieutenant D. L. Roscoe's "Benkara."



MONT EGAL.

Saddle bred stallion, owned by Major T. N. Horn, 4th Field Artillery, Mrs. T. N. Horn, up
Winner of the second prize in the Ladies Side Saddle Class. Ridden by Mrs. T. N. Horn.

Class III: Polo ponies. Eight entries.

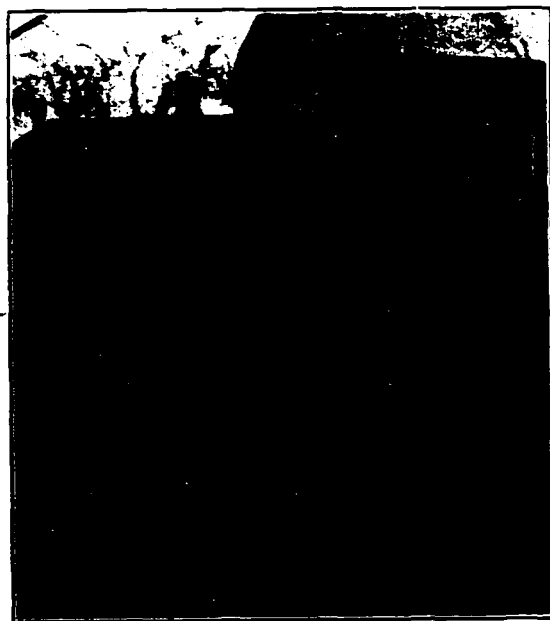
Conditions: Running the wands 25; manners of pony 25; control, which includes halting directly from the gallop, turning, riding the figure 8, and hitting the ball, all at the gallop, 50.

Winners: 1. Captain G. S. Gibbs' "Tommy Atkins;" 2. Lieutenant Swift's "Highball;" 3. Lieutenant Swift's "Waterwagon;" 4. Lieutenant Pike's "Eddie Foy."

Class IV. Ladies riding Astride. Ten entries.

Any horse or pony. Required: Walk, trot and gallop. Equipment 25, management 50, general appearance 25.

Winners: 1. Miss Bessie Griffin; 2. Miss Elizabeth Hanson; 3. Mrs. W. G. Sills; 4. Mrs. Percy L. Jones.



DIXIE.

Winner of the first prize in the Class for Best Trained Mounts and the third prize in the Officers' Jumping Class.
Owned by Lieut. EBEN SWIFT, 11th Cavalry.

Class V. Exhibition Ride by Officers. Fourteen entries.
No awards.

Class VI. Ladies Riding Side Saddle. Five entries.

Any horse or pony. Equipment 25, management 50, general appearance 25.

Winners: 1. Mrs. G. V. Strong; 2. Mrs. T. N. Horn;
3. Mrs. W. Kelly; 4. Mrs. R. Van Horn.

Class VII. Best trained mount. (Owned by an Officer.)
Fourteen entries.

Required: Walk, trot, gallop, two-track, reining back, haunches in, right and left leads, changing leads on figure 8 and jumping an obstacle three feet six inches in height.

Prizes: A silver cup and ribbons.

Winners: Lieutenant Eben Swift's "Dixie;" 2. Captain H. S. Hawkin's "Becky Sharp;" 3. Captain H. S. Hawkins'



CÆSAR.

Major T. N. HORN, 4th Field Artillery, (owner), up.
Winner of the Ladies' Jumping Class, (4 ft. 6 in.), ridden by Mrs. T. N. HORN.
Winner of the Officers' High Jump (5 ft. 4 in.), ridden by Captain L. R. BALL, 6th Cavalry.

"Robbin Lightfoot;" 4. Captain W. G. Sills' "Joseph Kronberg."

Class VIII. Ladies Jumping. Seven entries.

Winners: 1. Mrs. T. N. Horn; 2. Mrs. G. V. Strong;
3. Mrs. G. V. Strong; 4. Miss E. Hanson.

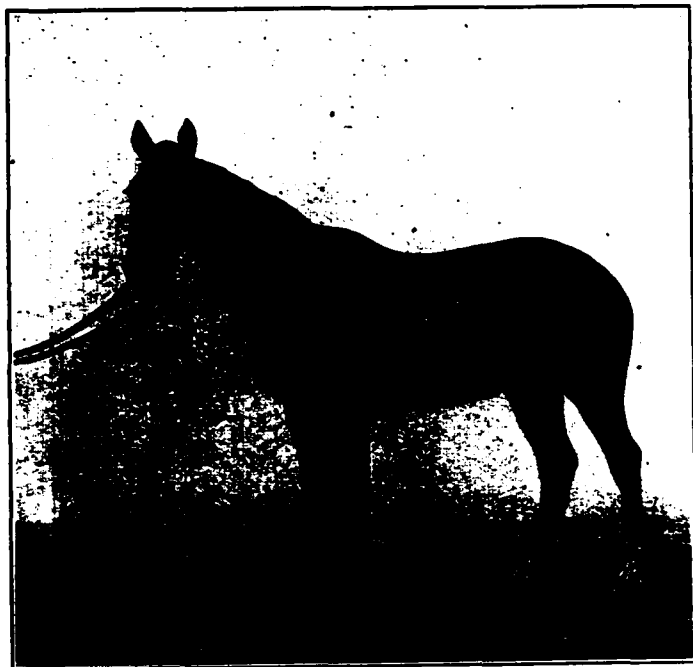
Class IX. Officers' Heavy Weight Chargers. Nine entries.

Each entry must be the property of an officer. Any saddle may be used.

Requirements: Walk, trot and gallop. Conformation 50, manners 25, action 25.

Prizes: A silver cup and ribbons.

Winners: 1. Lieutenant Eben Swift's "Forestall;" 2. Major T. N. Horn on Captain Greer's "Aurora;" 3. Lieu-



FORESTALL.

Thoroughbred gelding, owned by Lieut. EBEN SWIFT, 11th Cavalry. Winner of the first prize in the Officers' Heavy Weight Charger Class. Sired by Watercross, out of Vernette.

tenant R. E. Beebe on Captain Haskell's "Kim;" 4. Captain J. E. Fechet's "Rattler."

Class X. Officers' Jumping. Twenty-seven entries.

Requirements: Entry must be the property of an officer or of the United States.

Obstacles: Board fence three feet and six inches high; post and rail, three feet and six inches high; bar, three feet and

six inches high; in and out jump, to consist two three-foot hedges, thirty feet apart.

Winners: 1. Major T. N. Horn on Captain Greer's "Aurora;" 2. Lieutenant G. V. Strong on Army Service School's "Lucy Lee." 4. Lieutenant P. J. Hennessey's "Duke of York."

Class XI. Officers' High Jump. Nine entries.

Requirements: Must be the property of an officer or of the United States.

Conditions: Jumping to start at four feet, the height will



CÆSAR IN ACTION.

Captain L. R. BALL, 8th Cavalry, up.

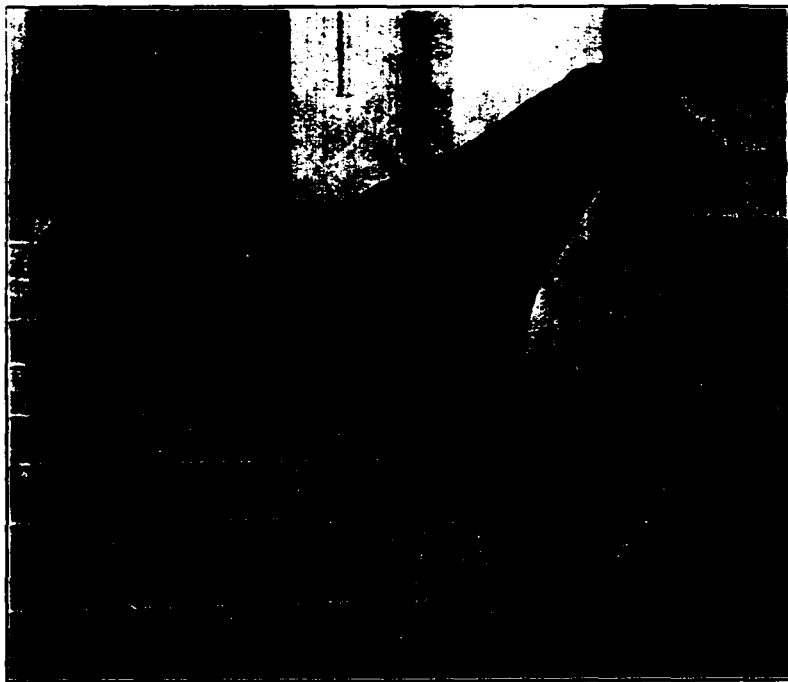
then be increased to four feet and six inches. From this height four inches at a time will be added until contest is decided, unless in the opinion of the judges such an elevation would be considered dangerous. Only three jumps will be allowed each horse at the different heights.

Prizes: A pair of spurs and ribbons.

Winners: 1. Major T. N. Horn's "Cæsar;" 2. Lieutenant E. J. Pike's "Red;" 3. Captain J. E. Fechet's "Rattler."

OFFICER'S CHARGERS.

THE accompanying cut is from a photograph of a horse purchased for the Front Royal Remount Depot, by Captain C. H. Conrad, Jr., who writes regarding him as follows: "I am sending you a photograph of 'Gamecock,' a horse now being ridden by Colonel D. S. Stanley. This horse was



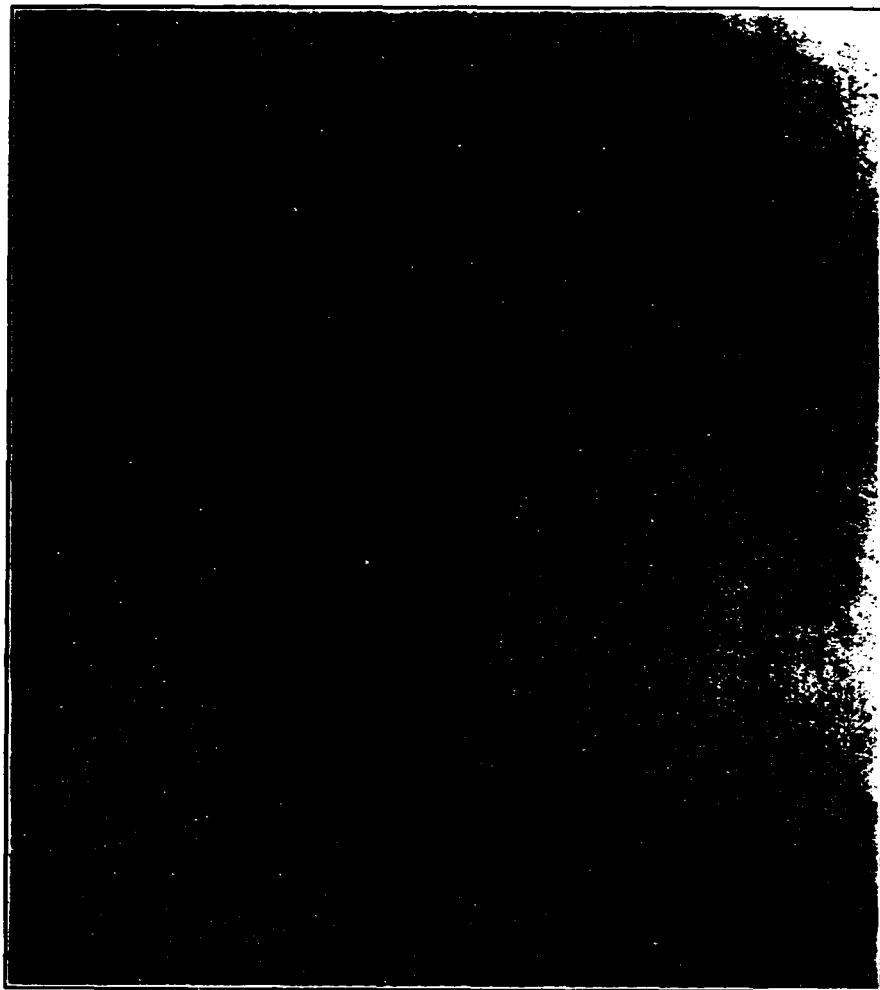
GAMECOCK.

purchased by me as a three year old. He was kept at this depot for about six months and sent to Washington for use as a mount for an officer. I have a number of colts at this place that will in time make the same kind of horse. In conformation he is considered about as close to the type of charger as one would



SIR EDWARD.

The property of the Hon. Adam Beck, of London, Canada.
 Bay gelding: 16 hands, 1 inch high, seven years old; bred by Tupelo (Thoroughbred); dam a graded mare of hunter class; weight 1,205 pounds; girth 77 inches; bone below knee 8½ inches.



SIR THOMAS.

The property of Hon. ADAM BECK, of London, Canada.
 Bay gelding, 15 hands, 3½ inches, seven years old; sired by Philosophy (Thoroughbred), out of a
 graded mare of hunter class, weight 1,100 pounds, girth 24 inches, bone below knee 8½ inches.

like to have. His measurements approach about the ideal of the Austrian cavalry horse and he has been pronounced by Colonel Dorst, who served as Military Attaché at Vienna for some years, as one of the best young horses he has seen in this country.

"Please note that in 'Gamecock's' picture, his tail has been tied up and the photograph taken with feet apart to show bone and hock."



C.ESAR.

Property of Major T. N. HORN, 4th Field Artillery. Black gelding; 16 hands; 7 years old; weight 1,175 pounds; thoroughbred sire, range mare dam.

"This horse will not be fully developed until six or seven years of age, but on conformation, is, at his present state of development, considered the most desirable type for military purposes."

"He should grow one-half inch more and should weigh, when mature, about eleven hundred and twenty-five pounds."

"He rides and drives and jumps nicely over four feet and has jumped five feet. He was hunted as a three year old."

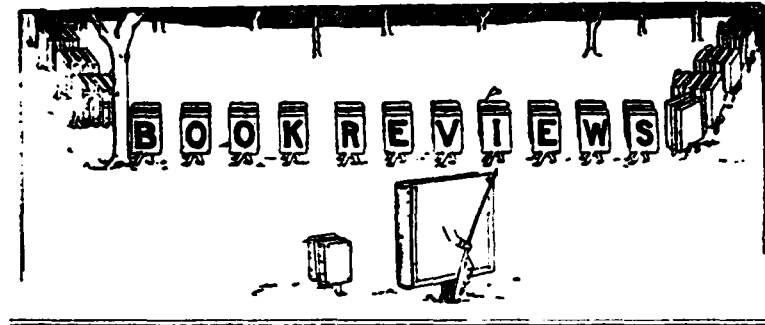
The following is the breeding and description of the horse:

By "Semper Ego," thoroughbred, out of a standard bred mare; age, five and one-half years; height fifteen hands and three and one-half inches; weight 1,060 pounds; girth seventy-two inches.

The two cuts of Canadian horses—Sir Edward and Sir Thomas—are from photographs furnished by Major H. T. Allen, General Staff, who considers these two horses as good types of chargers.

The cut of the horse Caesar is from a photograph supplied by the owner Major T. N. Horn, Fourth Field Artillery. This horse was a twice winner at the recent Horse Show held at Fort Leavenworth, Kansas.

These cuts of horses and of others that may hereafter be published in the CAVALRY JOURNAL are presented with a view of their being freely criticised by our readers and their merits and defects being pointed out, this for the purpose of bringing forth the ideas of our horsemen as to the best type of chargers for our officers and as a matter of instruction for our younger officers.



What Horse For The Cavalry *

This work is written by a patriotic American who writes solely because he is patriotic and a horse-lover and not because he needs the money.

Mr. Borden, in company with some of us, does not highly regard the type of horse set as our standard by General Orders No. 27, War Department, 1911, and argues strongly for a smaller and more handy horse that requires less care; one that can endure more hardships and is more docile—less subject to nerves

He finds this animal in the Arab and half bred Arab, which forms a strong strain in the great governmental studs of European countries, and thinks such an animal should be not over fifteen hands high and well bred.

Accordingly the author regards the thoroughbred as the peer of all others for the one purpose for which he is bred—racing; and the Irish hunter as the finest animal for cross-country racing

Both of these types need their own environment and being;

*"WHAT HORSE FOR THE CAVALRY." By Spencer Borden. J. H. Franklin Co., Fall River, Mass. 1912.

specialists in their line are not at all suitable for all around purposes; neither do they stand well under climatic hardship.

"The horse to win races is one thing. The horse for cavalry use, * * * is quite another thing.

The author gives the following quotation from one of the best veterinarians of the German army:

"The Prussian Government, after long efforts, has succeeded in improving its army horses; it has put some blood into them, even too much blood. * * * If it is true that the German cavalry horses have blood which gives them speed, it is recognized also in these days that they easily get leg-weary, that they are prone to sore backs, that they are delicate and require careful looking after to keep them in health, besides which they demand a lot of strong feeding.

"Also, after the great maneuvers, when these Prussian cavalry horses are fatigued, thin and sore, the regiments are compelled to come back to their garrisons by short journeys, *leading their horses by the heads.*"

The author with unexampled facilities at his disposal, has looked over the great studs of nearly all countries and put together the latest statistics about the cavalry horse. We owe him a debt of gratitude for the information he has made available for us. Every horse-lover will find it a joy to look at the magnificent animals so beautifully represented in the numerous illustrations of this book. It would be worth having even though one could not read.

X.

Troops on Riot Duty.* This work contains a complete discussion of the use of troops, both regular and militia, in time of civil disorder.

The tactical use of troops in the various situations that arise, in riot duty, is dealt with; general principles are prescribed and while endeavoring to avoid normal formations, such for-

"TROOPS ON RIOT DUTY." By Captain Richard Stockton, Second Infantry, N. G., N. J., and First Lieutenant Sackett M. Dickenson, Second Infantry, N. G., N. J. Four inches by five and one-quarter inches. Price, seventy-five cents. The Military Publishing Co., Trenton, N. J.

mations are believed to be adapted to secure the best results in certain circumstances are stated. A defect exists in that the use of the bayonet is suggested against mobs, apparently against the better judgment of the authors; and also that firing at mobs, through intervals in an advance line, by a reserve force is recommended.

The legal phase of martial law, the duties, rights, and immunities of troops in this peculiar status of society, are carefully gone into and this part of the work contains much that is of value both to the regular and militia establishments.

The work closes with an appendix in which important army regulations, articles of war, and cases, in reference to martial law as well as forms of orders or proclamations, best adapted to circumstances arising in time of civil disorder, are set forth.

L. H.

Fire Problems.*

This little book of eighty pages is of great interest to those studying or practicing field firing of small arms. The necessity of proper fire control and direction is accentuated throughout these studies.

"A good commander," says the author, "with a good shooting company, will always beat a similar commander with an indifferent company; but do not give your choke-bore to a tyro. * * * It will be seen that in the following problems, if five per cent. of the results depend upon whether the unit is an average one or an excellent one at range shooting, ninety-five per cent. depends on the action of the fire-unit commander; and so it is also on service. *Accurate shooting does not redeem, but only accentuates the effect of unsound orders.* Under the word 'fire-unit commander,' I include all ranks from a battalion commander to a lance corporal."

These problems are fired in India. It would be difficult to find suitable ranges for some of them in the United States,

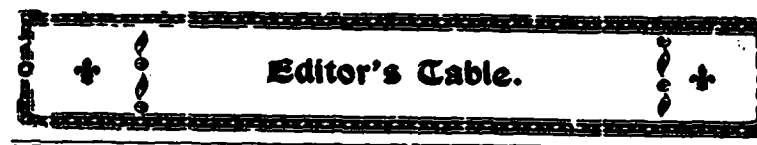
"FIRE PROBLEMS." By Major General T. D. Filcher, C. B. (Twenty-five Fire Problems with numerous outline sketches). Hugh Rees, Ltd. London. 1912. Price, 1s. 6d. net.

but many can be worked as map problems. Their theoretical solution could then be compared with the results obtained by actual firing and the lessons to be taught thus more forcibly impressed on the mind of the student.

The problems involved forces from two men up to a brigade of infantry and a battery. They include four situations for machine guns and one for night firing. The necessity of good ranging is dwelt upon throughout. "Too much stress cannot be laid on the necessity of teaching all men to be good judges of distances and it is wonderful how much they will improve by constant practice in this subject," writes General Pilcher. "Reliable and accurate mechanical range finders should be in the possession of every company, but complicated instruments have a way of getting out of order on active service, even if the nerves of the men working them are sufficiently calm to do the instrument justice, and besides the range finder often happens to be with the portion of the company which is not on the spot. *The range finders which a man always has with him are his eye and his rifle, and on these he must be taught to rely principally.*"

Does our average officer appreciate enough the importance of visual training?

P. E. P.



A MOBILE ARMY.

We all realize that our country urgently needs a larger, more economical and more efficient army. One of the first considerations in bringing this about is unity of thought and action in the army itself. So long as an officer's relative rank and pay depend on the relative proportion of his particular arm to the other arms, just so long will selfish interest, consciously or unconsciously, be to a great extent the basis of the argument he will find springing up in his mind as good and true reasons why his own branch should be increased and the other branches held stationary or decreased.

When an officer's official rating can be independent of the strength of his arm relative to the other arms, then will the bitterness of the argument about the relative needs of the various arms entirely vanish and the discussion become academic and limited to an attempt to clarify our minds so that the best decision may be reached in the matter. Even then errors may be made, but the decision will be based on the best opinion of the united minds of our officers.

When our officers can unite on a plan for the best organization of our army, based on both military and political conditions, Congress will give such an organization to us, and the individual members of Congress will be truly thankful for the cessation of the importunities that are made to them in behalf of one branch or another.

As a practical measure for securing this unity of thought and action of all the arms, the "One List for Promotion" bill,

devised by a group of infantry officers of ability and patriotism and embraced by a large number of officers of the other branches as soon as it was understood, seems to have died a natural death, the Infantry Association and the officers of that arm as a whole having failed to indorse it. The Infantry Association, representing the arm which is numerically nearly as strong in officers as all the other arms combined and representing the arm in which this scheme originated, seemed to be the one to take the lead in this matter. As it has not indorsed the measure, no other arm as a whole has done so and it appears to be dead.

The JOURNAL of the U. S. Cavalry Association has studiously avoided any criticism or attack on any other arm and it is a source of regret to this JOURNAL that our friends in the Infantry should have taken exception to the editorials in our last issue.

A strong argument for the increase instead of the decrease of our cavalry was entirely omitted from those editorials because representative infantry officers stated that the officers of our sister arm found that argument objectionable to them.

We would like to make one more attempt to find a basis on which all arms could unite, thus removing the bitterness that now exists and that must exist if every attempt to increase one arm is necessarily a move that adversely affects the officers of all other arms.

We honestly believe all the arguments that have been advanced for an increase of our cavalry. Also, we can see that an increase of the cavalry would relatively adversely affect the officers of the other arms.

A basis of possible union of interest has, in conversation, been suggested by several officers, representing all branches, viz:

The acceptance of the principle that the increase or decrease of the number of officers in any arm shall be borne by all the arms, in all grades, share and share alike, officers thus transferred to another branch to rank in the branch to which transferred as they would have ranked therein had they been originally commissioned in the branch to which transferred.

With such a principle publically accepted, we can go before Congress with clean hands, represent the army's needs a

a whole, and state the arguments for the relative proportions of the various arms. Congress then, not having to look out to checkmate selfish interest, can intelligently decide on a military policy and we can leave the responsibility for that decision entirely on those who make it, and cheerfully devote our thought to making out of the forces allowed the best engine of war that the conditions permit.

Will our sister arms agree to publically announce their acceptance of this principle?

COUNCIL OF NATIONAL DEFENSE.

The recent action relative to the reduction of cavalry for economy's sake, or for political ends, forcibly brings up the danger of piece-meal legislation. The advantages to the service and therefore to the country at large in having a well-balanced army properly organized and located would be seen in far greater efficiency and economy.

At the present time there are vital army measures pending in Congress that are opposed by the President and the War Department; the service hasn't yet fully harmonized all its larger differences; and the well-rounded army plan of the General Staff has not yet been completed. Under these conditions the importance of a Council of National Defense should appeal to all elements of the Army. Such a council would safe-guard the interests of the whole service and of each separate branch, and if that measure could be enacted now, the service could well dispense with all other proposed army legislation at this session of Congress.

In any consideration of a well-balanced army in reference to war readiness the first line must receive first consideration and this by statute is the Regular Army and the Organized Militia. We believe that to give this first line the solidarity that war preparedness demands, the ratio of regulars of all branches should be increased. However, in any combination that may be worked out, based on the law and existing organiza-

tions, it is clear that a decided deficiency in cavalry and other auxiliary troops exists. In any war on this continent cavalry would be the first arm needed and it should be prepared to strike hard and without delay. The quantity of organized militia cavalry is not only small but a considerable number borne on the rolls are ineffective. Rightly or wrongly, many of the States feel that the maintenance of the more expensive and difficult branches like field artillery and cavalry should be by the Federal Government. These branches are unquestionably expensive, but they are none the less essential. Therefore, in peace, measures should be taken to assure ample auxiliary troops, not only for the first line but a quota for the second. There is in fact, no branch of the regular mobile army adequate to the requirements of the country, and a reduction of any one would be prejudicial to the interests of the whole and suggestive of similar treatment of other branches. This leads back to the original subject, the Council of National Defense, upon which the final responsibility for our naval and military policies, including the ratio of regulars to each other and to the organized militia and volunteers should fall.

The proposed organization of this council is as follows: Secretaries of Army and Navy, Chairmen of the Committees on Appropriations and on Military Affairs of both Senate and House, Chief of Staff of the Army, the Aid for the Operations of the Fleet of the Navy, and Heads of the War and Navy Colleges. This bill has received formal approval by the President, the Secretary of War, the Secretary of the Navy and various distinguished officers of both departments.

Energy expended in bringing into existence this council of eminent men would be efforts directed towards the betterment of all branches in the broadest sense and would eventuate to the general welfare of the country. Once a well-defined military policy were outlined, regardless of the length of time involved in its accomplishment, all officers could and should support it.

THE REMOUNT PROBLEM.

We have been impressed of late with the seriousness with which the decrease in breeding of light horses is regarded by experts when considered from the viewpoint of its ultimate effect upon the available supply of remounts.

Besides we have been reliably informed that even now the Quartermaster's Department is encountering real difficulty in obtaining the remounts necessary to supply peace time casualties which do not exceed 2,400 horses per annum. In this connection we are told that, owing to the vast multitude of poor breeding stock in this country, it is difficult to obtain anything at all approximating to our needs for cavalry service at reasonable prices.

If this be true, and we have no reason for doubting it, it is our patriotic duty to enquire into the causes and seek a remedy for this condition. The wireless telegraph, the aeroplane and the dirigible balloon have come to stay and all must be considered as the factors in future wars. They all increase the importance of cavalry, whether it be acting as a large mounted reserve on the battlefield or supplementing the reconnaissance and patrol duty of the aerial scouts. Cavalry has always been of the greatest importance to our army; today it is more than ever indispensable.

Thoughtful statesmen have but to study the losses in horses in previous wars to see that some means must be sought for assuring supplies of horses in time of war, not depending on neighbors who might be unable or unwilling to meet the need in case of a sudden declaration of hostilities. In as small a war as that in South Africa, Great Britain required over 300,000 remounts in the first six months.

It is not an easy matter to obtain any exact data on which to estimate our present supply but we do know that it is only common sense that if we are having difficulty in obtaining 2,400 horses per year, that it would be no easy matter to secure one hundred times that many in a few months. We can probably make a close estimate from comparison with Great Britain.

In a recent census Great Britain found about 3,000,000 horses in the United Kingdom but only 17,000 of these were reported "suitable for military purposes." At the same proportion, our total supply today would be about 130,000 for field artillery and remounts. It is not hard to realize that many of these horses are hunters and fancy riding and driving horses and would be valued by their owners at almost prohibitive prices. If we were to have a war under present conditions we would be obliged to mount most of our cavalry on the big-footed, big-headed, soft-boned type of horse with which we are all familiar or else resort to draft animals. Either method would be worse than unsatisfactory and besides it would prove very expensive since the useful life of such animals would probably not exceed four months of field service.

What are the conditions that exist at present which are causing such a flurry on the subject of remounts?

(a) Within the past few years many of the states have actively discouraged racing so that many of our principle pad-docks have been broken up and their contents scattered over the entire world.

Mr. Pond, in the February number of *Bit & Spur* states, "During the past two years, it is estimated that about two and one-half million dollars worth of high class thoroughbred stock has been driven out of the United States owing to the cessation of racing. * * * The riding horse is really becoming scarce and, since racing has been discouraged in many of the states, the number of stallions available for breeding suitable remounts has been decreased until the finer blooded animals are becoming extinct."

Some advise the Government to encourage racing to repair the harm which has been done but it would probably require at least a quarter of a century to regain what has been lost. Besides considerable time will be needed in which to educate public opinion to the desirability of such action.

(b) Another cause is the falling off in the demand for lighter types owing to various influences among which we might mention bicycles, automobiles, trolley lines, the breaking up of large ranches in the west into smaller farms, fencing in pasture lands, etc.

While the first cause (a) mentioned is seriously effecting us by decreasing the number of blooded stallions suitable for breeding remounts, the latter influences (b) are destroying the market for the very class of horses which we must have for cavalry use. In this connection attention is invited to the tables prepared by George M. Rommel and appearing in the *JOURNAL* for November, 1911, pages 422 to 427.

It would appear that something radical must be done to create a demand for such horses or breeders will stop raising them.

The Quartermaster's Department has already taken a step in this direction by experimenting with remount stations. In fact the remount station at Fort Reno has passed the experimental stage. It is a success. The idea is, and it is a sound one, that the Government should procure its remounts from the three year olds and keep them until mature before issuing them to the service. The better grades of colts are either worked too hard by the farmers after becoming three years old or else they become so valuable from handling that they are not in the market for prices which the Government is willing to pay.

The Agricultural Department has a plan whereby it hopes to obtain about 2,400 remounts per year. This plan is probably familiar to all our readers but in brief it embraces the distribution of 100 stallions of varying types among the more prominent horse breeding localities. The Government to give free service to mares and in return to have the option on the three year old colts. The scheme is very good so far as it goes, provided the Government will pay enough to make the venture advantageous to the breeder. The present price of \$150 does not appear to us sufficiently high unless the Government contemplates buying practically all the colts. It costs more than \$100 to raise a colt to a three year old and many of the culls would bring but little in the market.

We believe, however, that nothing better offers at present than a combination of system of remount depots with the free service plan just referred to.

Such a plan involves a considerable outlay of money on the part of the Government but it should be the means of building

up an enormous industry which would provide us with a large reserve supply of remounts and, at the same time, enrich the nation out of all proportion to the expenditure.

There are today more than 23,000,000 horses in the United States and less than one per cent. of them are pure breds and only about one-fifth of these are light horses. A large portion of the remaining ninety-nine per cent., are mongrels of the poorest type. What an enormous power it would give us over the horse market of the world, if we could eventually practically eliminate the mongrels! The expense of raising and keeping the well bred animals would be the same as that for the mongrels while their increased market value would pay the expenses of sustaining at war strength a really efficient force of cavalry.

A CHIEF OF CAVALRY.

In the January, 1912. number of the CAVALRY JOURNAL—page 786—an unfortunate typographical error, that should have been detected by the proof reader, gave our friend, the Editor of the *Infantry Journal* an opportunity to comment upon the same as follows:

"Our esteemed contemporary, THE JOURNAL of the United States Cavalry Association, prints in its last issue certain decisions and recommendations of the Cavalry Branch Association at West Point, which are excellent in tone and spirit. They include, however, according to our contemporary's text, the rather remarkable recommendation:

"That every effort should be made to secure a permanent Chief of Staff with rank commensurate with the importance of his position and whose prominent duty should be to secure for the cavalry service the recognition it deserves in any general reorganization scheme, etc., etc.

"Which seems to be a sufficiently ambitious program to satisfy even the most radical."

Even a most casual reading of the entire paragraph from which the above extract is taken shows that reference was

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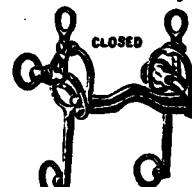
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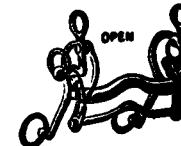
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made to a "Chief of Cavalry" and not to a "Chief of Staff" and that this was a typographical mistake, pure and simple.

However, the above is but preliminary to calling attention again to this recommendation made by the West Point Branch and reiterated by one of the other Branch Associations. Some two years and more ago, this important topic was discussed over and over again in the CAVALRY JOURNAL and all the arguments for this proposition, there are none against it, were fully set forth but the matter was unhappily allowed to be dropped.

Of course, it will be almost impossible to obtain any legislation on this subject at this session of Congress unless there may be a mere chance that the proposed scheme of reorganization, prepared by the General Staff, contains such a proposition and it should be accepted and adopted as a compromise measure for the general legislation tacked on to the army appropriation bill, known as the Hay amendments. If that scheme does not include a chief for each of the branches of the mobile army, our friends in Washington, of all arms, should use their best efforts to have such a proposition included.

The chances are, however, that no general reorganization scheme will be adopted at this session of Congress and it would be well for us to lay our plans for the campaign for obtaining a *Chief of Cavalry* at the next session. Let each of our branch Associations discuss this subject fully, giving every possible argument in favor of having such an official and the best plan of operation for obtaining one. Then send these conclusions to our Executive Council to be digested and acted upon. Only by some such consecrated action will we ever get this much desired legislation. Still it is believed that it should be included in the general reorganization scheme prepared by the General Staff.

CAVALRY.*

A new work with the above title has just been received. It is in the original French and by Captain Loir and with a preface by General Langlois, the well known writer and authority of the French Army.

The following extracts from a translation of the preface by General Langlois will be of interest to our cavalymen, especially at this time when it has been proposed to reduce our cavalry by one-third:

"* * * You have addressed yourself to the younger comrades of your arm who wish to get a general view of the operations of cavalry as well as of the various missions that can be entrusted to it; your object has been to show them how 'a tactical situation is handled.'

"Permit me to say that you are too modest. Your book will be one of the most useful to the field officers likely to command troops of all arms. Frequently, if the cavalry does not render all the service that is to be expected of it, it is because the commanding general, through not knowing its scope of action, does not know how to give a mission clear, specific and feasible. After having read carefully the pages that you have written, after having thought them over, every officer commanding a mixed force (force of all arms) will be in a position to make suitable use of the squadrons under his command, to exact nothing of them that they are unable to carry out, to demand of them all that they can give. All field officers, as well as those likely to become field officers will find your book a valuable guide.

"I shall say even that you should aspire higher and that your book will be of use even to our cavalry commanders. I take an example in order to make myself understood. In a large number of our maneuvers, we see confided to our cavalry the

"Cavalerie. Procédés Technique; La Cavalerie dans L'ensemble de L'Armée; La Cavalerie dans la Bataille." By Captain Loir, État-Major du XXe Corps D'Armée. With a preface by General Langlois, formerly a member of the Superior Council of War and member of the French Academy.

task of retarding columns of hostile infantry on the march; often, too often, this task is poorly executed. Those who will apply your principles, after having read the short study which you devote to the delaying action of cavalry and which you base upon a concrete case, will avoid committing these errors that we witness every year. Moreover, these principles are the very same that General Février put forth so masterfully when he was making his special role of the cavalry studied.

"Finally, in the higher commands, all the commanders have not had the opportunity during their careers, to handle cavalry and the orders that they give to it bear the evidence of this gap in their military instruction. The chapters in which you treat of the role of your arm *before during and after the battle* will enlighten them and will exert a salutary influence.

* * * * *

"I reproach you, however, for having taken all of your examples from the operations of the German cavalry in 1870-71. Perhaps you have feared that, in going as far back as the exploits of our cavalry of the first empire, it would be said that all is changed since then. This is a mistake, for man is always the same, and demoralized infantry, whatever be the rifle with which it is armed, has always been and will always be a prey for active cavalry. You have feared this criticism; it is a pity, for there was in the Murats, the Lasalles, etc., a keenness that the Germans of 1870 never had.

* * * * *

"Making an arm of your alert pen, you charge like a true cavalryman upon certain doctrines promulgated, after recent campaigns, as a result of a false interpretation of events or of preconceived ideas. You crystallize the ideas about fighting on foot. You rise strongly against that school 'which has held that cavalry combat is only a passage of arms of a former age.' History in hand, you prove that the improvement in armament, far from restricting the role of cavalry in modern warfare, on the contrary gives your arm an importance entirely new, and you are a thousand times right. If I desired to express my ideas in this regard, I should say that each

nation should have as much cavalry as is permitted on the one hand by their financial resources of the country and on the other by its horse population; never will one have too much cavalry.

"Evidently you have recapitulated the lessons of your masters, as you have told me, of General Bourdériat whose teachings you have followed, and of General de Chabot under whose orders you have had the good fortune to be. You have supported yourself by the precepts of many other noted military men whom you have frequently cited: De Brack, Ardant du Pie, de Galiffet, de Conitet, Cardot, Tremaue, Geslin de Bourgogne, etc., etc., you could not select better models and you have interpreted their teachings like a true cavalryman, fond of his arm, animated by an ardent faith and your conviction is essentially communicable. 'At the enemy, without counting his ranks,' you have said. That is your directing principle. Thus, in closing your book, one seems to be ready to charge, saber in hand at the enemy!"

BRANCH ASSOCIATIONS.

The agitation caused in the cavalry service by the proposition to reduce the strength of our cavalry, although an evil in itself, has brought forth good along two lines.

First, it has caused many of our young officers to realize that the Cavalry Association exists for a purpose other than that of publishing journal and has brought many of them into the fold. There is, however, room for the remaining officers that are not now members.

Second, it has had the effect of causing Branch Associations to be organized at several of the larger garrisons and regimental posts. Such Branch Associations are now formed at West Point, Washington, Fort Leavenworth and in the following regiments: Second, Third, Fifth, Ninth, Tenth, Eleventh and Thirteenth.

It is understood that the officers of the Fifteenth Cavalry at Fort Myer are members of the Washington Branch and

those of this regiment at Fort Leavenworth are members of that Branch.

The Executive Council are using their best efforts to have the other regiments take up this matter but some of them are so scattered that, at present, little can be done by them in getting together on this question.

The following are the provisions of the Constitution of the U. S. Cavalry Association regarding Branch Associations:

ARTICLE VIII.

SEC. 10. It shall be the duty of the Executive Council to organize Branch Associations at posts where there are officers of the regular cavalry stationed and in each State, Territory and the District of Columbia having cavalry belonging to the organized militia, as contemplated in Article XV.

SEC. 11. The Executive Council shall also, by correspondence and otherwise, endeavor to keep active the Branch Associations. Any propositions looking to the promotion of the interests of the cavalry, signed by twenty members or by a majority of the Executive Council, shall be submitted to the Branch Associations, and to all regular members not members of Branch Associations, for an expression of opinion by means of a vote.

ARTICLE XV.

BRANCH ASSOCIATIONS.

SECTION 1. Branch Associations of the United States Cavalry Association may be organized at each station where there are cavalry officers of the regular service stationed and in each State, Territory and the District of Columbia having cavalry belonging to the organized militia.

SEC. 2. Each Branch Association shall elect a President and Secretary and such other officers as it deems necessary to successfully conduct the affairs of the Branch Association.

SEC. 3. All correspondence from the Executive Council to members belonging to Branch Associations shall be addressed through the Secretary.

Sec. 4. The Branch Association shall meet from time to time to read essays, papers, etc., and to discuss matters pertaining to the United States Cavalry Association. It shall be the duty of the Branch Associations to solicit articles for publication in the JOURNAL; to obtain proxies or the votes or opinions of members on any matter that may be brought before the Association and forward the same to the Secretary. Any proposition submitted by the Branch Association to the Executive Council looking to increased efficiency may be submitted by the Executive Council to other Branch Associations for opinion and vote.

Copies of the Constitutions of such Branch Associations as have forwarded them to the Secretary of the U. S. Cavalry Association will be furnished upon application..

THE BREEDER'S CUP.

Herewith is a cut from a photograph of the horse "Devvisor" that won the Breeder's Cup, in the Charger Class, given by the U. S. Cavalry Association for the best horse of this class shown at the various Horse Shows in the Virginia Horse Show Circuit during the year 1911.

Horses were entered in this class at eleven Horse Shows which were held as follows: Richmond, Va., May 22d; Culpepper, Va., July 4th; Manassas, Va., July 26th; Orange, Va., August 2d; Front Royal, Va., August 15th; Berryville, Va., August 23d; Keswick, Va., May 16th; Washington, D. C., May 4th; Upperville, Va.; Charlottesville, Va.; and Warrenton, Va., the dates on which the last three were held not being given in the report furnished us.

The owner reports that the photograph is not of the best. Captain Conrad writes of this horse: "I saw this colt before he was bought by Mr. Benner and was greatly pleased with him."

The following is his description, etc:

Name: "Devvisor."

Breeding: By "Alenscot" out of "Sunlight."

Age: Four years in March, 1911.

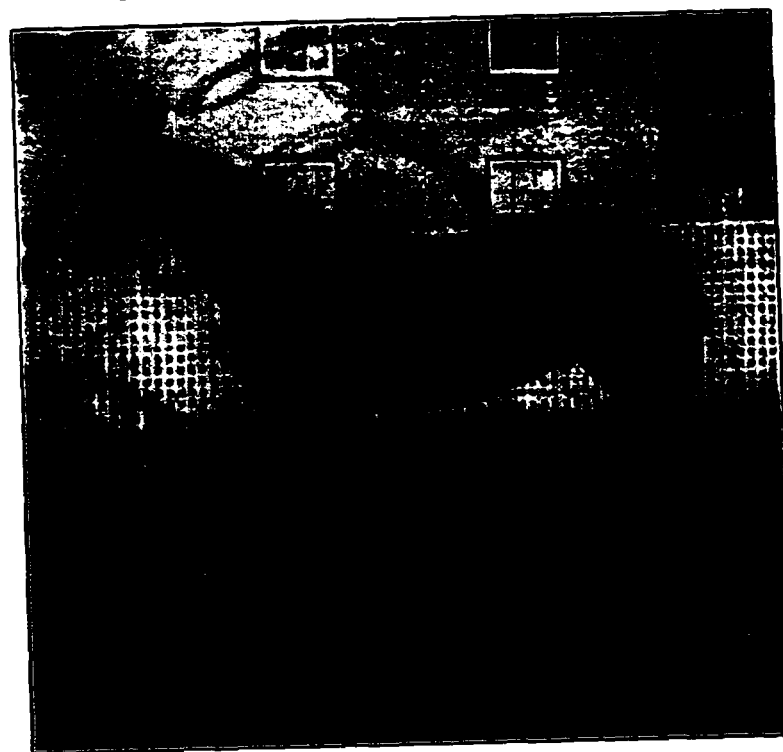
Height: Sixteen hands and one-half inch.

Weight: Eleven hundred and fifty pounds.

Girth: Seventy-five and one-half inches.

Bone: Three inches below knee—eight and one-half inches.

This horse is Kentucky bred, registered No. 56,675; a chestnut gelding; showy but manageable. Bought as a two



DEVISOR.

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year old for \$1,000. For sale now, the price asked being \$2,500. Is now owned by Mrs. U. D. Benner, Warrenton, Va.

The cup, to cost one hundred dollars, is being made by Black, Starr & Frost, of New York. It was expected that a cut of the same would be sent us in time for publication in this number of the CAVALRY JOURNAL.



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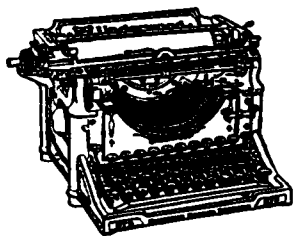
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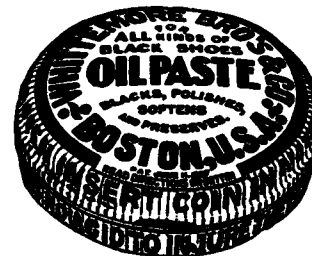
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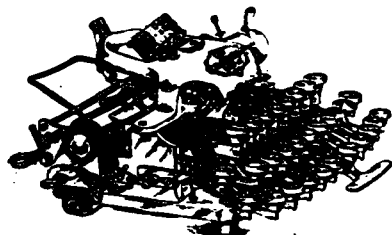
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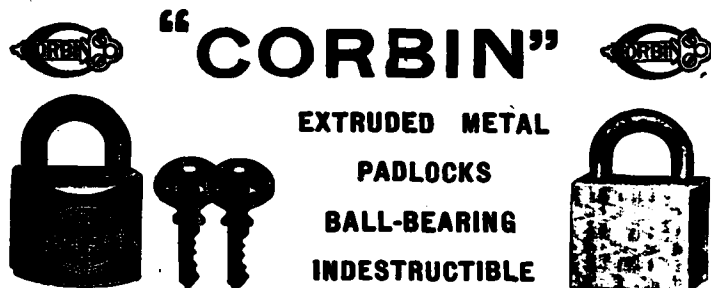
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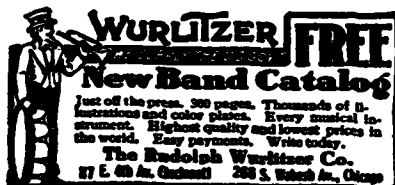
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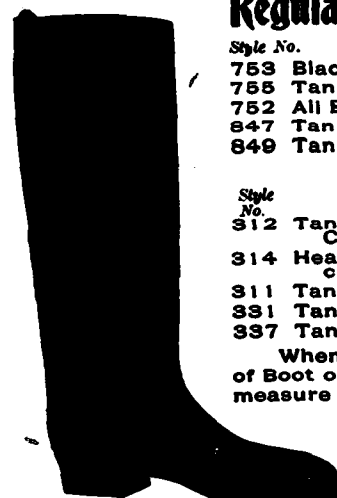
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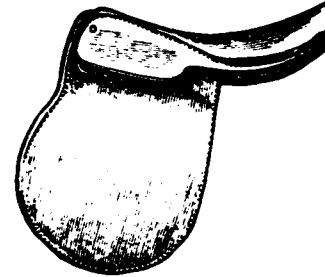
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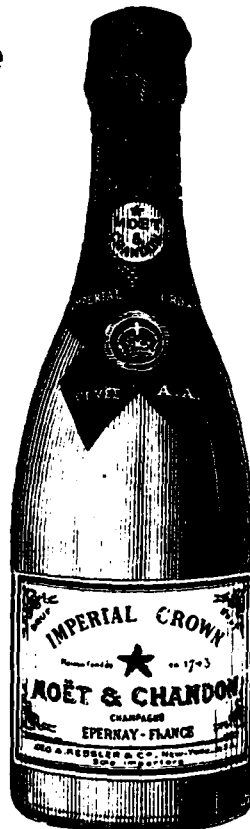
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INDEX TO VOLUME XXIII.

JOURNAL OF THE U. S. CAVALRY ASSOCIATION.

JULY 1, 1912, TO JUNE 30, 1913.

Numbers 91 to 96, inclusive.

INDEX.

	PAGE
Action of Cavalry, The Strategic. (Reprint).....	125
Advanced Guard, Machine Guns with the.....	14
Advice, a Word of. (Translation).....	853
Aeroplane, Scout Type of Military. (Military Notes).....	860
Aeroplanes and the Cavalry, The. (Reprint).....	123
Aircraft in the Service of Reconnaissance, Cavalry and. (Translation).....	826
American Horses for Cavalry Use. (Reprint).....	672
Applied Minor Tactics. (Book Review).....	168
Armament, Its Organization and, Cavalry. (Reprint).....	845
Armies, The Operation of the Balkan.....	908
Army Cooks, Manual for. (Book Review).....	705
Army Horse, The. (Military Notes).....	343
Army, Horseshoes of the Russian.....	746
Army, Price of Remounts in Russian. (Military Notes).....	1063
Army Remount Question, The. (Reprint).....	804
Army Remounts. (Reprint).....	683
Army, The Chilian.....	97
Army, The New Organization of the Swiss.....	222
Aviation Squadron in the Connecticut Maneuver Campaign, The.....	
Barrels versus Buckets.....	455
Battle of Loule Bourgas or Karagatch, The. (Translation).....	21
Battlefield, Communications and Reconnaissance on the.....	837
Branding Government Horses. (Military Notes).....	990
Breeding in France, Horse—Hippometria. (Military Notes).....	531
Brilliant Role of the Turkish Cavalry, The. (Translation).....	1059
Buckets versus Barrels.....	832
Campaign in Alsace. (Book Review).....	21
Carbine for the Cavalry, A. (Military Notes).....	868
Carbine in the Japanese Army, New. (Military Notes).....	694
Carbine, Rifle versus. (Editor's Table).....	534
Cavalry, A Carbine for the. (Military Notes).....	883
Cavalry, A Chief of. (Editor's Table).....	694
Cavalry and Aircraft in the Service of Reconnaissance. (Translation).....	543
Cavalry at the Siege of Harper's Ferry in 1862, The.....	826
Cavalry Demolition Pack, Proposed.....	897
Cavalry Depots, Swiss Remounts and. (Reprint).....	70
Cavalry Division, Notes on the Organization of a. (Translation).....	684
Cavalry Drill Regulations, Notes on the New Russian.....	1033
Cavalry Drill Regulations, Notes on the New Russian.....	246
Cavalry Drill Regulations, Our.....	559
Cavalry Drill Regulations, The New Russian. (Translation).....	614
Cavalry, Employment of. (Military Notes).....	653
Cavalry Equipment, The New.....	531
Cavalry Equipment, The New. (Military Notes).....	253
Cavalry Horse, The Trotter as a. (Reprint).....	635
Cavalry in Maneuvers.....	527
Cavalry in War. (Translation).....	814
Cavalry, Instruction and Training of.....	440
Cavalry, Its Organization and Armament (Reprint).....	290
	760
	845

INDEX TO VOLUME XXIII

iii

	PAGE
Cavalry, Long Marches of Infantry and.....	958
Cavalry, Morgans in the. (Reprint).....	119
Cavalry Needs, Some.....	397
Cavalry Organization (Editor's Table).....	1078
Cavalry, Organization of the French.....	765
Cavalry, Our. (Reprint).....	1000
Cavalry, Our. (Book Review).....	535
Cavalry Posts versus Mixed Posts. (Military Notes).....	700
Cavalry Ralls Their Value and How Made.....	227
Cavalry Reconnaissance and Transmission of Information by Modern Methods.....	25
Cavalry Reorganization, Etc. (Editor's Table).....	1071
Cavalry Reserve, A. (Military Notes).....	348
Cavalry Reserve Corps. (Military Notes).....	533
Cavalry Screen, The.....	89
Cavalry, Some Notes on German. (Reprint).....	505
Cavalry System, Some Defects of Our. (Reprint).....	1048
Cavalry, The Aeroplanes and the. (Reprint).....	123
Cavalry, The Brilliant Role of the Turkish. (Translation).....	832
Cavalry, The Confederate. (Reprint).....	323
Cavalry, The Importance of. (Reprint).....	307
Cavalry, The Necessity for Well Organized.....	723
Cavalry, The Service of Reconnaissance, with Special Regard to Divisional. (Translation).....	321
Cavalry, The Strategic Action of. (Reprint).....	125
Cavalry, The Strategical Employment of. (Reprint).....	510
Cavalry Use, American Horses for. (Reprint).....	672
Cavalry, What Horse for the. (Editor's Table).....	357
Cavalrymen, Forgotten.....	553
Charger, The.....	5
Chickamauga, The Truth About.....	185
Chief of Cavalry, A. (Editor's Table).....	543
Chief, Let Us Have A. (Translation).....	485
Chilian Army, The.....	97
Club Rates. (Editor's Table).....	1081
Coat, The Service. (Military Notes).....	145
Colony, A Soldier.....	445
Color of Horses. (Military Notes).....	860
Colors, Notes on Horse. (Military Notes).....	699
Communications and Reconnaissance on the Battlefield. (Capt. G. W. Moses).....	990
Confederate Cavalry, The. (Reprint).....	323
Conformation of the Horse.....	207
Contests, International. (Reprint).....	678
Cooks, Manual for Army. (Book Review).....	705
Corps, Cavalry Reserve. (Military Notes).....	533
Daily Diary of Equitation Work at the Mounted Service School.....	30
Daily Diary of Equitation Work at the Mounted Service School.....	218
Defects of Our Cavalry System, Some. (Reprint).....	1048
Degree, Jumpers of High. (Reprint).....	676
Demolition Pack, Proposed Cavalry.....	70
Diary of Equitation Work at the Mounted Service Schools, Daily.....	218
Discussion of a Napoleonic Maneuver. (Translation).....	1022
Divisional Cavalry, The Service of Reconnaissance with Special Regard to. (Translation).....	331
Double versus Single Rank. (Editor's Table).....	1070
Drill Regulations, Notes on the New Russian Cavalry.....	246
Drill Regulations, Notes on the New Russian Cavalry.....	559
Drill Regulations, The New Russian Cavalry. (Translation).....	653
Drill Regulations, Our Cavalry.....	614
Duty, Troops on Riot. (Book Review).....	881
Education, Modern Riding and Horse. (Book Review).....	168
Employment of Cavalry. (Military Notes).....	531

INDEX TO VOLUME XXIII.

	PAGE
Employment of Cavalry, The Strategic. (Reprint)	510
Equipment, The New Cavalry. Capt. Edward Davis	253
Equipment, The New Cavalry. Capt. Edward Davis	635
Equipment, The New Cavalry. (Military Notes) Capt. Stodier	527
Equitation Work at the Mounted Service School, Daily Diary of	30
Equitation Work at the Mounted Service School, Daily Diary of	218
Eugenics versus Euthenics. (Editor's Table)	546
Euthenics, Eugenics versus. (Editor's Table)	546
Field Glasses. (Military Notes) Maj. Alonzo Gray	150
Field Service. (Book Review)	166
Flag, Under the Old. (Book Review) Gen. Jas. H. Wilson	1067
Foot and Military Shoe, Soldier's. (Book Review)	707
Forgotten Cavalrymen Col. Eben Swift	353
Form and Use of the Saber, The Lieut. Gen. S. Patton, Jr.	752
Fort Keogh Remount Depot Vet. G. E. Griffin	607
French Cavalry, Organization of the An Officer Abroad	765
General Rodenbough. (Editor's Table)	883
General Staff Reorganization Plan, The. (Editor's Table)	712
Generals, Some Recollections. (Military Notes)	1060
German Cavalry, Some Notes on. (Reprint)	505
German Tactics. (Book Reviews)	702
Glasses, Field. (Military Notes) Maj. Alonzo Gray	150
Gunnery. (Book Review)	705
Guns, in the Service of Scrutiny and Information, Machine. (Translation)	520
Guns, Marching to the Sound of the. (Reprint)	816
Handbook and Instructor, Scouts. (Book Review)	541
Head Hunters of Northern Luzon. (Book Review)	539
Heated Horse, Watering the. (Military Notes) Vet. G. E. Griffin	151
Horse and its Supply, The Military. (Reprint)	502
Horse Breeding in France, Hippometries. (Military Notes)	1059
Horse Colors, Notes on. (Military Notes) Lieut. Col. Chas. E. Woodruff	699
Horse, Conformation of the Vet. G. E. Griffin	207
Horse Education, Modern Riding and. (Book Review)	168
Horse for the Cavalry, What. (Editors Table)	357
Horse Plague, The Kansas. (Military Notes) Vet. G. E. Griffin	530
Horse, The Army. (Military Notes)	343
Horse, The Trotter as a Cavalry. (Reprint)	814
Horse, The Useful Morgan. (Reprint)	811
Horse, Watering the Heated. (Military Notes) Vet. G. E. Griffin	151
Horses, Branding Government (Military Notes)	531
Horses, Color of. (Military Notes)	860
Horses for Cavalry Use, American. (Reprint)	672
Horses, Needs and Scarcity of. (Reprint)	670
Horses, Swimming. (Military Notes)	864
Horseshoes of the Russian Army Capt. N. K. Averill	746
Hunters, of Northern Luzon, Head. (Book Reviews)	539
Importance of Cavalry, The. (Reprint)	307
Increased Cost of Living. (Editor's Table)	715
Individual Training of the Russian Trooper, The Capt. N. K. Averill	965
Inequalities of Promotion. (Editor's Table)	174
Infantry and Cavalry, Long Marches of An Officer Abroad	958
Infantry Officers at Saumur. (Reprint)	142
Instruction and Training of Cavalry Capt. H. R. Hickok	760
Instructor, Scouts Handbook and. (Book Review)	541
Interesting Manila. (Book Review)	706
International Contests. (Reprint)	678
International Map of the World. (Military Notes)	1057
Japanese Army, A Visit to the Thirteenth Division Lieut. Burnett	422
Japanese Army, New Carbine in the. (Military Notes)	534
Japanese in Manchuria. (Book Review)	161
Jumpers of High Degree. (Reprint)	676
Kansas Horse Plague, The. (Military Notes) Vet. G. E. Griffin	530

INDEX TO VOLUME XXIII.

	PAGE
Lava Capt. N. K. Averill	945
Leader and His Squad, The Squad Lieut. Wm. W. Edwards	776
Let Us Have a Chief. (Translation)	488
List for Promotion, One. (Editor's Table)	170
Living, Increased Cost of. (Editor's Table)	715
Long Distance Rides of Twenty-seven Patrols. (Military Notes)	339
Long March, A Lieut. Col. A. K. Mizner	792
Long Marches of Infantry and Cavalry An Officer Abroad	958
Luzon, Head Hunters of Northern. (Book Review)	539
Luzon, The 1912 Maneuvers in the Department of Capt. A. E. Saxton	771
Machine Guns in the Service of Scrutiny and Information. (Translation)	520
Machine Guns with the Advance Guard Lieut. A. E. Phillips	14
Manchuria, Japanese in. (Book Review)	161
Manchus, The. (Military Notes)	697
Maneuver Campaign, The Aviation Squadron in the Connecticut Capt. Hennessey	455
Maneuver, Discussion of a Napoleonic. (Translation)	1022
Maneuvers, Cavalry in Capt. Moses	440
Maneuvers in the Department of Luzon, The 1912 Capt. A. E. Saxton	771
Manila, Interesting. (Book Review)	706
Manual for Army Cooks. (Book Review)	705
Maps, Method for Numbering Road Junctions on. (Military Notes)	1056
Maps of the World, International. (Military Notes)	1057
March, A Long Lieut. Col. A. K. Mizner	792
Marches of Infantry and Cavalry, Long An Officer Abroad	958
Marching to the Sound of the Guns. (Reprint)	816
Memories of Two Wars. (Book Review)	540
Method for Numbering Road Junctions on Maps. (Military Notes) Lieut. C. R. Mayo	1056
Military Aeroplanes, Scout Type of. (Military Notes)	880
Military Horse and Its Supply, The. (Reprint)	502
Military Shoe, Soldiers Foot and. (Book Review)	707
Minor Tactics, Applied. (Book Review)	168
Minor Tactics, Studies in. (Reprint)	478
Mobilitate Vigemus. (Military Notes) Capt. McCoy	524
Modern Methods, Cavalry Reconnaissance and Transmission of Information by Capt. H. Rubottom	25
Modern Riding and Horse Education. (Book Review)	168
Morgans in the Cavalry. (Reprint)	119
Mount, An Unsuitable. (Military Notes) Maj. Gray	529
Mounted Service School, Daily Diary of Equitation Work at the	30
Mounted Service School, Daily Diary of Equitation Work at the	218
Necessity for Well Organized Cavalry, The Lieut. Col. F. S. Foltz	723
Needs and Scarcity of Horses. (Reprint)	670
Needs, Some Cavalry Capt. Fitch	367
New Carbine in the Japanese Army. (Military Notes)	534
New Cavalry Equipment, The Capt. Edward Davis	253
New Cavalry Equipment, The Capt. Edward Davis	635
New Cavalry Equipment, The. (Military Notes) Capt. Stodier	527
New Organization of the Swiss Army, The	222
New Russian Cavalry Drill Regulations, The. (Translation)	653
Non-commissioned Officers, Sketching for Lieut. Wm. M. Edwards	77
Notes on German Cavalry, Some. (Reprint)	505
Notes on Horse Colors. (Military Notes) Lieut. Col. Chas. E. Woodruff	699
Notes on the New Russian Cavalry Drill Regulations Capt. N. K. Averill	246
Notes on the New Russian Cavalry Drill Regulations Capt. N. K. Averill	559
Notes on the Organization of a Cavalry Division. (Translation)	1083
Numbering Road Junctions on Maps, Method for. (Military Notes)	1056
Observations of an Officer Abroad Capt. Geo. T. Langhorne	58
Observations on the Work at Saumur Capt. Babcock	449

Officer Abroad, Observations of an.....	Capt. Geo. T. Langhorne	PAGE	58
Officers at Saumur, Infantry. (Reprint).....		142	
Olympic Games, Stockholm, Sweden, 1912, The United States Army in the Riding Competitions of the.....	Lieut. Col. Folts and Capt. Henry	369	
One List for Promotion. (Editor's Table).....		170	
Operations of the Balkan Armies, The.....	Maj. R. A. Brown	908	
Organisation and Armament, Its, Cavalry. (Reprint).....		845	
Organisation of a Cavalry Division, Notes on the. (Translation).....		1033	
Organisation of the French Cavalry.....	An Officer Abroad	765	
Organisation of the Swiss Army, New.....		222	
Organisation, Promotion and. (Editor's Table).....		361	
Organisation, The Relation of, Promotion to.....	Capt. Geo. Van Horn Mosley	239	
Organized Cavalry, The Necessity for Well.....	Lieut. Col. F. S. Folts	723	
Organization, Cavalry. (Editor's Table.).....		1078	
Our Cavalry. (Book Review).....		635	
Our Cavalry. (Reprint).....	Gen. Philip St. George Cooke	1000	
Our Cavalry Drill Regulations.....	Lieut. C. R. Mayo	614	
Pack, Proposed Cavalry Demolition.....	Lieut. G. V. Strong	70	
Patrols, Long Distance Rides of Twenty-seven. (Military Notes).....		339	
Photograph, An Unique. (Military Notes).....		1064	
Pieces, Tail. (Editor's Table).....		717	
Pistol, Saber vs., A Solution. (Military Notes).....	Capt. N. K. Averill	341	
Plague, The Kansas Horse. (Military Notes).....	Vet. Griffin	530	
Policy.....	Commander J. S. Mc Kean, U. S. Navy	620	
Posts versus Mixed Posts, Cavalry. (Military Notes).....		700	
Price of Remounts in Russian Army. (Military Notes).....		1063	
Promotion and Organization. (Editor's Table).....		361	
Promotion, Inequalities of. (Editor's Table).....		174	
Promotion, One List for. (Editor's Table).....		170	
Promotion to Organization The Relation of.....	Capt. Geo. Van Horn Mosley	239	
Proposed Cavalry Demolition Pack.....	Lieut. G. V. Strong	70	
Protection in War. (Book Review).....		352	
Rakda, Their Value, and How made, Cavalry.....	Capt. C. R. Day	227	
Rank, Relative. (Editor's Table).....		886	
Rasp, The. (Book Review).....		104	
Recollections, Some, Generals. (Military Notes).....		1060	
Reconnaissance and Transmission of Information by Modern Methods. Cavalry.....	Capt. H. Rubottom	25	
Reconnaissance, Cavalry and Aircraft in the Service of. (Translation).....		826	
Reconnaissance on the Battlefield, Communications and.....	Capt. G. W. Moses	990	
Reconnaissance with Special Regard to Divisional Cavalry, The Service of. (Translation).....		331	
Regulations, Notes on the New Russian Cavalry Drill.....	Capt. N. K. Averill	246	
Regulations, Notes on the New Russian Cavalry Drill.....	Capt. N. K. Averill	559	
Regulations, Our Cavalry Drill.....	Lieut. C. R. Mayo	614	
Regulations, The New Russian Cavalry Drill. (Translation).....		653	
Relation of Promotion to Organization, The.....	Capt. Geo. Van Horn Mosley	239	
Relative Rank. (Editor's Table).....		886	
Remount Depot, Fort Keogh.....	Vet. G. E. Griffin	607	
Remount Question, The Army. (Reprint).....		804	
Remounts and Cavalry Depots, Swiss. (Reprint).....		684	
Remounts, Army. (Reprint).....		683	
Remounts in the Russian Army, Price of. (Military Notes).....		1063	
Reorganization Plan, The General Staff. (Editor's Table).....		712	
Reserve, A Cavalry. (Military Notes).....	Maj. C. D. Rhodes	348	
Reserve Corps, Cavalry. (Military Notes).....		533	
Reorganization, Cavalry, Etc. (Editor's Table.).....		1071	
Rides of the Twenty-seven Patrols, Long Distance. (Military Notes).....		339	
Riding and Horse Education, Modern. (Book Review).....		168	
Riding Competition of the Olympic Games, Stockholm, Sweden, 1912, The United States Army in the.....	Lieut. Col. Folts and Capt. Henry	369	
Riding School at Stromsholm. (Military Notes).....		157	

Rifle of the Future, The. (Military Notes).....		PAGE	864
Rifle versus Carbine. (Editor's Table).....		883	
Riot Duty, Troops on. (Book Reviews).....		881	
Road Junctions on Maps, Method for Numbering. (Military Notes) Lieut. C. R. Mayo.....		1066	
Russian Army, Horseshoes of the.....	Capt. N. K. Averill	746	
Russian Cavalry Drill Regulations, Notes on the.....	Capt. N. K. Averill	246	
Russian Cavalry Drill Regulations, Notes on the New.....	Capt. N. K. Averill	559	
Russian Cavalry Drill regulations, The New. (Translation).....		663	
Russo-Japanese War, The. (Book Review).....		537	
Saber, The Form and Use of the.....	1st. Lieut. Geo. S. Patton, Jr.	752	
Saber vs. Pistol, A Solution. (Military Notes).....	Capt. N. K. Averill	341	
Saumur, Infantry Officers at. (Reprint).....		142	
Saumur, Observations on the Work at.....	Capt. Babcock	449	
Scarcity of Horses, Needs and. (Reprint).....		670	
School at Stromsholm, Riding. (Military Notes).....		157	
Scout Type of Military Aeroplanes. (Military Notes).....		860	
Scouts Handbook and Instructor. (Book Review).....		541	
Screen, The Cavalry.....	Capt. G. W. Moses	89	
Scrutiny and Information, Machine Guns in the Service of. (Translation).....		520	
Service Coat, The. (Military Notes).....	Capt. C. E. Stodter	145	
Service, Field. (Book Review).....		166	
Service of Reconnaissance with Special Regard to Divisional Cavalry, The (Translation).....		331	
Shoe, Soldiers Foot and Military. (Book Review).....		707	
Siege of Harper's Ferry in 1862, The Cavalry at the.....	Maj. Gen. Geo. B. Davis	897	
Single versus Double Rank. (Editor's Table.).....		1083	
Sketching for Non-commissioned officers.....	Lieut. Wm. M. Edwards	77	
Soldier Colony, A.....	Maj. Gray	445	
Soldiers Foot and the Military Shoe. (Book Review).....		707	
Soldiers, Tin. (Book Review).....		169	
Squad Leader and His Squad, The.....	1st Lieut. Wm. M. Edwards	776	
Squadron in the Connecticut Maneuver Campaign, The Aviation Capt. Hennessey.....		455	
Staff Work. (Book Review).....		163	
Strategic Action of Cavalry, The. (Reprint).....		125	
Strategical Employment of Cavalry, The. (Reprint).....		510	
Strength, War. (Editor's Table).....		709	
Stromsholm, Riding School at. (Military Notes).....		157	
Studies in Minor Tactics. (Reprint).....		478	
Swimming Horses. (Military Notes).....		864	
Swiss Remounts and Cavalry Depot. (Reprint).....		684	
Tactics, Applied Minor. (Book Review).....		168	
Tactics, German. (Book Review).....		702	
Tactics, Studies in Minor. (Reprint).....		478	
Tail Pieces. (Editor's Table).....		717	
Thoroughbred and Trotting Blood. (Military Notes).....		152	
Tin Soldiers. (Book Review).....		169	
Training of Cavalry, Instruction and.....	Capt. H. R. Hickok	760	
Training of the Russian Trooper, The Individual.....	Capt. N. K. Averill	965	
Transformations of War. (Book Review).....		868	
Transmission of Information by Modern Methods, Cavalry Reconnaissance and.....	Capt. H. Rubottom	25	
Tripoli. (Book Review).....		354	
Trooper, The Individual Training of the Russian.....	Capt. N. K. Averill	965	
Troops on Riot Duty. (Book Review).....		881	
Trotter as a Cavalry Horse, The. (Reprint).....		814	
Trotting Blood, Thoroughbred and. (Military Notes).....		152	
Truth About Chickamauga, The.....	Capt. Edward L. Anderson	185	
Turkish Cavalry, The Brilliant Role of. (Translation).....		832	
Under the Old Flag. (Book Review).....	Gen. Jas. H. Wilson	1067	
Unique Photograph, An. (Military Notes).....		1064	

	PAGE
United States Army in the Riding Competitions of the Olympic Games, Stockholm, Sweden, 1912, The..... <i>Lieut. Col. Folz and Capt. Henry</i>	369
Unsuitable Mount, An. (Military Notes)..... <i>Maj. Gray</i>	529
Useful Morgan Horse, The. (Reprint).....	811
Visit to the Thirteenth Division, Japanese Army, A <i>Lieut. Burnett</i>	422
War, Cavalry in. (Translation).....	290
War of Today, On. (Book Review).....	355
War of Today—Vol 2. (Book Review)..... <i>Bernhardt</i>	1065
War, Protection in. (Book Review).....	352
War Strength. (Editor's Table).....	709
War, The Russo-Japanese. (Book Review).....	537
War, Transformations of. (Book Review).....	868
Wars, Memories of Two. (Book Review).....	540
Watering the Heated Horse. (Military Notes)..... <i>Vet. G. E. Griffin</i>	151
Word of Advice, A. (Translation).....	853
Work, Staff. (Book Review).....	613