ANNUAL REPORT

OF THE

COMMANDANT

INFANTRY AND CAVALRY SCHOOL AND STAFF COLLEGE

FOR THE

SCHOOL YEAR ENDING

AUGUST 31, 1905

STAFF COLLEGE
PRESS, 1905

TABLE OF CONTENTS

INFANTRY AND CAVALRY SCHOOL:

Report of the Commandant.
Appendices:

A—Report of the Secretary.
B—Report of the Instructor, Department of Military Art.
C—Report of the Instructor, Department of Engineering.
D—Report of the Instructor, Department of Law.
E—Report of the Instructor, Department of Military Sanitation and Hygiene.
F—Report of the Instructor, Department of Spanish.

STAFF COLLEGE:

Report of the Commandant.
Appendices:

A—Report of the Instructor, Department of Military Art.
B—Report of the Instructor, Department of Engineering.
C—Report of the Instructor, Department of Law.

INFANTRY AND CAVALRY SCHOOL

FORT LEAVENWORTH, KAS.,
August 31, 1905.

The Chief of Staff,
U. S. Army,
Washington, D. C.

Sir:

I have the honor to submit the following report on this school for the year commencing September 1, 1904, and ending August 31, 1905.

The following was the personnel of the school at the beginning of the school course (September 15,1904).

COMMANDANT

Brigadier General J. Franklin Bell, U. S. Army.

PERSONAL STAFF

Captain Malin Craig, 10th Cavalry.

1st Lieutenant Daniel Van Voorhis, 3d Cavalry.

Because of the provisions of paragraph 41, A. R., 1904, restricting the detail of other than lieutenants of the army to the position of aide-de-camp on the staff of a brigadier general, Captain Craig was, on November 5, 1904, relieved from duty as aide-de-camp, per orders 15, Infantry and Cavalry School and Staff College, series 1904, and 1st Lieutenant Clarence O. Sherrill, Corps of Engineers, appointed to the vacant position by same order.

ASSISTANT COMMANDANT

Lieutenant Colonel W. W. Wotherspoon, 14th Infantry.

Lieutenant Colonel Wotherspoon was relieved from duty at the school September 22, 1904, to enable him to comply with the requirements of paragraph 1, special orders 219, War Department, September 17, 1904, he having been detailed to the general staff.

Major Eben Swift, 12th Cavalry, instructor, department of Military Art, was, on October 1, 1904, detailed to perform the duties of assistant commandant.

SECRETARY AND DISBURSING OFFICER

Captain Milton F. Davis, 1st Cavalry.

Captain Davis was transferred to the 10th Cavalry per paragraph 13, special orders 303, War Department, December 27, 1904.

DEPARTMENT OF MILITARY ART

Major Eben Swift, 12th Cavalry, *instructor.*

Major C. H. Barth, 12th Infantry, *assistant instructor.*

Major L. S. McCormick, 7th Cavalry, *assistant instructor.*

Captain M. F. Steele, 6th Cavalry, *assistant instructor.*

Captain J. D. L. Hartman, 1st Cavalry, *assistant instructor.*

Captain J. P. Ryan, 6th Cavalry, *assistant instructor.*

Major McCormick was, at his own request, relieved from duty at the school, to enable him to proceed to the Philippine islands with his regiment, per paragraph 2, special orders 290, War Department, December 10, 1904, and left school March 1, 1905.

DEPARTMENT OF ENGINEERING

Major T. H. Rees, Corps of Engineers, *instructor.*

Captain E. T. Cole, 6th Infantry, *assistant instructor.*

1st Lieutenant Wildurr Willing, Corps of Engineers, *assistant instructor.*

Lieutenant Willing was, on July 1, 1905, relieved from duty at the school to enable him to comply with the requirements of paragraph 7, special orders 69, War Department, March 25, 1905.

DEPARTMENT OF LAW.

Major D. H. Boughton, 11th Cavalry, *instructor.*

Captain Charles Crawford, 20th Infantry, *assistant instructor.*

Captain H. O. Williams, 5th Infantry, *assistant instructor.*

Captain H. A. White, 11th Cavalry, *assistant instructor.*

Captain Crawford was transferred to the department of Military Art May 1, 1905, per orders 38, Infantry and Cavalry School and Staff College, May 1, 1905.

DEPARTMENT OF MILITARY SANITATION AND HYGIENE

Lieutenant Colonel John Van R. Hoff, Medical Department, *instructor.*

Captain P. F. Straub, Medical Department, *assistant instructor.*

Captain J. H. Stone, Medical Department, *assistant instructor.*

Captain David Baker, Medical Department, *assistant instructor.*

1st Lieutenant J. F. Edwards, Medical Department, *assistant instructor.*

Captain Baker and Lieutenant Edwards were relieved from duty at the school December 31, 1904, per orders 19, Infantry and Cavalry School and Staff College, December 31, 1904, their services being no longer required.

Lieutenant Colonel Hoff was promoted colonel, Medical Department, to date January 19, 1904. The order announcing his promotion was not received. Colonel Hoff left the school May 18, 1905, under instructions from the War Department. No order or copy of instructions was received.

Captain Straub was relieved from duty at the school per orders 35, Infantry and Cavalry School

and Staff College, April 14, 1905, to enable him to comply with the requirements of paragraph 7, special orders 83, War Department, April 11, 1905.

Captain Stone was relieved from duty at the school June 1, 1905, per orders 43, Infantry and Cavalry School and Staff College, June 1, 1905, to enable him to comply with the requirements of paragraph 1, special orders 123, War Department, May 27, 1905.

DEPARTMENT OF SPANISH

The department of Spanish was not organized until December 28, 1904, when the following named officers, who had reported pursuant to War Department orders, were assigned to it per orders 18, Infantry and Cavalry School and Staff College, series of 1904, viz:

Captain P. E. Traub, 13th Cavalry, *instructor.*

Captain F. Le J. Parker, 12th Cavalry, *assistant instructor.*

Captain C. F. Bates, 25th Infantry, *assistant instructor.*

Captain Bates was, on May 1, 1905, after completion of the instruction and examinations in that department, transferred to the department of Law, per paragraph 2, orders 38, Infantry and Cavalry School and Staff College, May 1, 1905.

STUDENT OFFICERS

1st Cavalry—1st Lieutenant James D. Tilford.
" " " " Roger S. Fitch.
3rd Cavalry— " " Daniel Van Voorhis.
" " " " Brice P. Disque.
4th Cavalry— " " Samuel A. Purviance.
5th Cavalry—Captain Lucius R. Holbrook.
6th Cavalry—1st Lieutenant Stuart Heintzelman.
" " 2nd Lieutenant Kenyon A. Joyce.
7th Cavalry—Captain William H. Paine.
8th Cavalry—Captain Farrand Sayre.
9th Cavalry—1st Lieutenant John S. Fair.
10th Cavalry— " " Charles C. Farmer, Jr.
11th Cavalry— " " Thomas F. Ryan.
" " " " Eben Swift, Jr.
15th Cavalry— " " William D. Forsyth.
" " " " Charles E. McCullough.

1st Infantry—Captain Campbell King.
" " 1st Lieutenant George C. Lewis.
2nd Infantry— " " Archie J. Harris.
" " " " Paul H. McCook.
5th Infantry— " " Clement A. Trott.
" " " " Paul W. Beck.
6th Infantry— " " Harry F. Dalton.
8th Infantry— " " Edwin J. Bracken.
9th Infantry—2nd " Willis E. Mills.
10th Infantry—Captain James V. Heidt.
" " 1st Lieutenant Joel R. Lee.
11th Infantry— " " James W. Furlow.
" " " " Charles H. Errington.
13th Infantry— " " William T. Patten.
15th Infantry— " " Benjamin H. Watkins.
16th Infantry— " " Charles E. Morton.
19th Infantry— " " Martin L. Crimmins.
21st Infantry— " " James M. Love, Jr.
24th Infantry— " " John B. Sanford.
25th Infantry— " " John N. Straat.
26th Infantry—Captain Hanson E. Ely.
" " Captain Murray Baldwin.
27th Infantry—1st Lieutenant Ralph McCoy.
" " 2nd Lieutenant John J. Fulmer.
28th Infantry—1st Lieutenant Andrew J. Dougherty.
" " " " Edward A. Kreger.
29th Infantry— " " William H. Waldron.
" " " " Charles L. Willard.
30th Infantry—Captain Harry H. Tebbetts.
" " 1st Lieutenant Eldred D. Warfield.

The following officers of the foregoing list graduated as

HONOR GRADUATES

1st Lieutenant Roger S. Fitch, 1st Cavalry.
" " Edward A. Kreger, 28th Infantry.
Captain Farrand Sayre, 8th Cavalry.
1st Lieutenant Stuart Heintzelman, 6th Cavalry.
" " Clement A. Trott, 5th Infantry.

The following made the necessary grade to qualify as

DISTINGUISHED GRADUATES

Disque, Brice P., 1st Lieutenant, 3rd Cavalry.
Dougherty, Andrew J., 1st Lieutenant, 28th Infantry.
Ely, Hanson E., Captain, 26th Infantry.
Joyce, Kenyon A., 2nd Lieutenant, 6th Cavalry.
King, Campbell, Captain, 1st Infantry.
McCoy, Ralph, 1st Lieutenant, 27th Infantry.
McCullough, Charles E., 1st Lieutenant, 15th Cavalry.
Paine, William H., Captain, 7th Cavalry.

Tebbetts, Harry H., Captain, 30th Infantry.
Waldron, William H., 1st Lieutenant, 29th Infantry.

The foregoing fifteen officers were originally designated by telegram from the War Department for the Staff College, but new regulations were subsequently adopted pursuant to which the retention of the seventeen highest graduates for the Staff class of the following school year was authorized.

Captain Holbrook and Lieutenant Fair, who graduated 16 and 17 respectively, had already been relieved by order 49, Infantry and Cavalry School and Staff College, July 1, 1905, prior to the adoption of this regulation. By direction of the Secretary of War so much of that order as relieved Captain Holbrook and Lieutenant Fair from duty at the school was revoked by order 53, Infantry and Cavalry School and Staff College, July 25, 1905, they having also been designated to take the course in the Staff College during the coming school year.

All the rest of the members of the class, having made proficient grades, were graduated, excepting the following three, who failed as indicated:

2nd Lieutenant Willis E. Mills, 9th Infantry; failed in law of evidence, military history, and map problems in applied tactics.

Captain John N. Straat, 29th Infantry; failed in practical topographic sketching.

Captain Benjamin H. Watkins, 13th Infantry; failed in military history and Spanish.

The following officers were, by authority of the War Department, retained on duty at the post to enter the Signal School the following school year:

1st Lieutenant Paul W. Beck, 5th Infantry.
1st Lieutenant George C. Lewis, 1st Infantry.
1st Lieutenant Eldred D. Warfield, 30th Infantry.
1st Lieutenant Charles L. Willard, 29th Infantry.

All the rest of the officers were relieved from duty at the school on July 1, excepting 1st Lieutenants Martin L. Crimmins, 19th Infantry, James M.

Love, Jr., 21st Infantry, and Paul H. McCook, 2nd Infantry, who were relieved to take effect upon the completion of their examinations for promotion.

Discipline during the year has been excellent.

PROGRESS

Considering the fact that the staff of the school was called upon to plan, organize, systematize, and conduct new courses of instruction in both schools (Infantry and Cavalry School and Staff College) at the same time, the progress made has been very gratifying. Though one of the courses of instruction in both schools is yet far from perfect in system, gratifying progress has been made in this regard also, and within a year or two there is every reason to hope that thorough system will have been established.

The making of an accurate, progressive topographical map of the reservation has been adopted as a part of the instruction of the Staff class, and satisfactory progress was made in this work during the year.

RECOMMENDATIONS

I have no recommendations to make. Among those made by the staff of this college which resulted in the adoption of the course outlined in general orders 115, War Department, series of 1904, will be found certain recommendations that a small amount of elementary instruction be dropped from the course here as soon as this particular part of the course has been reached by the annual curriculum of garrison schools. These recommendations related to instruction in hygiene, in security and information, and in several other minor subjects. It is intended to eliminate these subjects from the course as soon as the progress of instruction in garrison schools shall justify such action.

It will probably always be necessary to retain in the course of instruction in the Infantry and Cavalry School a certain amount of practical instruction in security and information, inasmuch as successful practical instruction in tactics largely depends upon a clear and accurate comprehension of the elementary principles embodied in security and information. It will hardly ever be safe to presuppose the possession of this information in adequate form on the part of every officer who enters the Infantry and Cavalry School. And before giving such practical instruction it will probably always be necessary to have a hasty review of security and information, followed by an examination, to test the knowledge of student officers therein.

With the exceptions noted above, all instruction in security and information will be dropped out of next year's course.

In the individual reports of the heads of departments, hereto appended, will be found detailed information concerning the course of instruction in their departments and methods of conducting the same.

Very respectfully,

J. F. BELL,

Brigadier General, U. S. Army,
Commandant.

[APPENDIX A]

INFANTRY AND CAVALRY SCHOOL
AND
STAFF COLLEGE

Fort Leavenworth, Kansas, July 5, 1905.

The Commandant,
Infantry & Cavalry School & Staff College,
Fort Leavenworth, Kansas.

Sir:

I have the honor to submit the following report pertaining to my office and duties as Secretary of the Fort Leavenworth Service Schools, for the fiscal year ending ending June 30, 1905:

DISBURSEMENTS

Department of Engineering,	$1,626.94
Department of Spanish,	298.05
Department of Military Art,	179.69
Bookbindery,	400.18
Printing office,	2,022.57
Office furniture, fixtures, etc.,	2,750.18
Library (books, periodicals, newspapers),	1,304.52
Stationery,	515.08
Pay of enlisted men (extra duty),	1,879.15
Papering, decorating, etc.,	127.00
Miscellaneous (repairs of clocks and typewriters, rental of telephones, expressage, etc.),	146.64
	$11,250.00

EMPLOYEES

The service of the Secretary's office and its appendages has been as follows:

3 civilian clerks.
1 civilian librarian.
1 sergeant of engineers, in charge of instruments.
2 sergeants of engineers, draughtsmen.

1 sergeant of engineers, bookbinder.
1 enlisted man, assistant bookbinder.
1 enlisted clerk.
6 enlisted printers.
2 enlisted janitors.

LIBRARY

During the current fiscal year, 602 volumes have been added to the library by purchase, 3 volumes by presentation, and 150 volumes of public documents.

Respectfully submitted,

MILTON F. DAVIS,
Captain, 10th Cavalry,
Secretary.

[APPENDIX B]

INFANTRY AND CAVALRY SCHOOL

DEPARTMENT OF MILITARY ART

Fort Leavenworth, Kansas, August 31, 1905.

The Secretary,
Infantry and Cavalry School,
Fort Leavenworth, Kansas.

Sir:

I have the honor to submit the following report of the work of this department for the year ending August 31, 1905:

The name of the department was changed from the department of Tactics to the department of Military Art by authority of general orders 115, War Department, 1904.

ALLOTMENT OF TIME

From September 15 to December 23, 1904, 67 days were available for school work, of which 53 half-days were allotted to the department.

From January 5 to June 30, 1905, 125 days were available, of which 99 half-days were allotted.

Total for the year, 152 half-days, which was five half-days less than was due to the department on the basis of its proportionate weight.

TEXT-BOOKS

Wagner's Service of Security and Information.

Carter's Horses, Saddles and Bridles.

Wagner's Organization and Tactics.

Griepenkerl's Letters on Applied Tactics.

Mayne's Infantry Weapon and Its Use in War.

ALLOTMENT OF ASSIGNED WEIGHT

A weight of 500 was assigned to the department, and was distributed as follows:

	Practical work	Examination	Total
1. Security and information	40	10	50
2. Hippology	30	20	50
3. Organization and tactics:			
Theoretical		66⅔	66⅔
Practical: Map problems in applied tactics	140		140
Practical: Terrane exercises	54		54
Practical: Maneuvers	37		37
4. Military history and geography		72	72
5. The Infantry weapon and its use in war		25	25
6. Military field signal communications		5⅓	5⅓
Total	301	199	500

SCOPE AND METHOD OF INSTRUCTION

In introducing the course in military art, the instructor delivered a lecture in which he explained the various features of the so-called "applicatory system" of instruction. This system, which is simply a method of teaching principles by their application to various concrete cases, is the basis of all military instruction in the world today. Its introduction is generally ascribed to General von Peucker, who was commandant of the war academy at Berlin from 1854 to 1872, but it may be traced to the earlier attempts of Scharnhorst and his followers to introduce war training in time of peace. It was brought to the attention of the world principally by the successes of the German armies in the decade 1860-70 and particularly by the brilliant writings of General J. von Verdy du Vernois just after the war with France. It may now be said to be firmly planted in the German army, and also in other lands, as among the Chilians, Turks, and Japanese, who have looked to the Germans for instruction. Numerous followers of Verdy du

Vernois have appeared, as Griepenkerl, Gizycki, Immanuel, Biensan and others, who have developed the method in its application to smaller bodies of troops. It would seem that in seeking for a course of instruction we need only turn to studies already so well marked out and defined.

I presume it may be stated that the primary object of the college is to teach the art of leading troops. To do this a course of instruction must be devised which shall not presuppose too advanced a state of preparation on the part of the students, and which proceeds in a progressive manner, teaching one thing at a time.

It cannot too often be said that in time of war a thousand elements are crowded together at once. It is possible however to isolate most of these elements in time of peace and to prepare officers to handle them in time of war.

Student officers are supposed to have a knowledge of their own arm of the service, of the field service regulations, and of the principles of the service of security and information. To insure uniformity in instruction, however, these subjects are reviewed, and in addition drill books of the three arms of the service are studied in the portions which particularly deal with the march, assembly, attack, and defense.

The map problem is then introduced, giving systematic instruction by means of a text-book in the preparation of orders, reading the map, and solving military situations thereon. This practice is extended by a large number of problems for which original solutions are required.

For extended study, to show the relation of the ground to the troops, to solve the problems of space and time, we represent the troops by blocks made to the same scale as the map, and move them according to the same rule as in practice.

In the terrane exercises the map is discarded for the more perfect experience of solving our problems on the ground itself, while the troops are still imaginary.

In the maneuver we take the troops, give them blank ammunition, and endeavor to copy the actual performance as far as possible in time of peace.

I. COURSE IN SECURITY AND INFORMATION

Although security and information is a portion of the course of instruction prescribed for the garrison schools, it was not thought to be time to entirely leave it out of consideration. It was however decided to dispense with nearly all of the text-book instruction, replacing it by lectures and quizzes on the authorized text-books. At the same time the practical work was largely increased.

Under this plan the following course was pursued:

6 lectures:

1. Orders; by Major E. Swift, 12th cavalry.
2. Messages and reports; by Major Swift, 12th cavalry.
3. Patrols; by Captain J. P. Ryan, 6th cavalry.
4. Outposts; by Major C. H. Barth, 12th infantry.
5. Advance and rear guards; by Captain J. D. L. Hartman, 1st cavalry.
6. The cavalry screen; by Captain M. F. Steele, 6th cavalry.

4 recitations and quizzes:

1. Patrols.
2. Outposts.
3. Advance and rear guards.
4. Cavalry screen.

1 examination.

4 map problems:

1. Patrols.
2. Outposts.
3. Advance and rear guards.
4. The cavalry screen.

4 discussions:

1. The patrol problem.
2. The outpost problem.
3. The advance and rear guard problem.
4. The cavalry screen problem.

5 terrane exercises (without troops):

1. Patrol dismounted.
2. Patrol mounted.
3. Outposts.
4. Advance and rear guards.
5. Cavalry screen.

4 maneuvers (with troops):

1. Patrols.
2. Outposts.
3. Advance and rear guards.
4. Cavalry screen.

A total of ten lectures and discussions, four recitations, one examination, and thirteen other exercises, each consuming one half-day.

The theoretical part of the subject is sufficiently explained by the statement above. The practical part was more complicated, and calls for a more extended notice.

The presence of the Staff class, a specially selected body of officers, who had just completed a course in the Infantry and Cavalry School, afforded an opportunity to give much needed supervision to the work, an element which had been lacking heretofore owing to the limited number of instructors. Accordingly the Staff class was employed in the preparation of map problems with solutions, in the manner explained in my report on that class.

After solution by the Infantry and Cavalry class, the papers were criticised by the Staff class. The assistant instructor prepared a discussion of the problem. The papers were handed back to the student officers in order that they might read the criticisms and reply if they wished.

In the terrane exercises the same system was followed, except that there was no public discussion, and that each man could not be given the same problem.

In the maneuvers the same general plan was again followed in the preparation of problems. The public discussion was supposed to take place on the ground itself at the close of the exercise, although in fact it was only done in the outpost problems. As no papers were turned in, there was no solution to be criticised, shown to student officers, etc.

Recommendations

It is recommended that the same plan in its main features be followed in future; i. e., problems and solutions prepared by the Staff class, criticism of work by the same class, and public discussion of problems and solutions.

In carrying out details it will be advisable that greater attention be given to the approved solutions. After a problem and solution has been handed in to the department by a member of the Staff class, the work should be carefully studied and discussed by an assistant instructor, assisted by other members of the class, on the ground itself. In this way an accepted solution can be prepared which can be given the approval of the department. To propose problems to a class of officers without giving information as to the character of the errors committed or as to the kind of solution which is considered right, and without having come to a conclusion as to what would be a proper answer, is not a satisfactory method of instruction. The proposed method involves more time and work, and can only be introduced by a full corps of instructors, with the assistance of the Staff class.

In the solution of map problems and terrane exercises the above system will work very well, but in duties in the field with troops (maneuvers) some modification is necessary. While relying on the Staff class for notation of errors committed in their problems, it is necessary that the student officers be given more supervision by instructors than in previous exercises by the class. This can be done by making the problems more simple, making them similar as far as possible, and by stationing the entire corps of instructors at such points in the terrane as will enable at least one instructor to see each student officer during the performance of an important part of his work.

This may easily be done in most cases.

A course covering a considerable tract of country can be laid out. The stations should be about a mile apart, and at each station an instructor, a detail of student officers, and a small body of troops are placed. From each station a student officer forms, instructs, and conducts an advance guard, patrol, or other body of troops, to the next station. This work is continued until all the student officers have had the work. A large number of officers can thus be given supervision and practice with a minimum number of troops and instructors. It may be said that the problem of the conduct of the troops between stations should have been previously carefully studied and definitely worked out. The Staff class supervises the work between stations.

In reaching a decision as to the theoretical knowledge of a student officer, we can rely on the map problem and terrane exercise for a written record upon which we can form a definite opinion. It is recommended that in the maneuver with troops these points be not considered, but that it be made a test

of those personal qualities which can only be observed when in actual command of men.

2. COURSE IN HIPPOLOGY

Instruction was by lectures and recitations based on authorized text-books, practical demonstrations and tests, and lessons in equitation.

The following lectures were given, all being prepared and delivered by Veterinarian Sidney L. Hunter, 6th cavalry, with the exception of numbers 2, 4, and 7, which were prepared and delivered by Major Loyd S. McCormick, 7th cavalry, instructor in hippology.

1. The cavalry horse.
2. Cavalry saddles and packs.
3. Hygiene and stable management.
4. Bits, bitting, and training.
5. Vice and restiveness.
6. Forage and feeding.
7. Pack and draft animals.
8. Diseases and injuries.
9. Age.
10. Soundness.
11. Framework, muscles, and foot.

On five of the above subjects there were recitations and a final examination. Nine half-days were devoted to practical demonstrations in age, conformation, and soundness, ending with an examination in which each student reported upon two horses.

Lessons in equitation consisted in rides under an instructor.

Recommendations

It has been recommended that all of this course except so much as pertains to age, conformation, and soundness, and lessons in equitation, be now discontinued, and that the subject be given no weight in determining standing of officers.

I respectfully recommend that the class be divided into two sections according to ability in riding, and that each section be given one hour's instruction each day when the time is not scheduled for practical work.

3. COURSE IN ORGANIZATION AND TACTICS

In this, the most important part of the entire course, great difficulty is constantly found in getting suitable text-books. The class of 1903-4 took forty-five lessons in Wagner's Organization and Tactics. The book was however published in 1896, and there were many who claimed that great and important changes were necessary, due to the lessons of the South-African and Spanish-American wars. As a result of this feeling, the use of the book was discontinued as a text-book, and a course of lectures was substituted. The subject was divided into a series of lectures, which were, with two exceptions, assigned to members of the Staff class. Instructions were given that so much of the text-book as might still be applicable should be used, supplemented by the newest ideas and the latest experience. The lecturers were informed that the book was to be regarded as authoritative up to 1896, and that it should not be changed unless revision were needed. In case interpolated sheets were necessary to bring the text up to date, they were to be prepared. Through the kindness of the bureau of military information at Washington a large number of books and translations, embodying everything of importance that has been written upon these matters in recent years, was obtained for the use of the lecturers. The subject was quite thoroughly covered but the result was, however, rather a vindication of the text-book. With the exception that almost everything on the subject of modern field artillery should be rewritten, the book can

be corrected so as to serve our purposes very well, until a new edition of General Wagner's work can be prepared.

A. Lectures

The following is a list of the lectures given:

Organization of the line and special troops, and the proportion of the different arms	Captain Ryan
Duties and organization of the staff	Captain Connor
Recruitment, mobilization, and concentration	Captain Ferguson
The medical department of the army	Colonel Hoff
The army on the march	Captain Sheldon
The army at a halt, in camp, in quarters, and in bivouac	Lieutenant Thorne
Characteristics of the three arms	Captain Ross
Infantry in attack	Lieutenant Peck
Infantry in defense	Captain Naylor
Cavalry in attack	Captain Craig
Cavalry in defense	Captain Booth
Artillery in attack	Captain Kelton
Artillery in defense	Captain Spaulding
The three arms combined in attack	Captain Walton
The three arms combined in defense	Captain Brees

The lectures were printed and delivered to the student officers and each lecture formed the subject of a recitation, and an examination was given on the entire subject.

B. Applied Tactics

In the ordinary course of events, the class having finished the theoretical study of the subject was now ready to begin the application of the knowledge so gained. This was supplied by a systematic study of the work on applied tactics by Major Griepenkerl. The book, presupposing a knowledge of tactics and service in the field, takes up the tactical handling of the smallest combination of the three arms that would usually be employed, and applies the ordinary principles of tactics to a series of twenty-five problems

with full and voluminous solutions. The book is therefore essentially elementary, as the author himself claims; but it furnishes an admirable basis for more extended studies in the leading of troops, and until the service has become more fully imbued with these principles we should retain its use. After completing the text a series of twenty similar problems was given to the class for original solution, the organization given in the text being replaced by that of our own army, and the orders being made to conform to those presented in the lecture on orders given by the instructor. The maps accompanying the text were retained in order to simplify the task by giving maps which had already been carefully studied.

The general character of the problems is shown by the following list. In each case a military situation was supposed, and the students were called to give an estimate of the proper action to be taken, with appropriate orders.

1. A march to the front.
2. A retreat.
3. An advance guard.
4. A rear guard.
5. An outpost from an advance guard.
6. An attack.
7. A position in readiness.
8. A defensive position.
9. An outpost; day and night dispositions.
10. A flanking detachment.
11. Independent cavalry.
12. Change of direction of a march.
13. A flank march.
14. Protection of a convoy.
15. Attack on a river line.
16. An attack of a defensive position.
17. A retreat after defeat.
18. Selection of a defensive position.
19. Organization.
20. A march of concentration.

The solutions of each problem were given to a detail from the Staff class which was charged with a careful study of the problem, the preparation of a solution, and the criticism of each individual paper. The solution submitted was examined and revised by the department, and the individual papers, with criticism and approved solution, were given to the student officers for examination and reply if they desired.

C. Terrane Exercises

In this class of work the Staff class was also utilized in the preparation of work for the Infantry and Cavalry class. In deciding on the character of the work certain general principles were kept in view. First: owing to the necessity for marking and judging of the capacity of the students, the work must be such as is performed mostly under the eye of the instructor who assigns the work. Second: an acceptable solution of every problem must be carefully considered before it is proposed to the class. Third: owing to the average progress in field work in the service, the work should be confined to minor tactical problems.

In pursuance of this idea the instructors of the department rode out with details of the Staff class, and worked out and solved sixteen problems in attack and defense, for cavalry, infantry, and artillery in small force.

Two of each of the following problems were solved:

Attack of buildings by infantry.
Attack of a wood by infantry.
Attack of elevated ground by infantry.
Attack of a defile by infantry.
Defense of a defile by infantry.
Attack and pursuit by cavalry.
Retreat and delaying tactics by cavalry.
Attack by artillery.

The problems were assigned on a basis of six problems to each member of the Infantry and Cavalry class. Written solutions were made and handed in. On the day following that on which a problem was solved, the officers again visited the ground with the instructors who then read the accepted solution, criticized the general manner of treating the subject, and gave an opportunity to the student officers to discuss the various points involved.

D. Maneuvers

The subject of practical instruction of a class of forty-six officers in field service is an exceedingly difficult one at all times. The difficulties are multiplied here on account of the competitive feature involved and the necessity of giving every officer the same supervision and practically the same work. It is believed that these difficulties have been overcome as nearly as was possible to do so.

The method pursued was similar to that recommended in security and information. In fact, three of the problems were a practical demonstration of the system there proposed. The results justified the hope that it would give satisfactory results in the following points: first, little time consumed; second, thorough supervision of each man's work; third, practically similar work by all; fourth, few troops employed.

This desirable result was obtained by making the problems simple and by giving principal attention to the elements of military and soldierly efficiency. Although the tactical and strategical elements were not given the first importance, they were not ignored, by any means, as the Staff class was especially charged with noting and reporting all errors of this character and had the same supervision over the exercise that they would otherwise have had, *i. e.*, between the

stations, which were about three miles apart for cavalry and three quarters of a mile apart for infantry.

An additional argument in favor of the plan proposed was the necessity for assigning the marks with promptness at the closing days of the course. To mark a map problem or terrane exercise is the most laborious operation that falls to the lot of an instructor, but these marks were quickly assigned, while full details are kept for the information of the department.

The maneuvers consisted of three exercises with an imaginary enemy, one with an indicated enemy, and one in hostile contact with represented enemy.

The exercises with an imaginary enemy were in advance guards, and outposts under both systems.

The exercises with indicated enemy were the same six problems in attack which had been solved without troops. Each member of the class was given one of the problems and a company of seventy-five men, and directed to execute the attack on an enemy indicated by two signal flags.

In the maneuver with hostile contact, it was proposed to use one squadron of cavalry and two battalions of infantry in forcing the position of a similar force with only one battalion of infantry. All the officers were assigned to duties with the troops, the instructor as chief umpire, assistant instructors as assistant umpires, and Staff class as assistants to the latter. The maneuver was not executed, on account of bad weather—the first and only exercise of the course which was not carried out on that account.

Recommendations

It is recommended that a similar course be followed next year, with such minor modifications as have been suggested by the experience of the last year. These changes are few and simple. First,

it is recommended that a few recitations be had in so much of the drill book as pertains to formations for assembly, march, and attack, for each of the three arms. Second, that the chapters in the new Field Service Regulations on marches, combat, and ammunition supply be included in the course. Third, that eight recitations be held on portions of Organization and Tactics which are up to date with such corrections and interpolations as may be considered necessary. A few additional terrane rides and maneuvers are recommended.

4. COURSE IN STRATEGY, MILITARY HISTORY, AND GEOGRAPHY

The study of military history is interesting and instructive. It has engaged the undivided attention of many brilliant men. When carried too far, it leads into a pedantic knowledge of events of our own and other ages, which is of no particular value to a soldier. When studied understandingly, it teaches us the experience of others in war, which is almost as good as the experience which we have gathered for ourselves. When it shows us the causes of triumphs and defeats of armies, it points to an appreciation of the meaning of strategy, a word which seems as yet to be poorly defined in our language. Military geography runs hand in hand with history and strategy, and is therefore appropriately considered at the same time.

It is now well established that the old idea of teaching the art of war as a doctrine was a mistake. The higher theory as taught by the books is put aside, and we study the campaigns first and pick out the strategy afterwards. In so doing, we follow literally the advice of Napoleon, who said, "Study attentively the campaigns of the great masters." It is one of

our most useful examples of the study of principles by their application.

In deciding upon the limits to put upon the course, two points seemed necessary: first, to teach the military history of our own land; second, to give other military history only since the latest great developments. It was decided then to begin our own military history with the revolutionary war. Contemporary military history was fixed to begin with the Sadowa campaign, of 1866, because it marked the inception of more great changes than any other campaign in history:—such were the breech-loading small arms, the solid-drawn case for the metallic cartridge, the perfection of mobilization schemes, the results of war training in time of peace, the general staff system, the systematic issue of orders, the concentration of large forces upon the field of battle.

Forty-five lectures, a list of which follows, were delivered by members of the Staff class, by instructors, and by distinguished visitors.

The revolutionary war, southern campaigns	Lieutenant Morgan
The revolutionary war, northern campaigns	Captain Clark
The Canadian invasions	Lieutenant Haskell
The war of 1812	Lieutenant Chapman
The campaign of Scott in Mexico	Captain Haight
The campaigns of Taylor in the Mexican war	Lieutenant James
The first Bull Run	Lieutenant Massee
Forts Henry and Donelson	Lieutenant Mears
Shiloh	Major Swift
The Peninsula	Captain Hartman
Jackson's Valley campaign	Lieutenant Buchan
The second Bull Run	Lieutenant Castle
Stone's River	Captain Booth
Fredericksburg	Captain Craig
Chancellorsville	Captain Sheldon
Vicksburg	Lieutenant Thorne
The Wilderness	Captain Kelton

Spottsylvania	Captain Ferguson
Cold Harbor	Captain Naylor
Petersburg	Captain Brees
Five Forks	Captain Walton
Atlanta	Captain Ross
Franklin	Lieutenant Peck
Nashville	Captain Spaulding
The Sadowa campaign, 1866	Lieutenant Morgan
The campaign of Metz, 1870	Captain Clark
The campaign of Sedan, 1870	Lieutenant Haskell
The siege of Paris, 1871	Lieutenant Chapman
The battles around Plevna, 1878	Captain Haight
The Balkan campaigns, 1878-9	Lieutenant James
The Greco-Turkish war	Lieutenant Massee
The South-African war	Captain Steele
The Spanish-American war and the Philippine insurrection	Lieutenant Mears
The campaign in Manchuria	Capt. Wm. G. Haan
The campaign in Manchuria	
The campaign in Manchuria	
The first day at Gettysburg	General E. P. Alexander
The second day at Gettysburg	
The third day at Gettysburg	
The influence of the navy on land operations	Lieutenant Commander W. L. Rodgers
The influence of the navy on land operations	
The influence of the navy on land operations	
The operation and maintenance of a railroad in the theater of war	Captain Connor
The operation and maintenance of a railroad in the theater of war	
The strategic position of the United States	Major Swift

It is greatly regretted that the lectures expected from Generals George B. Davis, Fitzhugh Lee, and Henry V. Boynton were not delivered, unforeseen events having interfered with them.

The lectures were not printed, but the lecturers each submitted a brief comment thereon, which was printed and served as a basis for recitations and examinations of the student class.

The department is greatly indebted to Captain Edwin T. Cole, of the Engineering department, for

valuable assistance in illustrating this course by lantern slides. Although all of the lectures were not illustrated, owing to the lack of time and facilities, the system was tried sufficiently to show its great possibilities. The graphic method of showing the phases of a campaign or battle makes it possible in a few moments to represent events which could not be given otherwise within the limits of many lectures. The time thus saved can then be employed in discussing the broad principles of tactics and strategy, for which the course is primarily intended.

Recommendations

It is recommended that the course be continued next year but that a single instructor be assigned to the preparation of lectures. In this way it is thought that the objects of the course will be more easily attained, by the elimination of unnecessary detail and the more systematic study of strategical, geographical, and tactical questions.

In this course time is saved and elaborate detail eliminated by abundant use of lantern slides. With further experience and illustrations, the course in military history bids fair to have a great future.

5. COURSE IN THE INFANTRY WEAPON AND ITS USE IN WAR

This new work by Captain Mayne of the British army, whose books on the same subject have been so long known, was introduced for the first time. The course was made in five recitations, two reviews, and one examination.

Recommendations

It is recommended that this branch be extended to include all weapons and munitions of war. It is expected that next year special attention will be given to the new artillery matériel.

6. COURSE IN MILITARY FIELD SIGNAL COMMUNICATIONS

The department was fortunate in obtaining the assistance of Captain William Mitchell, of the signal corps, who not only prepared and delivered two lectures, but turned out his company of troops for demonstrations of the use of the corps in the field. A recitation and an examination on the subject-matter of the lectures were held.

Recommendations

With the formal installation of a signal school at the post, it is thought that this branch may be omitted from the course and that it will be sufficient to witness some of the practical demonstrations of the signal school.

EXAMINATIONS

All examinations were written, the entire class, except those unavoidably absent, being assembled in the lecture room.

Lists of questions were printed on sheets and handed to the students. Opposite each question was noted the maximum value of the answer.

When the examinations lasted all day, they were divided into a morning and afternoon task, lasting respectively from 8 a. m. to 12 noon, and from 1 to 5 p. m. Such students as so desired were allowed to remain until 12.30 p. m. on the morning tasks, and 5.30 on the afternoon tasks.

The lists of questions for the morning and the afternoon tasks were further each divided into two nearly equal portions, each portion being printed on a separate sheet. All the questions pertaining to a single day's examination were thus prepared on four separate sheets, but numbered in one series. One sheet at a time was handed to each student, and he was

allowed a recess of ten minutes after turning in his answers to it before the next sheet was handed to him.

Answers returned by students were signed by numbers, instead of by names. At each examination a different number was assigned each student by the secretary of the school. The same plan was followed in the solution of practical problems on the map.

The following general instructions were written on the blackboard at the first examination, and were observed at all subsequent ones. It was not found necessary to repeat them, nor to publish others.

Do not write your name on your work.

A number will be furnished each one of you. Write this number in the upper right-hand corner of each page.

Number the pages in the upper left-hand corner.

Write the answers to questions in regular order.

Do not copy the questions, but be sure to number answers to correspond to questions.

Leave a margin of an inch and a half at the top and left of each page.

Write only on one side of the paper.

No student will leave the examination room without permission of the assistant instructor in charge. Students who request such permission are supposed to ask it for a necessary purpose.

Fasten together the sheets containing your answers before turning them in to the assistant instructor in charge.

Each student will be allowed a recess of ten minutes after turning in the answers to questions on the first sheet handed him in the morning and in the afternoon.

RESULT

Security and Information. Theoretical: thirteen deficient on first examination, all proficient upon reexamination. *Practical:* two deficient, one reexamined in December and found proficient, the other reexamined in June and reported deficient; in the case of the latter the academic board recommended

another reexamination in August, when this officer was reported proficient.

Hippology. None deficient.

Organization and Tactics. Theoretical: two deficient on first examination, both proficient upon reexamination. *Practical:* in map problems (twenty, 19 in tactics and 1 in organization) one student deficient, also deficient upon reexamination; in terrane exercises without troops (six), and in maneuvers with troops (four), none deficient.

Strategy, Military History, and Geography. Five deficient on first examination, two of whom were still declared deficient upon reexamination.

Infantry Weapon and Its Use in War. None deficient.

Military Field Signal Communications. None deficient.

Table Showing Maximum Value, Highest and Lowest Marks, and Average of Marks, in All Subjects

	Maximum Value of Mark	Highest Mark	Lowest Mark	Average of Marks
Security and Information — Theoretical	10	9.467	7.500	8.1340
Security and Information — Practical	40	38.380	30.200	35.4832
Hippology — Theoretical	20	19.930	15.000	18.3930
Hippology — Practical	30	29.915	28.930	29.4484
Organization & Tactics — Theoretical	66⅔	66.646	51.840	62.5020
Organization & Tactics — Prac. Map Problems	140	136.100	105.686	123.3136
Organization & Tactics — Prac. Terrane Exer.	54	53.310	40.770	50.3582
Organization & Tactics — Prac. Maneuvers	37	36.680	29.800	34.4730
Strategy, Military History, and Geography	72	71.750	54.210	62.7180
Infantry Weapon and Its Use in War	25	25.000	19.292	23.4760
Military Field Signal Communications	5⅓	5.333	4.078	4.7470

Major C. H. Barth, 12th infantry, Captain M. F. Steele, 6th cavalry, Captain J. D. L. Hartman, 1st

cavalry, and Captain J. P. Ryan, 6th cavalry, served as assistants in the department during the entire course. I have never seen officers work harder, take less rest, or show more steadfast devotion to duty than they have, and I am sure that whatever success has been attained is due to them.

Respectfully submitted,

EBEN SWIFT,
Major, 12th Cavalry,
Instructor.

[APPENDIX C]

INFANTRY AND CAVALRY SCHOOL

DEPARTMENT OF ENGINEERING

Fort Leavenworth, Kansas, August 31, 1905.

The Secretary,
Infantry and Cavalry School,
Fort Leavenworth, Kansas.

Sir:

I have the honor to submit the following report of the work of this department for the year ending August 31, 1905:

ALLOTMENT OF TIME

From September 15 to December 23, 1904, 67 working days were available for school work, of which 189 hours were allotted to the department. During this period the allotment of time in half-day periods had not been adopted and cannot be so reported. At the rate of four hours to each half-day the 189 hours are equivalent to 42 half-days and 21 lecture hours.

From January 5 to June 30, 1905, 125 working days were available, of which 71 half-days and 35 lecture hours were allotted.

The total for the year is the equivalent of 113 half-days and 56 lecture hours, but inasmuch as three recitations were held daily during a part of the year there has actually been a total of 138 half-days for this department.

TEXT-BOOKS

Military Topography and Sketching: Root.
Manual of Military Field Engineering: Beach.
Pamphlets prepared and issued by the department.

ALLOTMENT OF ASSIGNED WEIGHT

A weight of 400 out of the total of 1225, or 32.7 per cent, was assigned to this department and was distributed as follows:

	Practical	Examination	Total
Topography, Part I, Surveying,	$66\frac{2}{3}$	$66\frac{2}{3}$	$133\frac{1}{3}$
Topography, Part II, Sketching,	$66\frac{2}{3}$	$66\frac{2}{3}$	$133\frac{1}{3}$
Field Engineering,	$66\frac{2}{3}$	$66\frac{2}{3}$	$133\frac{1}{3}$
Grand totals,	200	200	400

LESSONS

Topography, Part I, and Pamphlets.

1. Pamphlet on Scales, to bottom p. 10.
2. Pamphlet on Scales, to end.
3. Topography, to Chap. IV, p. 58.
4. Topography, to Chap. V, p. 66.
5. Pamphlet, "Notes on Topography," to "Instruments," p. 8.
6. Topography, to Chap. VII, p. 85.
7. Pamphlet, "Notes on Topography," to end.
8. Topography, to "Traversing," p. 117.
9. To "Use of Compass," p. 133.
10. To "Traversing with the Plane Table," p. 143.
11. To "Differential Leveling," p. 159.
12. To "Contours are designated," p. 171.
13. To "Field Work," p. 189.
14. To Chap. XII, p. 198.
15. To Chap. XIV, p. 237.

Omissions:—Chapters III, VI, XII and XIV, and numerous pages and paragraphs throughout the text were omitted. Many paragraphs were corrected by printed slips and others were designated to be read only and not to form parts of lessons.

Topography, Part II, and Pamphlets.

1. Topography, Chap. XX, p. 280 to p. 292.
2. Pamphlet on "Range Finders."
3. Topography, pp. 255 to 261, 269 to 271, 290 to 292.
4. Topography, "Methods of Field Work," p. 293, to "Hill Features," p. 295, and Pamphlet on Compasses.
5. Hill Features, p. 295, to "Batson Case," p. 307.
6. Sheet on Bower Sketching Case; Topography, pp. 308 and 309, Pamphlet on "Contouring" to p. 17.

7. Finish Pamphlet on "Contouring."
8. Topography, p. 309 to end.

Manual of Military Field Engineering.

1. To Chap. V, p. 28.
2. To par. 94, p. 48.
3. To par. 122, p. 66.
4. To Chap. XII, p. 84.
5. To Chap. XIV, p. 105.
6. Pamphlet on Attack of Fortified Positions.
7. To Par. 269, p. 130.
8. To par. 316, p. 150.
9. To Chap. XVIII, p. 175.
10. To Chap. XXI, p. 205.

The following pages and paragraphs were for reference only. A general knowledge of their contents was required but they were not parts of lessons or of examination subjects:—Table p. 14, Chap. III, par. 55 to 60 incl., Chap. XII, par. 218 and 219, tables, pp. 121, 122, paragraphs 259, 260, 262, 266, 267, 287, 319 to 323 incl., articles (1) to (11) in par. 330, 352 a, 375 to 397 incl., Chapters XIX and XXI. Numerous corrections were made and pamphlets of instructions for practical work were issued.

In each subject a lesson in general review comprised two of the advance lessons and each lesson included a review of the previous lesson.

LECTURES

1. Principles of Surveying and Systems of Coordinates.
2. The Transit and Its Adjustment.
3. Triangulation and Traversing, and the Adjustment of Errors.
4. Field Methods Applied in Sketching.
5. Organization of Groups of Sketchers and Combination of Sketches into Maps.
6. Photographic and Mechanical Processes of Reproducing Maps.
7. Siege Operations.
8. Siege Operations (continued).

PRACTICAL WORK

	(half-days)
Topographic Surveying.	
Problem 1. Transit survey, ...	7

Problem 2.	Leveling,	7
Problem 3.	Compass survey,	5
Problem 4.	Plane table survey,	5
Problem 5.	Contouring,	6
Problem 6.	Sextant survey,	4
	Finishing maps,	3
	Total half-days,	37

Topographic Sketching.

Problem 7.	Determine lengths of pace and construct working scales,	1
Problem 8.	Road sketch on foot with note-book, compass and clinometer. Preliminary,	1
	Record,	2
Problem 9.	Position sketch with drawing board, compass and protractor. Preliminary,	1
	Record,	2
Problem 10.	Road sketch on foot with sketching case. Preliminary,	1
	Record,	2
Problem 11.	Outpost sketch with improvised instruments. Preliminary,	1
	Record,	2
Problem 12.	Combined position sketch. Preliminary,	1
	Record,	2
Problem 13.	Road sketch, mounted, with note-book, compass and clinometer. Preliminary,	1
	Record,	2
Problem 14.	Road sketch, mounted, with sketching case. Preliminary,	1
	Record,	2
Problem 15.	Road sketch, mounted, with choice of instruments. Preliminary,	1
	Record,	2
	Total half-days,	25

Field Fortification.

Problem 16.	Shelter trenches,	1
Problem 17.	Wire entanglements, high and low. Palisade,	1
Problem 18.	Abatis,	1
Problem 19.	Fascine and gabion,	1
Problem 20.	Revetments of fascines, gabions and hurdle,	1
Problem 21.	Revetments of sand-bags and sod, loop-holes on parapet,	1
	Total half-days,	6

Field Engineering.

Problem 22.	Knots, splices and lashings; shears and gin; canvas ponton, barrel raft, log raft, .	1
Problem 23.	Bridge with canvas pontons and log and barrel rafts, ...	1
Problem 24.	Bridge of pile bents, ...	4
Problem 25.	Truss bridge, using pile bridge as false work,	3
Problem 26.	Trestle bridge with round timbers, .	1
Problem 27.	Demolitions:—destroying pile bridge, cutting steel rail, blowing in palisade and trench work, cutting down trees, firing a land mine, ...	1
	Total half-days, ...	11

REVIEW LESSONS

Topography, Part I. (surveying)	8
Topography, Part II. (sketching)	4
Field Engineering, ...	5
Total half-days, ...	17

EXAMINATIONS

Topography, Part I. (surveying)	2
Topography, Part II. (sketching)	1
Field Engineering, ...	1
Total half-days, ...	4

SCOPE AND METHOD OF INSTRUCTION

Topography, Part I (Surveying). Theoretical instruction in this subject included study of text-book and recitations thereon, explanation of the text given by instructors during the recitation hour, and lectures on special subjects not fully explained in the text. Student officers were at liberty at any time to go to the instructors for special explanation of any part of the subject not thoroughly understood. Recitations were held by lectures, each section including eleven or twelve student officers, and were of one hour's duration.

For practical work in this subject the class was divided into parties of four members each and each member of a party performed in rotation the different

duties required in the problem. That member of the party who was, for the time being, instrument-man, was in charge of the party and was responsible for the work done during his tour. The others acted as rodmen, chainmen, recorder, axemen, etc., as required. When the field work was finished each member of a party secured copies of the field notes of the other members, and then in the draughting room each reduced all the notes and plotted the entire survey.

The pamphlet of instructions which governed this work gave for each problem, the character and extent of the survey, the organization of the party, the duties pertaining to each position, the instruments and equipment required, the allotment of time, and detailed methods of procedure for field work and draughting.

The work was marked on the following basis:

Field Work:	
Compliance with instructions	3.0
Accuracy of the work	3.0
Completeness	2.0
Completeness and neatness of notes and record	1.0
Total	9.0
Draughting:	
Compliance with instructions	3.0
Accuracy of plotting	3.0
Completeness	2.0
Neatness	1.0
Total	9.0

A list of problems has been given.

Topography, Part II (Sketching). Theoretical instruction in this subject was of like character with that in surveying.

In practical work each problem consisted of two parts, preliminary work, one half-day; and record work, one whole day. In preliminary work the class was divided into parties of two members each, and each party received assistance and instruction from

a member of the Staff class detailed for this purpose.

In record work each member of the class worked independently and without assistance and was marked on the results turned in and in accordance with the following schedules:

For hard work, industry and energy, as opposed to indifference and carelessness	3.0
For attention to and compliance with instructions	3.0
For accuracy	3.0
For completeness	2.0
For neatness and draughting	1.0
4 (	12.0
Maximum	3.0

For the final road sketch the following basis of marking applied:

For distance covered	3.0
For width of sketch to include details and features actually located	3.0
For accuracy	3.0
For completeness	3.0
For neatness and draughting	3.0
2½ (	15.0
Maximum	6.0

A combined position sketch covering an area of about 23 square miles was made in one and one half days by the two classes working together. This problem was not marked. A pamphlet of instructions describing each problem and giving in detail the methods to be pursued, was issued to govern this work.

Field Engineering. The method adopted for theoretical instruction in this subject was similar to that used in the subject of topography. The practical work was conducted in accordance with instructions issued in pamphlet form, in which were given a description of the work to be done in each problem, the organization of the working parties, the tools and

material required, and the method of performing the work.

In the field fortification problems the class did all of the work under the direct supervision and direction of the instructors. In the bridge problems the two classes worked together, the chiefs of working parties being selected by detail from the Staff class.

A list of the problems has been given.

MARKS IN PRACTICAL WORK.

Subject.	Number Deficient.	Lowest Proficient Mark.	Average Mark.	Highest Mark.
Topography, Part I	0	2.255	2.836	2.965
Topography, Part II	1	2.390	2.826	2.940
Field Engineering	0	2.900	2.950	3.000

EXAMINATIONS

The following copy of instructions that were issued in printed form to each member of the class will show the method of conducting the examinations in the department of engineering:

Student officers of the Infantry and Cavalry class will bring to the examination room for the examination in engineering, the following articles:

Triangular scale of equal parts.
Steel ruler.
Steel triangle.
Pair of dividers.
Pencils.
Eraser.
Boxwood protractor.

The following instructions will be observed:

1. Bring this memorandum to the examination room and read it carefully.
2. Write only on one side of the paper.
3. Answer only what the questions require.
4. On each sheet and on the map write your number in the upper right hand corner and number the pages consecu-

tively in the lower right hand corner. The name of the student officer will not appear on any examination paper.

5. When the paper is finished arrange the sheets in proper order, lay the question sheet on top and the map sheet at the bottom and fasten all together at upper left hand corner only, with one paper fastener. Do not fold the map or other papers.

6. Before turning in your paper read it over carefully and make corrections if necessary. Any desired additions to answers may be made on new sheets with proper reference to question and original answer.

7. The questions will not be copied but the answers will be numbered to correspond with the questions.

8. The certificate is to be signed with the official signature of the officer. It will not be attached to the examination paper but will be turned in separately.

9. Written matter will be in ink. Constructions and diagrams may be drawn in pencil.

10. The examination questions are clear and precise and no explanation of their meaning can be given.

The following certificate was required of each officer:

I certify on my honor that I have neither directly nor indirectly, received or afforded any assistance or information whatever in the examination in topography held on ...., 1904.

(Signature).

Marks in Examinations.

	Topography, Part I.	Topography, Part II.	Field Engineering.
Number reexamined,	3	4	3
Number deficient on final examination,	0	0	0
Lowest proficient mark,	2.263	2.267	2.254
Average mark,	2.825	2.791	2.861
Highest mark,	3.000	3.000	2.969

REMARKS

The course of instruction in topography (surveying and sketching) has resulted in giving to the offi-

cers of the class a practical working knowledge of the principles of topography and of the use of the ordinary surveying and sketching instruments. At least one third of the class may be considered excellent topographers, capable of executing a good instrumental survey of a tract of land or of producing contoured sketches of routes and positions. With a few exceptions, all members of the class may be relied upon to make a simple instrumental survey, or an ordinary road or position sketch.

Owing to the reduction in time, the following problems of the previous year were necessarily omitted:

Base line measurement, and triangulation.
Filling in outline map by sketching.
Position sketch with range finder.

In field engineering the usual problems illustrating the construction of trenches, revetments, obstacles, and military bridges were given, but owing to the limited time it was necessary to omit the following problems that had previously been given:

Tactical location of trenches and field works.
Trace and defilade a field work.
Profile a field work.
Bridge with framed trestles.
Double lock spar bridge.
Bridge with wooden pontons.
Flying bridge.

The truss bridge was this year substituted for the suspension bridge of last year. It is impracticable to construct more than one bridge of this semipermanent character each year, but by selecting a different type each year and using those of former years as object lessons to illustrate the different methods of construction, a fair knowledge of the various types may be imparted.

The cantilever, the arch and different forms of trusses are still available for future classes.

The construction of the truss bridge this year was made part of a problem in design and construction for the Staff class, each member of that class having designed a truss bridge and prepared working drawings and estimates of material, tools, time required, method of erection, and organization and duties of working parties. The best features of the plans submitted were combined and the resulting plan was adopted for the bridge to be constructed by the two classes. All of the work was done by the student officers. The bridge is of the Pratt truss type with a span 62½ feet (exclusive of approaches) in five panels each 12½ feet long. It spans the north branch of Corral creek.

Over the south branch of Corral creek there was constructed a trestle bridge of round timbers, in five bays, with a total length of 63 feet. In constructing this bridge, not a measurement had been made before the class arrived on the ground ready to begin work, and no plans or instructions had been prepared. A supply of rough timber in various lengths and of planks for flooring and of the necessary tools had been hauled to the ground.

The bridge was completed and a wagon driven across it after five hours' work by half of the two classes.

A pile bridge was also constructed across the north branch of Corral creek. This served as false work for the truss bridge and was removed after the truss bridge was completed.

I desire to commend the services of the assistant instructors in this department, Captain E. T. Cole, 6th Infantry, and First Lieutenant W. Willing, Corps of Engineers, who have labored untiringly, zealously,

and efficiently to insure the success of the work that has been undertaken.

It is a pleasure also to be able to report that almost without exception the members of the class of 1904-5 have shown the greatest interest and zeal in their work and have been attentive to their duties.

Very respectfully,

THOS. H. REES,

Major, Corps of Engineers,

Instructor.

[APPENDIX D]

INFANTRY AND CAVALRY SCHOOL

DEPARTMENT OF LAW

Fort Leavenworth, Kansas, August 31, 1905.

The Secretary,
Infantry and Cavalry School,
Fort Leavenworth, Kansas.

Sir:

I have the honor to submit the following report of the work of this Department for the year ending August 31, 1905:

ALLOTMENT OF TIME

From September 15 to December 23, 1904, there were 67 days available for school work of which this department used 37 one hour recitations and two half-day examinations. From January 4 to June 30, 1905, 125 days were available of which 21 half-days, including one examination, were allotted this department. During the year 57 recitations and three examinations were had.

Owing to a reduction of the time previously allotted the law, the moot court exercises were confined to a series of practical test questions, the time for the preparation of answers being taken from that allotted this department during the second term.

TEXT BOOKS

Smith's Elementary Law.
Clark's Criminal Law.
McKelvey on Evidence.

The Army Regulations, Manual for Courts-Martial, and the works of Davis and Winthrop on military law were used as books of reference.

ALLOTMENT OF ASSIGNED WEIGHT

A weight of 150 was assigned this Department and distributed as follows:

Elementary Law,	40—17 lessons	and	one	examination.	
Criminal Law,	40—20	"	"	"	"
Evidence,	55—20	"	"	"	"
Moot-Courts,	15—5 exercises.				
Total	150				

LIST OF LESSONS

It having been necessary to shorten the course in law owing to a reduction of the time allotted that subject, the following is the list of lessons adopted for the year 1905-6:

Elementary Law (Smith's)—15 recitations and 4 lectures.

Lesson 1. To bottom p. 25. Omit foot note pp. 19-20.
" 2. " Sec. 52, p. 52. Note on p. 32, read only.
" 3. " bottom p. 74. Note on p. 59, read only.
" 4. " Sec. 145, p. 97.
" 5. " bottom p. 119.
" 6. " p. 157. Omit Chap. XII.
" 7. " Sec. 259, p. 176. Note on p. 175, read only.
" 8. " bottom p. 192.
" 9. " " p. 211. pp. 204-5. read only.
" 10. " Sec. 386, p. 231.
" 11. " bottom p. 251.
" 12. " " p. 268.
" 13. " Sec. 484, p. 289.
" 14. " bottom p. 312. Omit Sec. 522-527 inclusive.
" 15. " " p. 329. Omit Sec. 534 and the corresponding explanation on pp. 316-17.

Examination.

Lectures: The lecture hours will be devoted to a general review of Elementary Law by the Instructor.

Criminal Law (Clark's)—13 recitations and 3 lectures.

Lesson 1. To Statutes, p. 24. Omit "Punishability and Indictability Not Absolute Tests", pp. 15-16.
" 2. " bottom p. 57. Sec. 5, 6, 11 and 12, explanatory text, read only.
" 3. " bottom p. 98. Omit "Presumption and Burden of Proof", pp. 68-70; Sec. 30, 31 and 32. Sec. 39, 40 and 41, black letter text only.
" 4. " bottom p. 152. Sec. 44 to 49 inc,, black letter text only. Omit "Agent's Act as Evidence of Authority", p. 118 to Sec. 53. Sec. 54 to 57 inc., explanatory text, read only.
" 5. " bottom p. 175.
" 6. " " p. 196.

Lesson 7. To Sec. 81, p. 224. Omit from "Consent", p. 216, to end of lesson.
" 8. " Sec. 84, p. 246.
" 9. " bottom p. 270.
" 10. " "The Asportation or Carrying Away". p. 294.
" 11. " Sec. 105, p. 323. Sec. 101-2-3-4, black letter text only.
" 12. " bottom p. 380. Omit Sec. 110 and from top p. 353 to end of lesson.
" 13. " bottom p. 412. Omit Sec. 147, 154, 155, and page 410.
Examination.

Lectures: The lecture hours will be devoted to a general review of Criminal Law by the Instructor.

Evidence (McKelvey)—19 recitations and 5 lectures.
Lesson 1. Page 1 to bottom page 17.
" 2. To bottom page 37.
" 3. " " " 59.
" 4. " " " 89. Sections 38, 39, 40, 41, 42, 43, 46, 47, 48, black letter text to be learned, explanatory text read only.
" 5. To bottom page 110.
" 6. " " " 125.
" 7. " " " 148 Sections 96 to 104 inclusive, black letter text to be learned, explanatory text read only.
" 8. To bottom page 170.
" 9. " " " 185.
" 10. " " " 201.
" 11. To section 153, page 225.
" 12. To bottom page 241.
" 13. To section 185, page 260.
" 14. To bottom page 281.
" 15. To bottom page 302.
" 16. To section 235, page 324.
" 17. To bottom page 340.
" 18. To section 268, page 359.
" 19. To bottom page 375.
Examination.

Lectures: The lecture hours will be devoted to a general review of Evidence by the Instructor.

Moot-Courts: Ten lecture hours covering the procedure of military tribunals.

Exercise 1

1. (a) What is the status of arrest of an officer? (b) Of an enlisted man?

2. Prepare charges in due form against Private John Doe, Company X, 40th Infantry, accused of having committed the following offences:

1. Willfully wasting ammunition.
2. Selling his uniform overcoat.
3. Disrespect toward his commanding officer.

4. Disobeying lawful order of his superior officer.

5. Desertion.

6. Larceny (a) of public property of the United States; (b) of private property.

7. Assault and battery upon a civilian outside of reservation.

One specification for each offence; two previous convictions, one by summary and the other by general court-martial Student officers will supply all the necessary data, papers, etc., that would be actually required in practice. Charges to be prepared on paper of legal cap size, to be properly briefed and indorsed, and to be accompanied by the papers required of the commanding officer when he forwards the charges recommending trial; all papers to have the proper office marks and inclosure notations. Accuracy and neatness will be considered in marking.

Exercise 2.

1. Private John Doe, Company X, 40th Infantry, a sentinel in charge of a prisoner, is accused of allowing the latter to obtain liquor. Fill out the accompanying form (Record of Summary Court) showing the complete procedure that would be had in the case, the accused consenting to trial by summary court, being convicted and having had one previous conviction at a former station.

2. Referring to the above accusation against Private Doe, describe in detail the procedure in the following cases incidents of trial not wanted:

(a) Accused does not consent but is tried and convicted by a summary court.

(b) Accused does not consent but is tried and convicted by a garrison court.

Under (a) what maximum punishment may the summary court inflict? Under (b) what is the maximum punishment?

3. A summary court has properly inflicted a punishment of three months forfeiture and confinement for the same period. Could substitutions have been made? i. e., could the forfeiture have been converted into confinement or *vice versa*? Give reasons for your answer.

4. Draw up charges (on answer sheet) against Sergeant Richard Roe, Company X, 40th Infantry, for being unlawfully absent from his post and company for seven days.

(a) Describe the procedure (incidents of trial not wanted) in this case when the trial is had before a garrison court-

martial: (b) Describe the procedure necessary to bring the Sergeant to trial before a summary court, he objecting to trial thereby.

Under (b) the summary court sentences the Sergeant to be reduced, to forfeit one month's pay and to be confined at hard labor for the same period. Is the sentence or any part of it legal? Why?

5. A civilian teamster employed by the quartermaster's department in the Philippine Islands during the insurrection, 1900, became drunk and disorderly: would you have sent him before a summary court or a provost court for trial? Give reasons for your answer.

Exercise 3

1. The following charges have been preferred, and a cour tmartial composed of officers of the 1st Infantry convened for the trial of the accused. The order convening the court is dated July 1, 1908:

Charge: Embezzlement, in violation of the 60th Article of War.

Specification: In that 2nd Lieutenant Henry Stiles, 1st U. S. Infantry, while serving as captain and commissary of the 40th Regiment, New York National Guard, a militia regiment duly mustered into the service of the United States, and having in his official possession as commissary of the regiment, one hundred dollars ($100.00), money of the United States, furnished and intended for the military service thereof, did fraudulently, unlawfully and feloniously convert to his own use and did embezzle the same.

This at Albany, N. Y., on the 30th day of June, 1906.

The 40th Regiment, N. Y. N. G, was mustered into the service of the U. S. June 1, 1906, and mustered out (the accused included) nine months later. The day following the muster out the accused was commissioned 2nd lieutenant of the 1st U. S. Infantry.

Based upon the above statement of facts the accused makes three pleas in bar of trial by the court-martial: what are they and what, in your opinion, should have been the action of the court in each case? Give reasons.

2. A soldier, Frederick Skow, Company M, 20th Infantry, deserted in the Philippines in 1900, during a time of war; he subsequently came into the hands of the military authorities but was not tried for some time, he claiming that his absence was due to the fact that he was a prisoner in the hands of the

enemy; he was finally tried for desertion, joining the enemy, etc.

(a) State when the Statute of Limitation (103d Article) began to operate in his favor and when it could have been pleaded as an absolute bar of trial.

(b) Had he deserted in time of peace and not in face of the enemy when would the Statute have begun to operate in his favor as to the desertion?

3. Supposing Skow had been discharged from the service under the misapprehension that he had been a bona fide prisoner of war, could he subsequently have been tried by court martial after the real facts had become known? In other words would the 48th Article of War operate to continue his liability after his separation from the service?

4. On a military reservation where the jurisdiction of the U. S. is exclusive, the following facts occurred:

Contrary to law the cattle of a ranchman by the name of Boyle were grazing at large and broke down the reservation fence where the troops had a garden; they destroyed a great deal of property before the gardener, Private Jones, discovered them. He drove them out but in doing so, and while still on the reservation, threw a stone breaking off the horn of a valuable cow, thereby causing her death. Boyle coming upon the scene at that time assaulted and severely injured Private Jones, who was rescued by his comrades, the latter seizing Boyle and taking him to the commanding officer; he upheld the men, claiming that they acted under his orders.

(a) Can the commanding officer arrest or detain Boyle? if so, how long can he hold him and what must ultimately be done with the prisoner?

(b) Can Boyle be prosecuted criminally? if so, in what courts, by whom and for what?

(c) Can Boyle be prosecuted civilly? if so, in what courts, by whom and for what?

(d) Can Boyle prosecute any one who has taken part in the affair? if so, whom, in what courts and for what?

Exercise 4

1. Describe the manner in which you, as judge advocate of a general court martial sitting at Fort Leavenworth, Kansas, would summon the following witnesses:

(a) Military person at Fort Leavenworth.

(b) Military person at some other post.

(c) Civilian residing at Fort Leavenworth.

(p) Civilian residing at Topeka, Kansas.
(e) Civilian residing at St. Louis, Missouri.
(f) A document in the adjutant's office at Fort Leavenworth.
(g) A document at department headquarters.
(h) A document on file in the War Department at Washington.
(i) A document in the hands of a civilian.

2. (a) Could you issue a writ of attachment for the Topeka witness?

(b) Could you issue a writ of attachment for the St. Louis witness?

(c) Could the St. Louis witness be punished for not obeying your subpoena? Give reasons for your answer.

(d) Could you take the deposition of the Topeka witness? Why?

(e) Could you cause the deposition of a person in London, England, to be taken for use before the court?

3. (a) Ordinarily how would you obtain the testimony of witnesses residing at a long distance from where the court is sitting?

(b) If you (judge advocate) are satisfied that the testimony of a witness is material and necessary, and he is in the Philippine Islands, are you required to obtain the consent of the court before subpoenaing him? Why?

(c) The accused at the beginning of a trial submits a long list of witnesses for the defense; the time required for the witnesses to assemble will be long and the cost of transportation great. What will be the procedure in determining whether these witnesses shall or shall not be summoned? and what considerations will govern in determining the action of the judge advocate and that of the court?

4. (a) What is the procedure when a writ of attachment is issued and served?

(b) How would you (judge advocate) secure the testimony by deposition of a civilian residing in New York?

(c) How would you pay this witness?

(d) The deposition was taken before a notary public. How is he paid?

(e) Has a summary court power to subpoena a civilian and to sign vouchers for his payment?

Exercise 5

1. In the case of the U. S. vs. John Doe, Company X,

40th Infantry, prepare a deposition by stipulation (to be taken in advance of trial) showing complete procedure in such a case. Oath administered by notary public.

2. On January 1, 1905, a brown female government mule named Grace, for which Captain X, assistant quartermaster, was accountable, died of a disease supposed to be colic. Private John Smith, Company X, 40th Infantry, a teamster in the corral, was a witness of the facts attending the death of the mule. Prepare Private Smith's affidavit for submission to the surveying officer.

3. Define military law, martial law, and military government.

4. What is meant by posse comitatus? By habeas corpus?

5. You (an army officer) have arrested a deserter in Topeka, Kansas. State what action you would take if served with a writ of habeas corpus issued by a Kansas judge. By a Federal judge.

The following values, subject to approval, have been adopted by the department:

Elementary Law,—15 recitations and			4	lecture hours,		35
Criminal Law,	13	" "	3	"	"	25
Evidence,	19	" "	5	"	"	40
Moot-Courts,			10	"	"	20
Examinations,	3 half-days incl.		3	"	"	
Total	50		25			120

SCOPE AND METHOD OF INSTRUCTION

The *scope* of instruction has been limited by three considerations: *first*, the amount of previous instruction; *second*, the object or purpose of instructing student officers in law; *third*, the time allotted that subject.

1. As to previous instruction, student officers reporting at this school are presumed to have completed the course in military and international law prescribed for the army garrison schools. These subjects are therefore not taught from text-books at this school, but the field covered by the garrison schools is enlarged, the principles more thoroughly examined, and the knowledge acquired made as practicable as possible by application.

2. The object or purpose of instructing student officers in law is, of course, to make such officers more efficient in the discharge of their duties and this is done by giving them an accurate working knowledge of those legal principles and procedure which army officers are supposed to know; at the same time the course is so arranged that it will furnish a good foundation for future work should an officer desire to pursue the subject further.

3. The time allotted to the study of law was determined by the relative importance it was supposed to have compared with other subjects taught at the school, and was fixed in advance by the academic Board.

Based upon these considerations the text books were selected and the lessons assigned as noted above.

As to the *method* of instruction the department of last year (see annual report of the Commandant, has followed the system recommended in my report 1904, p. 51). This is briefly described as the quiz system of instruction and consists of quizzes upon assigned lessons supplemented by lectures, illustrations and analyses by the instructor, and an examination of leading cases so far as time will permit. The results have been gratifying and the department after a year's experience is convinced of the superiority over the old method of instruction, a conviction that is shared by the student officers as well. The advantages are found in the possibility of emphasizing the more salient features—the fundamental principles, and of covering much more ground without unduly taxing the working capacity of the student officers.

EXAMINATIONS

The examinations are written and are conducted under the following instructions:

Examination in.....

Value of subject,—; that of each answer (per cent) is shown by the number on the left. Time of examination, 4 hours with half hour extension if desired. Write answers only, each opposite its serial number placed at the left of the marginal line. Prefix the question sheet to the examination papers when the latter are completed, and place your examination number in the upper right hand corner of each separate sheet. Write on both sides of the paper (legal cap), leaving an interval of one or two lines between consecutive answers. Accuracy, neatness and compliance with the above instructions will be given a value not to exceed 3 per cent in marking the paper.

If a form is required necessitating a separate paper it will be annexed as an exhibit of the answer to which it belongs.

The highest percentage obtained was 98.6, the average being 87.6, and the lowest 76.2. Five student officers were reexamined, one failing to pass on his final examination. Six student officers have over 97 per cent.

Very respectfully,
D. H. BOUGHTON,
Major, 11th Cavalry,
Instructor.

[APPENDIX E]

INFANTRY AND CAVALRY SCHOOL

DEPARTMENT OF MILITARY SANITATION AND HYGIENE

Fort Leavenworth, Kansas, March 1, 1905.

The Secretary,
Infantry and Cavalry School,
Fort Leavenworth, Kansas.

Sir:

I have the honor to submit the following report of the work of this Department for the year to end August 31, 1905:

ALLOTMENT OF TIME

From September 15 to December 23, 1904, 67 days were available for school work, of which none were allotted to this Department. From January 5 to June 30, 1905, 126 days were available, of which 14.3 half-days were allotted. Total for the year, 14.3 half-days.

TEXT BOOK

Woodhull's Military Hygiene.

ASSIGNED WEIGHT

A weight of 75 was assigned to the Department.

SCOPE AND METHOD OF INSTRUCTION

As heretofore stated, owing to the fact that thus far the student officers have had no previous theoretical instruction in the subject of the Department, the method of instruction has been that of the text-book, with lectures to more thoroughly develop important points. The ultimate scope of the Department is a practical knowledge of the care of troops, a scope which cannot be thoroughly realized until the student body comes here well grounded in the theory of military hygiene.

Fortunately the time is approaching when the preliminary instruction in this important subject will be given in the garrison schools, and the student officers will report here prepared to take up intelligently the solution of practical problems in military sanitation, which should be the real scope of the course in this institution.

As the care of troops as a science is little known in our service, I have thought it well to include in this report the examination questions for this year, as indicating the scope of instruction at present given.

SCHEDULE OF LECTURES AND RECITATIONS

Day	Date Jan.	Hour From	Hour To	Class or Sect'n	Lecture	Lesson Pars.	Place
Thu.	5th	P. M. 1.30	2.30 P. M.	C.	General Considerations. Lt. Col. Hoff.		Lecture Hall.
		2.30	3.30 P. M.	S. 1-2		1—59	Sec. Rooms C. & D.
		3.30	4.30 P. M.	S. 3-4	Structure and Functions of Man. Lt. Col. Hoff.	1—59	" " "
Fri.	6th	A. M. 11.00	M. 12.00 P. M.	C.			Lecture Hall.
		1.30	2.30 P. M.	S. 1-2		60—100	Sec. Rooms C. & D.
		2.30	3.30 P. M.	S. 3-4		60—100	" " "
Mon.	9th	A. M. 11.00	M. 12.00 P. M.	C.	Selection of Soldiers, etc. Lt. Col. Hoff.		Lecture Hall.
		1.30	2.30 P. M.	S. 1-2		101—192	Sec. Rooms C. & D.
		2.30	3.30 P. M.	S. 3-4		101—192	" " "
Tues.	10th	1.30	2.30 P. M.	S. 1-2		193—259	" " "
		2.30	3.30 P. M.	S. 3-4		193—259	" " "
Wed.	11th	1.30	2.30 P. M.	S. 1-2		260—321	" " "
		2.30	3.30 P. M.	S. 3-4		260—321	" " "
Thu.	12th	1.30	2.30 P. M.	S. 1-2		322—364	" " "
		2.30	3.30 P. M.	S. 3-4	[Tables to be studied but not committed].	322—364	" " "
Fri.	13th	1.30	2.30 P. M.	S. 1-2		368—430	" " "
		2.30	3.30 P. M.	S. 3-4		368—430	" " "
Mon.	16th	A. M. 11.00	M. 12.00 P. M.	C.	Special Hygiene. Lt. Col. Hoff.	431—498	Lecture Hall.

SCHEDULE OF LECTURES AND RECITATIONS (Contineud)

Day	Date Jan.	Hour From	Hour To	Class or Sect'n	Lecture	Lesson Pars.	Place-
		1.30 P. M.	2.30 M.	S. 1-2		431—498	Sec. Rooms C. & D.
		2.30	3.30	S. 3-4			" " "
Tues.	17th	A. M. 11.00	M. 12.00	C.	Personal Hygiene. Lt. Col. Hoff.		Lecture Hall.
		1.30 P. M.	2.30 M.	S. 1-2		499—577	Sec. Rooms C. & D.
		2.30	3.30	S. 3-4		499—577	" " "
Wed.	18th	1.30 P. M.	2.30 M.	S. 1-2		578—642	" " "
		2.30	3.30	S. 3.4		578—642	" " "
Thu.	19th	A. M. 11.00 P. M.	M. 12.00 M.	C.	Water. Capt. Stone.		Lecture Hall.
		1.30 P. M.	2.30 M.	S. 1-2		643—749	Sec. Rooms C. & D.
		2.30	3.30	S. 3-4		643—749	" " "
Fri.	20th	A. M. 11.00 P. M.	M. 12.00 M.	C.	Preventable Diseases. Capt. Straub.		Lecture Hall.
		1.30 P. M.	2.30 M.	S. 1-2		750—797	Sec. Rooms C. & D.
		2.30 P. M.	3.30 M.	S. 3-4		750—797	" " "
Mon.	23d	1.30 P. M.	2.30 M.	S. 1-2	Pages	1—184	" " "
		2.30 P. M.	3.30 M.	S. 3-4		1—184	" " "
Tues.	24th	1.30 P. M.	2.30 M.	S. 1-2	Pages	185—224	" " "
		2.30	3.30	S. 3-4		185—224	" " "
Mon.	30th	A. M. 8.00 P. M.	M. 12.00 P. M.	Class	Examination.	Book	Lecture Hall.
		1.00	5.00	Class	Examination.	Book	" "

Recapitulation:

Advance lessons,	13	consuming 13 half-days.
Review "	1	" 1 " "
Average length of lessons,	18.5 pages.	
Shortest lesson,	9 "	
Longest "	39 "	
Lectures,	7	consuming 7 hours.
Examination,	1	" 2 half-days.

EXAMINATION

The examination was written, and many of the student officers were occupied from 8 a. m. to 6 p. m., with scarcely any intermission, and the papers probably averaged fifty pages. A copy of the instructions therefor, as well as copies of the question sheets themselves, are incorporated below.

Instructions

1. Bring this memorandum to the examination room and read it carefully.

2. The examination questions will be on four sheets, Nos. 1 and 3 containing two, and Nos. 2 and 4 three questions each. Five questions (two sheets) will be given out during the morning session, 8 a. m. to 12.30 p. m., and the same number in the afternoon, 1 to 5.30. After turning in the answers to questions on sheets 1 or 3, officers may temporarily leave the room, if they so desire, and so soon as answers to the five questions are turned in they will be excused for that session.

3. In answering write only on one side of the paper.

4. On each sheet write your number in the upper right hand corner and number the pages consecutively in the lower right hand corner. The name of the student officer will not appear on any examination paper.

5. When the paper is finished arrange the sheets in proper order, lay the question sheet on top and fasten all together at upper left hand corner only, with one paper fastener.

6. Before turning in your paper read it over carefully and make corrections if necessary. Any desired additions to answers may be made on new sheets, with proper references to question and original answer.

7. The questions will not be copied but the answers will be numbered to correspond with the questions.

8. The certificate is to be signed with the official signature of the officer. It will not be attached to the examination paper but will be turned in separately, upon completion of the examination.

9. Written matter will be in ink. Diagrams may be drawn in pencil.

10. It is believed that the examination questions are sufficiently clear and precise, and no explanation of their meaning will be given.

INFANTRY AND CAVALRY SCHOOL,

Fort Leavenworth, Kansas, January 30, 1905.

Sheet No. 1.

EXAMINATION IN MILITARY SANITATION AND HYGIENE

Morning Session.

I. You are detailed to examine and muster into the United States service a regiment of volunteers; your medical assist-

ants are from civil life, and unfamiliar with the regulations governing the physical requirements of a recruit. You happen to be without a copy of the recruiting regulations but must begin work at once.

Write out a brief summary of requirements of a recruit; instructions to govern the examiners, covering the method of examination, age, physical proportions, the principal causes for rejection, and what the examiners must record.

II. As a member of a uniform board appointed to consider the whole question of military clothing, you are specially assigned to consider and report to the board upon the materials of which military clothing is made, their kind, color, advantages and disadvantages.

Write a memorandum covering what you would embody in such a report, giving reasons for your conclusions.

JOHN VAN R. HOFF,
Lieut.-Col., D. S. G.,
Instructor.

INFANTRY AND CAVALRY SCHOOL,
Fort Leavenworth, Kansas, January 30, 1905.

Sheet No. 2.

EXAMINATION IN MILITARY SANITATION AND HYGIENE

Morning Session.

III. A separate brigade recently recruited, of which you are acting chief commissary, has been cut off from its base of supplies, and must expect to live upon the country for some time. Cattle, sheep and hogs are obtainable, also corn, flour and potatoes. The brigade commander directs you to submit an estimate of the amounts and kinds of available food the command would require for the maintenance of health and efficiency. As a basis of this report, write out memoranda covering:

(a) Food classification.

(b) Nature and functions of each class of food.

(c) Daily proportionate parts of each class of food required by the individual soldier.

(d) State what articles of food and the quantity of each per day you would recommend to cover these requirements.

(e) Also write down suggestions for the management of the ration so as to give variety and promote contentment.

(f) The ordinary methods of selecting and cooking beef.

(g) The selection of flour and its baking.

NOTE: No table need be given in the solution of this problem. The following data are available:

100 PARTS OF	WATER	ALBUMINATES	FAT	STARCH	WASTE
Beef	63	20	17	.....	.....
Mutton	55	18	27	.....	.....
Pork	56	17	24	.....	.....
Corn	13	7	.....	78	2
Flour	11	12	.....	71	6
Potatoes	78	2	.....	18	2

IV. As constructing quartermaster, what would you have to consider from a hygienic standpoint in the selection and preparation of the site of a post, including character of soil, air, moisture, area? what in the construction of barracks, including materials, plan, size, foundation?

V. With reference to the barracks mentioned in the previous question (4), discuss the following subjects: ventilation; dangers to health from inadequate ventilation; disposal of products of expiration and combustion; air and floor space; fresh air required and how obtained.

JOHN VAN R. HOFF,
Lieut.-Col., D. S. G.,
Instructor.

INFANTRY AND CAVALRY SCHOOL,
Fort Leavenworth, Kansas, January 30, 1905.

Sheet No. 3.

EXAMINATION IN MILITARY SANITATION AND HYGIENE

Afternoon Session.

VI. In connection with the construction of a post, state what are the various ways of disposing of excrementitious and other waste matters, which you as quartermaster might have to consider, and give a description of each.

VII. What consideration should govern you, as quartermaster, in providing a water supply for a post, sources, quantity, quality, and probable contaminations being considered? Describe some of the more dangerous contaminations, the simple methods of detecting impurities, and some ways of purifying water.

JOHN VAN R. HOFF,
Lieut.-Col., D. S. .G,
Instructor.

INFANTRY AND CAVALRY SCHOOL,

Fort Leavenworth, Kansas, January 30, 1905.

Sheet No. 4.

EXAMINATION IN MILITARY SANITATION AND HYGIENE

Afternoon Session.

VIII. What would be your responsibilities as a company commander, regarding the personal sanitation of the men of your company? State what instructions you would give them in the matter of cleanliness, clothing, pack, habitation, bed, water, sinks, care of feet, habits and amusements.

IX. You are the commanding officer of a camp of mobilization located in the southeastern part of the United States, limestone country, rock being near the surface. The ground is usually dry and is well wooded, but severe rain-storms frequently occur. The water supply is ample, and food, tentage, clothing, and medical supplies adequate.

Write out a memorandum covering the sanitary facilities and arrangements which should be given consideration in order to safeguard the health of the camp; also state the sanitary precautions which should be taken in order to maintain your command at the maximum of health.

X. A division of raw troops has been in the above camp for six weeks. Usual contagious diseases, mumps and measles, exist, and the command is extensively infected by typhoid fever. The division commander directs you to make a sanitary inspection of the camp.

Write out a report, without any caption or signature, merely beginning "sir" and ending "very respectfully", setting forth as if they actually existed, such sanitary defects as you think are liable to be found under the above conditions, stating what means and methods should be applied, in your opinion, to correct said defects.

JOHN VAN R. HOFF,

Lieut.-Col., D. S. G.,
Instructor.

The result of the examination is tabulated as follows:

Questions	Marks			Average value of questions marked by Instructors			Remarks
	Average	Highest	Lowest	A	B	C	
I	2.734	2.99	2.20				
II	2.697	2.97	1.80				
III	2.444	2.94	1.80				17 papers were below the general average. The highest *total mark* was 2.919, and the lowest 2.250.
IV	2.817	3.00	2.25				
V	2.570	2.99	0.50				
VI	2.728	3.00	1.50				
VII	2.688	3.00	1.50				
VIII	2.911	3.00	2.25				
IX	2.533	2.90	2.25				
X	2.583	2.90	2.25				
				2.711	2.625	2.662	

General Average, 2,670.

While the examintaion may not be counted as brilliant, it is gratifying as an evidence that our officers had learned so much of an essential subject in so short a period and with necessarily inadequate teaching.

REMARKS AND RECOMMENDATIONS

As it is probable that I shall not again have the honor to conduct the course in military hygiene in this school, I venture to add as a last word the substance of a critique originally prepared as a memorandum for the Commandant but not heretofore submitted, which, with what has been said in my previous reports, fully expresses my views regarding instruction in the care of troops.

In view of its importance to the efficiency of armies, it is not to be doubted that the "care of troops" as an art has attracted the attention of thoughtful officers since the earliest times, but a systematic study of the principles of military hygiene, the science which teaches how and why to care for soldiers, became a part of military education but a comparatively

short time since; and it is quite natural that this should have been brought about largely through the instrumentality of medical officers.

Parkes' great work, first published less than half a century ago, and, almost contemporaneously, the works of Roth and Lex in Germany, Morache, Boudin, Michel Lévy and others in France, and Hammond with us, gave an impetus to scientific investigation into means of preserving the health of soldiers which has, as shown by statistics, produced remarkable results.

I need hardly say that this science treats of the principles which should govern in the selection and development of the recruit, the personal care of the soldier, his ration, the water he should drink, his clothing, the air he breathes, his habitations, their interior economy, heating, lighting, ventilating, scavengering, etc., and finally the prevention of infectious diseases to which he is subject.

I am informed that the scientific "care of troops" is taught to line officers and aspirants in the war college, and the military schools at Saint Cyr and Val-de-Grâce, in France; in the war college and inferior military schools in Germany; in Austria, Italy, and probably in other European countries, some general instruction is given in this important subject.

But in these countries, except Great Britain, where all the able-bodied must learn the soldier's art, and, through practical experience, "the care of troops," a theoretical knowledge of military hygiene is not of the paramount importance it is with us, where the people have no other means of learning this vital subject.

Of course military hygiene is extensively taught in all military medical schools.

In the United States, by statutory requirement a course in military hygiene has been a part of the cur-

ricula of the military and naval academies for a number of years, but until recently little or no attention was given it, and a few perfunctory recitations in some school "physiology" served only to bring discredit upon a subject second to none in importance to our forces.

Military sanitation has been taught more or less systematically at the Infantry and Cavalry School, Fort Leavenworth, for over a quarter of a century, and a fairly comprehensive course is now given here—not indeed all I could wish, but as much perhaps as the crowded curriculum will warrant. This subject is also taught in the army medical school, but with these exceptions it has had no recognition with us as an essential part of military education, until the promulgation of G. O. Nos. 81 and 115, of 1904, War Department. This fact is doubtless chargeable to long years of peace, during which military hygiene never flourishes.

Important as is a theoretical knowledge of military hygiene to the soldier of the regular army, who learns it practically as well in his daily life and usually practices it successfully, the more important is it to our present civilian and prospective soldier because our army is the people, who will do their own fighting, but will not take the trouble to learn how until the fight is on, and certainly will know nothing of the "care of troops" unless they study it theoretically.

Congress has recently reaffirmed that the national forces are constituted from "all able-bodied male citizens of the United States and persons of foreign birth who shall have declared their intention to become citizens, * * * between the ages of 18 and 45 years." How are they to learn the care of troops?

The permanent establishment, now numbering about 60,000, has an authorized maximum strength of

100,000; this force, always organized and maintained in the highest state of efficiency, constitutes our first line. Back of this there is an organized militia, numbering 115,000 men, intended as the first reserve. In addition to the forces enumerated, there is an exceedingly important advance-guard, or coast defense line, the United States navy, with its adjunct the marine corps, having a combined strength in personnel of more than an army corps, to which organization a knowledge of military hygiene is of the utmost importance. Behind all are 10,000,000 men of soldier age, from whom ultimately must come our fighting material.

In the war of the revolution 231,771 men were enrolled; in that of 1812, 150,214 (on a basis of one year's service); in the Mexican war, 101,992; in the war of the secession, 2,100,000; and in the Spanish-American war, 275,000. Taking the average of these as a basis, it is reasonable to assume that in any further war we will require not less than 550,000 troops.

The machinery for the instruction in the scientific care of troops of the 150,000 regular land and sea soldiers and sailors is immediately available, though I believe the amount of instruction required is totally inadequate; the means by which the 115,000 organized militia can be instructed is not difficult to provide; but is it to be presumed for a moment that either the state forces or the 285,000 souls contributed from our military resources will take the trouble to adequately study or indeed study at all so special a subject as military hygiene, unless we of the regular establishments set the example? I do not think so. I cannot, however, for a moment concede that a knowledge of the scientific care of troops is to be studied by us simply as an example to the militia, and is not an essential part of the education of every

military officer, even though most of us learn the art by daily observation and practice. Nevertheless, with us the supreme importance of a study of the subject does lie in the example we set to our prospective soldiers, who until they come into the theater of actual operations cannot learn the "care of troops" except theoretically.

It is not to be presumed that any subject will be studied by officers of the state forces or in any schools where military instruction is given which is not studied by those of the regular establishment.

It is hardly necessary to bring to the attention of the Commandant the views of military authorities as to the necessity of a study and practice of military hygiene by line officers. General Robert E. Lee wrote in 1862, "Until the regimental officers can be made to appreciate the necessity of taking care of their men, keeping them under their control, attending to their wants and comforts and enforcing cleanliness, etc., I fear the sanitary condition of the army will not improve. It is the want of this attention and provision for comfort that causes our men so soon to break down under hardship." Wolseley says, "A great object with officers should be to keep those committed to their charge in good health. Without it nothing can be accomplished. There are precautions to be taken and rules to be attended to—the result of experience—which it is now disgraceful in an officer to be ignorant of," etc., etc.

From the foregoing I believe it logically follows that the care of troops is essentially the business of the line officer, and if there be any science or art which treats of the practice of this important subject, certainly it should be known to, or at least recognized by him.

The Commandant will recall that when I recommended the introduction of the teaching of military

hygiene in all our army schools, and as a requirement for promotion, I emphasized the desirability of entitling the subject "Care of Troops," which of course military sanitation is, so that line officers would appreciate its supreme importance to them, and accept it as essentially their own affair. These recommendations were approved by the Commandant and college staff, but in the hands of the General Staff were very much minimized in G. O. 115, 1904, W. D., leaving little but a bare recognition of the art, and the title "Care of Troops" was ignored.

The suggestion of change of title was made advisedly, and I still believe that its adoption is important.

Did the limits of this paper permit, it would be easy to show that military hygiene first developed into a science after the sanitary laches of the Crimea due to ignorance on the part of line officers of how to care for their men, and that, as previously stated, it owed its development largely to the work of army medical officers. Hence, in the minds of the unthinking it has come to be regarded as a part of a very special profession which does not belong to the fighting department, and only remotely concerns the combatant officer.

This is particularly the case with our army, and it is most unfortunately so since we, of all nations, must depend upon untrained military resources from the very inception of any war we engage in. A knowledge of military hygiene is of value to all officers, but is essential

1st, to general officers, for they must be able to weigh the sanitary against the purely military requirements, and give to each its due value.

2nd, to line officers, for it goes without saying that the care of troops is an essential part of their business, and this care, if efficiently administered, de-

mands an adequate knowledge of the principles and practice of military hygiene. The line officer is the sanitary executive.

3rd, to medical officers, whose most important function is that of sanitary expert, but whose relation to military sanitary matters is purely advisory. The medical officer's education in the principles of hygiene should be all embracing; he must know the causes of disease and their remedies. Such attainment demands a knowledge of the fundamental facts of physics, chemistry, anatomy, physiology and bacteriology; he must have all the practical knowledge the line officer has, and besides all the theoretical knowledge which would fit him to advise the line officer should the latter encounter sanitary problems the solution of which demands deeper sanitary knowledge than he possesses. In a word, the sanitary officer is the sanitary specialist and the line officer the general practitioner. There seems to be no reason, however, why some line officers with special aptitude and opportunity, should not become accomplished military sanitarians, as well as engineers or lawyers, for example; provided, of course, they devote as much time and talent to acquiring a comprehensive knowledge of hygiene as others have devoted to law and engineering.

Respectfully submitted,

JOHN VAN R. HOFF,

Colonel, Assistant Surgeon General,

Instructor.

[APPENDIX F]

INFANTRY AND CAVALRY SCHOOL

DEPARTMENT OF SPANISH

Fort Leavenworth, Kansas, August 31, 1905.

The Secretary,
Infantry and Cavalry School,
Fort Leavenworth, Kansas.

Sir:

I have the honor to submit the following report of the work of this Department for the year ending August 31, 1905:

The Department of Spanish at the Infantry and Cavalry School was authorized by paragraph 198, General Orders 115, June 27, 1904, War Department. In accordance with the same general order the course in Spanish consists "of instruction in reading, writing, and speaking Spanish, with an especial view to acquiring a conversational knowledge of the language."

ALLOTMENT OF TIME

From September 15 to December 23, 1904, 67 days were available for school work no part of which was allotted to the Department. From January 5 to June 30, 1905, 125 days were available of which 43 half-days were allotted. Total for the year, 43 half-days.

TEXT-BOOKS

Traub's Pronunciation and Verb.

Marion and Des Garennes' Introducción á la Lengua Castellana.

Worman's First Spanish Book.

Worman's Second Spanish Book.

ALLOTMENT OF ASSIGNED WEIGHT

A weight of 100 was assigned to this Department and was distributed as follows:

Practical work	30.00
Examination	70.00
Total,	100.00

EXERCISES FOR YEAR (Practical)

Making six phonograph records.

SCOPE AND METHODS OF INSTRUCTION IN THEORETICAL AND PRACTICAL WORK

Theoretical Work

(a) *Scope:*

The scope of the theoretical work was planned with a view to giving each student officer such a knowledge of the pronunciation, grammar, verbs, vocabulary, and idioms of Spanish as would afford him a sound foundation for a practical speaking knowledge of the language. A reference to the text-books and list of lessons already given will indicate fully the theoretical course followed.

(b) *Methods:*

The methods of theoretical instruction included the use of lectures, recitations, quizzes, and conferences. Lectures were delivered by the undersigned on important and difficult points in Spanish and the subjects were so selected as either to supplement the text or to give to the student officers a general idea of what would be studied in detail in the succeeding lessons.

Quizzes were used in place of reviews and they aided materially in fixing the principles of correct expression of thought in Spanish. These quizzes were taken out of the lecture hours, and were conducted

in the lecture room by the undersigned. After the first few days recitations were conducted in Spanish, on lessons assigned in the text-books enumerated above. Enunciation papers were used as little as possible—dictation and conversation made up the greater part of each recitation.

In order to avoid using up too much time in answering questions at the beginning of each recitation, the undersigned, after the first month, met the class in conference at an hour selected by the student officers, and went over carefully with them the whole of the lesson for the next day, each student officer being encouraged to ask questions on points that were not clear to him. Attendance was voluntary, and the results were very satisfactory.

Practical Work

(a) *Scope:*

The scope of the practical work was planned with a view to giving to each student officer, first a correct pronunciation and, in addition, such conversational fluency and facility as could be imparted in the brief period allotted to the Department.

(b) *Method:*

The phonograph and texts of the International Correspondence Schools of Scranton, Pa., were made use of for the sole purpose of giving a correct pronunciation. Each student officer was required to make six records. The first record did not count but each one of the others was given a value of 6 as practical work, making a total of 30 for the course, thus leaving 70 out of the assigned weight, to be given to the examination.

The student officers did such efficient work with the phonograph that no one was declared deficient in it, the lowest of the 46 officers receiving 27.44075 out of 30 or 91.47 per cent.

The average mark on practical work was 29.46690, and the highest mark 30.00.

By thus making use of the phonograph, lectures, quizzes, recitations, and conferences, rapid progress was made in attaining to a very fair speaking knowledge of the language in 40 lessons as is shown by the examination.

EXAMINATION

The examination counted 70, took 1½ days, and was partly oral and partly written. A copy of the instructions therefor is incorporated herewith.

LIST OF LESSONS

Lectures and Quizzes.	Date 1905.	No. of Lesson.	Pronunciation and Verb. Traub.	Introduccion a la Lengua Castellana. Marion and Des Garennes.	First Spanish Book.—Worman. Second Spanish Book.—Worman.
Lecture.— Pronunciation	Jan. 5.	1.	Page 1. to bot. p. 5; examples for pron. only.		
		2.	To § 44, p. 7. " "		
		3.	To § 58, p. 9. " "		
Lecture.— The Verb in General	Jan. 10.	4.	To bot. p. 11; " "	Les. 1.—Ejercicio de pronunciación, vocabulario, gramática, ejercicio escrito.	
Lecture.— The Phonograph	Jan. 11.	5.	§ 81, pp. 20, 21.		
		6.	§ 84	Les. 1.—Lectura, conversación.	
		7.	§ § 85, 86	" 1.—Ejercicio de verbos y repaso de la lección.	
		8.	§ § 87, 88	Les. 2.—Same portions as in lesson 5.	
		9.	§ § 89, 90	" 2.— " " " 6.	
Lecture.— Demonstrative and Possessive Pronouns	Jan. 18.	10.	§ § 91, 92	" 2.— " " " 7.	
		11.	§ 93	" 3.— " " " 5.	
		12.	§ 94	" 3.— " " " 6.	
		13.	Review § § 84, 93, 94	" 3.— " " " 7.	Les. 1. Worman's First Spanish Book.
Lecture.— Object Pronouns	Jan. 24.	14.	§ § 114, 115	" 4.— " " " 5.	Les. 2.
		15.	§ § 116-123	" 4.— " " " 6.	" 3.
		16.	§ 128	" 4.— " " " 7.	" 4. to bot. p. 20.
		17.	§ § 129-132	" 5.— " " " 5.	" 5. to mid. p. 25.

LIST OF LESSONS—continued

Lectures and Quizzes.	Date 1905.	No. of Lesson.	Pronunciation and Verb. Traub.	Introduccion a la Lengua Castellana. Marion and Des Garennes.	First Spanish Book.—Worman. Second Spanish Book.—Worman.
Quiz.— Lessons 1-4, inclusive, "Introducción".....	Jan. 31.	18.	§ 133.....	" 5.— " " " 6. Jan.31.	" 6. to bot. p. 29.
		19.	§ 134.....	" 5.— " " " 7.....	" 7. to bot. p. 33.
		20.	§ § 135, 136.....	" 6.— " " " 5.....	" 8. to bot. p. 37.
		21.	§ § 138, 139.....	" 6.— " " " 6.....	" 9.
Lecture.— Verb: orthographic changes; irregular verbs: reflexive substitute,.....	Feb. 6.	22.	§ § 140, 141.....	" 6.— " " " 7.....	" 10. to bot. p. 46.
		23.	§ § 156, 163, 164.....	" 7.— " " " 5.....	" 11. to bot. p. 50.
Quiz.— Lessons 5-7, inclusive, "Introducción,"	Feb. 8.	24.	§ § 165, 166.....	" 7.— " " " 6.....	" 12. to bot. p. 55.
		25.	§ § 167, 168.....	" 7.— " " " 7.....	" 13.
		26.	§ § 169, 170.....	" 8.— " " " 5.....	" 14.
		27.	§ 171.....	" 8.— " " " 6.....	" 15. to bot. p. 67.
Lecture.— Impers. and Deft. Verbs. Modes of Address. Manners and Customs,.	Feb. 14.	28.	§ § 157, 172, 173.....	" 8.— " " " 7.....	" 16. to bot. p. 71.
		29.	§ § 174, 175.....	" 9.— " " " 5.....	" 17. to bot. p. 75.
		30.	§ § 158, 176, 177.....	" 9.— " " " 6.....	" 18.
		31.	§ § 159, 178, 179.....	" 9.— " " " 7.....	" 19.
Quiz.— Lessons 8-10, inclusive, "Introducción,"	Feb. 20.	32.	§ § 160, 180, 181.....	" 10.— " " " 5.....	" 20. to bot p. 88.
		33.	§ § 181, 182, 183.....	" 10.— " " " 6.....	" 21. to bot. p. 93.
		34.	§ § 184, 186, 187.....	" 10.— " " " 7.....	" 1. Worman's Second Spanish Book. to bot. p. 4.
		35.	§ § 188, 189.....	" 11.— " " " 5.....	Les. 2. to bot. p. 11.

Lecture.—										
Letters, Subjunctive. Origin of Spanish Language,.....	Feb. 27.	36.	§ § 190, 191.....	" 11.—	"	"	"	6.....	" 3.	to bot. p. 18.
		37.	§ § 192, 193.....	" 11.—	"	"	"	7. Feb. 28	" 4.	to bot. p. 23.
		38.	§ § 196, 197.....	" 12.—	"	"	"	5.....	" 5.	to bot. p. 28.
		39.	§ § 198, 199.....	" 12.—	"	"	"	6.....	" 6.	to bot. p. 34.
		40.	§ § 200, 201.....	" 13.—	"	"	"	5.....	" 7.	to mid. p. 41.
Quiz.—										
Lessons 11-13, inclusive, "Introducción,".....	Mch. 6.	41.	§ § 202, 207, omit list of verbs pp. 201, 202.	" 14.—	"	"	"	5.....	" 8.	to bot. p. 46.
Quiz.—										
Review of quizzes previously held,.....	Mch. 7, 8, 9.									

INFANTRY AND CAVALRY SCHOOL

DEPARTMENT OF SPANISH

Fort Leavenworth, Kansas, March 3, 1905.

MEMORANDUM

I. Bring this memorandum to the examination room and read it carefully, before beginning work.

II. The examination in Spanish will be partly written and partly oral.

III. WRITTEN EXAMINATION.

1. The written examination will be held on Monday, March 13, between 1.30 and 6 p. m.

This examination will have a value of 30, out of a maximum of 100, in determining relative standing. It will consist of two sheets. No. 1 will contain 50 sentences in English to be translated into Spanish. No. 2 will contain 25 more English sentences and, in addition, 15 selected tenses of various Spanish verbs.

2. After turning in their answers to sheet No. 1, officers may, if they so desire, leave the room before taking and beginning work on sheet 2.

All papers must be turned in by 6 p. m.

3. The questions will not be copied. The answers or translations corresponding to each question will be written in the blank space immediately following such question on the examination paper. Should such space prove insufficient, any desired corrections may be written upon blank sheets of legal cap paper and appended to the printed sheets. Whenever the answer to a question is thus supplemented, write in the margin to the left of the original question "see also page——"; and number the additional answer to correspond to the question.

4. On each sheet (printed or additional) write your number in the upper right-hand corner, and number all pages consecutively in the lower right-hand corner. The name of the student officer will not appear on any examination paper.

5. All written matter will be in ink, and the writing must be legible enough to show clearly the spelling, accentuation, etc., intended. Write only on one side of the paper.

6. Where a sentence is susceptible of more than one translation, give any one if they are equally accurate and correct; otherwise, give the translation that accords with the best usage.

7. In writing out the tenses of the verbs write out the verb forms corresponding to V. and VV., thus making eight forms for each tense. The *subject* pronouns will not be expressed in writing these tenses, except that V. and VV. must be written in every case.

Each tense will be written in a column and no abbreviation of any verb form nor ditto marks will be used, each verb form being written out in full.

8. Before turning in your paper, read it over carefully and make any necessary corrections or additions; after which, arrange the sheets in proper order and fasten all together at upper left-hand corner only, with one paper fastener.

9. Do not translate words inclosed within marks of parenthesis. Such words merely indicate to the student officers what noun is referred to.

10. The examination questions are clear and precise, and no explanation of their meaning will be given.

IV. ORAL EXAMINATION.

1. This will comprise two parts, each of which will count 20, thus giving the oral examination a total value of 40 in determining standing. Part I of the oral examination will be held between 8 a. m. and 12.30 p. m. on March 13, and will consist in making a phonograph record as stated below. Part II of the oral examination will be held between 8 a. m. and 12.30 p. m. on March 14, and will consist of an exercise in reading and conversation as indicated below.

2. The phonograph record (part I of the oral examination) will include three exercises, as follows:

(a) Speaking into the instrument 7 Spanish sentences read from a printed slip. 3½ minutes will be allowed.

(b) Speaking into the instrument a verbal translation of a slip containing a short piece of English prose. 5 minutes will be allowed.

Slips (a) and (b) will be handed the student officer about ten minutes before his examination begins, but he will not be permitted to write out a translation of slip (b).

(c) Speaking into the instrument without previous preparation, Spanish answers to 6 questions put to the student in Spanish. 3½ minutes will be allowed.

The value of the above will be: (a) 7; (b) 7: (c) 6; total 20.

3. Part II of the oral examination will also include three exercises, as follows:

(a) Reading aloud a selected piece in Spanish. 2 minutes will be allowed.

(b) Answering, in Spanish, 5 questions put to him in that language and referring to the selection first read. The answers must be correct Spanish and pertinent to the questions but need not conform in other respects to the text of the selection. 3 minutes will be allowed.

(c) Answering, in Spanish, 10 questions put to him in Spanish, and involving the use of words and constructions that have been gone over in the course. 5 minutes will be allowed.

The value of the above will be: (a) 5; (b) 5; (c) 10; total 20.

Every Spanish answer in both the oral examinations must contain a subject and a predicate. The simple replies, "Si Señor" or "No Señor" will not be accepted.

V. The certificate will not be attached to the examination paper, but will be turned in separately upon completion of the entire examination, written and oral, and will apply to both. It will be signed with the official signature of the officer.

The examinations took place just as scheduled; there was no hitch and they were completed long before the time limit allowed.

Two student officers did not obtain the required 75 per cent and, in accordance with the orders on the subject, they were reexamined on April 8, 1905; one of them obtained 53.92826 out of 70 and was declared proficient, the other obtained only 39.54207 and was recommended as deficient in Spanish.

The lowest proficient mark made on the examination was 52.67462; the average proficient mark was 64.60585, and the highest mark was 69.83451.

REMARKS

The hard and enthusiastic work of the student officers and the loyal and efficient services of the assistant instructors will readily account for the success of the department in the first year of its existence.

RECOMMENDATIONS

1. That one hundred lessons be assigned to Spanish.

2. That each recitation be marked daily on a maximum of three, and a value be assigned to recitations and practical work equal to at least $\frac{2}{3}$ of the weight assigned to Spanish.

3. That a value be assigned to the examination not to exceed $\frac{1}{3}$ of the weight assigned to Spanish.

4. That a department of languages be authorized for the Staff College and that a study of the French or German languages be required of the student officers as may be elected by them.

5. That if one instructor is to supervise the teaching of all three languages, then the instruction of the Staff class in French and German should not take place at the same time as the instruction of the Infantry and Cavalry class in Spanish.

6. That one hundred lessons be assigned to French or German in the Staff College.

7. That the student officers of the Signal School be taught French, German, or Spanish, as each one may, with certain limitations, elect.

8. That the instruction in the respective languages take place at the same time as those languages are taught to the student officers in the other School and the Staff College.

9. That the number of lessons in languages for the Signal School be one hundred.

Very respectfully,

PETER E. TRAUB,
Captain, 13th Cavalry,
Instructor.

STAFF COLLEGE

FORT LEAVENWORTH, KAS.,
August 31, 1905.

The Chief of Staff,
U. S. Army,
Washington, D. C.

Sir:

I have the honor to submit the following report on this college for the year commencing September 1, 1904, and ending August 31, 1905:

The Staff College was established pursuant to paragraph 2, general orders 115, War Department, June 27, 1904. Its personnel at the beginning of the college year (September 1, 1904) was as follows:

COMMANDANT

Brigadier General J. Franklin Bell, U. S. Army.

PERSONAL STAFF

Captain Malin Craig, 10th Cavalry.

1st Lieutenant Daniel Van Voorhis, 3d Cavalry.

Because of the provisions of paragraph 41, A. R., 1904, restricting the detail of other than lieutenants of the army to the position of aides-de-camp on the staff of brigadier generals, Captain Craig was, on November 5, 1904, relieved from duty as aide-de-camp, per orders 15, Staff College, series 1904, and 1st Lieutenant Clarence O. Sherrill, Corps of Engineers, appointed to the vacant position by same order.

ASSISTANT COMMANDANT

Lieutenant Colonel W. W. Wotherspoon, 14th Infantry.

Lieutenant Colonel Wotherspoon, was relieved from duty at the college September 22, 1904, to comply with the requirements of paragraph 1, special orders 219, War Department, September 17, 1904, he having been detailed to the General Staff.

Major Eben Swift, 12th Cavalry, instructor, department of Military Art, was, on October 1, 1904, detailed to perform the duties of assistant commandant.

SECRETARY AND DISBURSING OFFICER

Captain Milton F. Davis, 1st Cavalry.

Captain Davis was transferred to the 10th Cavalry per paragraph 13, special orders 303, War Department, December 27, 1904.

DEPARTMENT OF MILITARY ART

Major Eben Swift, 12th Cavalry, *instructor.*

Major C. H. Barth, 12th Infantry, *assistant instructor.*

Captain M. F. Steele, 6th Cavalry, *assistant instructor.*

Captain J. D. L. Hartman, 1st Cavalry, *assistant instructor.*

Captain J. P. Ryan, 6th Cavalry, *assistant instructor.*

DEPARTMENT OF ENGINEERING

Major T. H. Rees, Corps of Engineers, *instructor.*

Captain E. R. Stuart, Corps of Engineers, *assistant instructor.*

DEPARTMENT OF LAW

Major D. H. Boughton, 11th Cavalry, *instructor.*

Captain H. O. Williams, 5th Infantry, *asisstant instructor.*

STUDENT OFFICERS

Of the twenty-three officers constituting the Staff class, the following named were members of the Infantry and Cavalry class of 1903-4, which was graduated June 27, 1904, viz:

Captain R. F. Walton, 6th Infantry.

Captain W. K. Naylor, 9th Infantry.

Captain Tenney Ross, 7th Infantry.

Captain Malin Craig, 10th Cavalry,
1st Lieutenant Raymond Sheldon, 18th Infantry.
1st Lieutenant G. E. Thorne, 12th Infantry.
1st Lieutenant R. H. Peck, 24th Infantry.
1st Lieutenant J. F. James, 8th Infantry.
1st Lieutenant F. E. Buchan, 3d Cavalry.
1st Lieutenant L. A. I. Chapman, 1st Cavalry.
1st Lieutenant W. A. Castle, 16th Infantry.
1st Lieutenant Gad Morgan, 7th Infantry.
2nd Lieutenant W. N. Haskell, 9th Cavalry.
2nd Lieutenant Frederick Mears, 5th Cavalry.
2nd Lieutenant E. K. Massee, 7th Infantry.

These officers were, by paragraph 9, special orders 169, War Department, July 20, 1904, detailed to enter the class at the Staff College on September 1, 1904, together with the following, viz:

Captain R. H. C. Kelton, Artillery Corps.
Captain O. L. Spaulding, jr., Artillery Corps.
Captain W. D. Connor, Corps of Engineers.
Captain W. B. Ferguson, Corps of Engineers.
1st Lieutenant H. B. Clark, Artillery Corps.

All reported on the date specified.

Captain E. E. Booth, 10th Cavalry, was detailed to enter the class at the Staff College by paragraph 13, special orders 207, War Department, September 2, 1904, and reported for duty at the college September 15, 1904.

1st Lieutenant C. S. Haight, 4th Cavalry, was detailed to enter the class at the Staff College by paragraph 18, special orders 204, War Department, August 30, 1904, and reported for duty at the college September 13, 1904.

1st Lieutenant H. J. Brees, Signal Corps, was detailed to enter the class at Staff College by paragraph 11, special orders 213, War Department, September 10, 1904, and reported for duty at the college September 30, 1904.

During the college year the following changes occurred in student personnel, viz:

Captain Malin Craig, 10th Cavalry, was transferred to the 1st Cavalry by paragraph 13, special orders 303, War Department, December 27, 1904.

Captain E. E. Booth, 10th Cavalry, was transferred to the 7th Cavalry per paragraph 3, special orders 109, War Department, May 11, 1905.

1st Lieutenant H. J. Brees, Signal Corps, was promoted captain, 1st Cavalry, per paragraph 9, special orders 283, War Department, December 2, 1904.

1st Lieutenant Raymond Sheldon, 18th Infantry, was promoted captain, 18th Infantry, per paragraph 6, special orders 250, War Department, October 24, 1904.

1st Lieutenant C. S. Haight, 4th Cavalry, was promoted captain, 5th Cavalry, per paragraph 5, special orders 120, War Department, May 24, 1905.

1st Lieutenant H. B. Clark, Artillery Corps, was promoted captain, per paragraph 3, special orders 286, War Department, December 6, 1904.

2nd Lieutenant E. K. Massee, 7th Infantry, was promoted 1st lieutenant, 22nd Infantry, per paragraph 3, special orders 113, War Department, May 16, 1905.

COURSE OF INSTRUCTION

The course of instruction was as successful and satisfactory as could reasonably be expected during the first year of the college's existence.

A rather difficult problem was imposed upon the staff of the college and Infantry and Cavalry School, namely, to plan and conduct at the same time new courses of instruction in both schools. The staff worked faithfully, and is entitled to much credit for the successes achieved.

It has been found rather difficult to coordinate the work of the two schools to the best advantage thus far, and it is feared that the inauguration of the Signal School (which must be coordinated also) may still further complicate matters, but the proposition is not unsolvable, and there is no doubt that in due time it will be solved satisfactorily.

Discipline has been excellent throughout the year.

The Staff College is yet so young, I have had insufficient experience to make any recommendations for changes in the course. To best promote the progress and improvement of the college, such changes should be made only as a result of mature experience.

Detailed reports concerning the courses of instruction in the different departments, and methods of conducting the same, will be found in the reports of heads of departments attached hereto as appendices.

Very Respectfully,

J. F. BELL,

Brigadier General, U. S. Army,
Commandant.

[APPENDIX A]

STAFF COLLEGE

DEPARTMENT OF MILITARY ART

Fort Leavenworth, Kansas, August 31, 1905.

The Secretary,
Staff College,
Fort Leavenworth, Kansas.

Sir:

I have the honor to submit the following report of the work of this department for the year ending August 31, 1905:

The department was created by authority of general orders 115, War Department, 1904.

ALLOTMENT OF TIME

From September 15, 1904, to June 30, 1905, 192 days were available, of which 220 half-days were allotted to the department.

TEXT-BOOKS

Griepenkerl's Letters on Applied Tactics.
Verdy du Vernois's Simplified War-Game.
Baker's Transportation of Troops and Matériel.
Field Service Regulations.

SCOPE AND METHOD OF INSTRUCTION

There were no examinations, and no marks were assigned in any subject.

Instruction was had by means of recitations; attendance at lectures; preparation and delivery of lectures; preparation of problems; preparing, directing and criticising the solutions of terrane exercises; umpiring at maneuvers; study of the text-books on applied tactics; original solutions of problems; staff rides; study of the war-game; practical application

of the war-game; discussion of problems and criticism of solutions made by students of the Infantry and Cavalry School.

All lectures given in the Infantry and Cavalry School, except those on security and information, were attended by students of the Staff College. They were not, however, required to recite upon the subject-matter of the lectures.

SECURITY AND INFORMATION

Students of the Staff College performed their first work in the preparation of problems for the Infantry and Cavalry class.

The following were submitted:

Patrolling:

1 terrane exercise, mounted.
1 terrane exercise, dismounted.
1 maneuver with troops.

Advance and Rear Guards:

1 map problem, on the map of West Point, Kentucky.
1 terrane exercise.
1 maneuver.

Outposts:

1 map problem, on the patrolling map.
1 terrane exercise.
1 maneuver.

Cavalry Screen:

1 map problem, on the map of Manassas, Virginia.
1 terrane exercise.
1 maneuver.

The terrane exercises and the maneuvers were conducted in the vicinity of the post.

The first problems were not accompanied by solutions when submitted by the Staff class, but it was soon made a feature of the work. On account of the great number of problems submitted it was however not practicable to give as careful supervision of the solutions of the Staff class as was given later with the experience gained.

The written solutions of the Infantry and Cavalry class were examined and reviewed by the members of the other class, and written reports were submitted thereon.

Upon receiving the comments and reviews of the Staff class officers the papers were marked by the assistant instructors and returned to the student officers in order that they might have an opportunity for reply. In case replies were received the assistant instructors again went over the paper before making the final mark.

In the maneuvers the officers of the Infantry and Cavalry class were under the supervision of members of the other class, who submitted written reports upon their observations. The marks were assigned by the assistant instructors as a result of their own observations and from the information contained in these reports.

Recommendations

A great improvement in this part of the course can be made by giving more time to the preparation of solutions which receive the approval of the department. The student officer gets little benefit from merely reading the comments and discussions. If however he is shown a solution which is considered correct he has a tangible result, upon which to base future work of the same kind.

To prepare such solutions of all problems requires a great deal of time. After solutions have been prepared they should be fully studied and discussed, either on the ground itself or on the map.

ORGANIZATION AND TACTICS

Lecture Course

For reasons stated in my report on the Infantry and Cavalry School it was decided to cover the theoretical portion of this course by a series of lectures

delivered for the most part by the members of the Staff class. Eleven half-days were allowed for the preparation of lectures, and those mentioned in my report on the Infantry and Cavalry class were duly delivered. The entire class was in attendance at these lectures.

Applied Tactics

The class recited upon *Letters on Applied Tactics*, completing the book in twenty-five lessons, extending from November 2 to December 15. They then made original solutions in writing of twenty map problems based upon this text, these solutions occupying the time from December to the end of January.

The following problems were solved:

Attack of an enemy in position.

Orders for taking up a position in readiness.

Orders for an advance guard and independent cavalry.

Orders for an advance guard to take up a position in readiness, and then to take up a defensive position from the above.

Outpost orders, orders for a flank guard, and reasons for same.

Orders for a flank guard.

Orders for an attack on heights.

Sketch of distribution of troops. Close cantonments. Positions of interior guards. Outpost orders for the night.

Orders of commander of a flank guard, with dispositions of cavalry.

Criticism of defensive positions in a certain area.

Sketch of outposts, and reasons for dispositions.

Orders for detailing outposts for the night.

Orders for taking up a position and reasons for same.

Sketch of outposts, and orders for same.

Orders for an attack, and reasons for same.

Sketch of outposts. Criticism of a village as a defensive position.

Orders for pursuit.

Orders of a brigade commander under the above.

Sketch of an advance guard, and orders for same advancing to occupy a position.

Orders for an advance guard pursuing an enemy.

After each problem an instructor usually gave a general discussion of the problem. The plan adopted was to call attention to the general line of action proposed for each important point in the solutions. In this way the class were informed as to whether their solutions were in accord with the majority or the minority. Another feature was to read the solution considered best with a few comments upon points that were not agreed to. When the instructor did not discuss the problem it was done by a detail of the class in the same way. The list of problems is considerably different from that proposed for the other class. In respect to organization, the form of orders, and the maps employed, the practice was the same for both classes.

Seven problems based upon Gizycki's *Strategical and Tactical Problems* were solved during the time from February 23 to March 7. These seven problems formed a continuous military situation for a command considerably larger than those previously considered. One problem in the concentration of troops, using the map of the country between Corinth, Mississippi, and Shiloh, Tennessee, and one problem in castrametation, using the same map, were also solved. After each problem there was a free discussion of all points, under the supervision of the instructor.

Recommendations

As this portion of the course in applied tactics will in the future be transferred to the Infantry and Cavalry School, opportunity for more advanced work is afforded to the Staff class. Following out the same line of work it is recommended that additional exercises from Gizycki's *Strategical and Tactical Problems* be solved, with four problems from Moltke, and four problems based upon historical examples.

For the latter set of problems, such attractive subjects are recommended, for instance, as, Napoleon's orders after the battle of Ligny; dispositions for following up the battle of Dresden; Pope's situation before the second Bull Run; Meade's orders before the battle of Gettysburg; and Bragg's dispositions in the campaign for Chattanooga.

In addition it is recommended that the revised edition of *Studies in the Leading of Troops* by Verdy du Vernois, be introduced into the course. These studies have stood the test of many years and continue to have the approval of the military world. A number of books on the same subject have been written but this is undoubtedly the best. It takes up the conduct of a division of troops, and step by step leads one through every phase of a campaign and battle, in a masterly way; it is perhaps the best example of the applicatory system of teaching.

Map Manevers

Recitations were had upon General Verdy du Vernois's *Simplified War-Game*, completing the book in five recitations, extending from January 30 to February 3. Upon completion of this course actual practice in the war-game was begun. A roster was kept, so as to vary the work of each officer and to give each his proportion of the more important work.

Seven tactical problems were solved by this method, as follows:

Four half-days using *Simplified War Game* map.

Three half-days using Livermore's *American Kriegspiel* map.

Four half-days using the map of the battle of Gettysburg.

Six half-days using the map of Manassas.

Two half-days using the map of Leavenworth county, Kansas.

Two half-days using the map of the battle of Chickamauga.

Three half-days using the map of the battle of Gettysburg.

Each officer prepared one original problem for solution by the method of the *Simplified War Game*, one half-day being thus employed. These problems were used as a basis for several of the later exercises.

The two methods of conducting exercises, either on a single map or on several maps, were both tried, but no satisfactory conclusion was reached as to which was the better. The size of force engaged was increased gradually from the smallest combination of the three arms usually employed.

The class was required to discuss verbally all war-game problems under the direction of the assistant instructor in charge. Twenty-five half-days were employed in this course.

Recommendations

Owing to the size of the class of twenty-three officers, the fact that but one instructor was available for the work, and the limited amount of room at our disposal, there were difficulties in the way of successful instruction in this subject. It was decided to conduct two exercises at the same time under the general direction of the assistant instructor with assistant umpires detailed from the class itself. The experiment, with umpires taken in this way from a class without previous experience in that line, was gratifying. It gives a strong argument in favor of the system pursued and encourages one to hope that this useful form of work may be more generally pursued in the army. The class is, however, too large for the best results with two exercises, conducted simultaneously, and it is recommended that in the future the same system be pursued with four identical problems.

TERRANE EXERCISES AND STAFF RIDES

Terrane Exercises

The Staff class was employed in exercises on the open ground without troops in two ways: first, in the preparation of problems for solution by the Infantry and Cavalry class; second, independently, in a study of the various phases of a continuous military situation, in which the officers were supposed to occupy positions with troops. The work prepared for the Infantry and Cavalry class was in minor tactics, while that on the staff ride was on a much broader scale. To explain the manner of preparing the minor tactical problems, the following example will be sufficient.

On the forenoon of the first day an instructor took a detail of eight members of the Staff class to the ground between Merritt lake and the new penitentiary. Four officers were given the problem of the attack of a piece of elevated ground; the remaining four officers were given another problem of the same character.

This is the problem:

> In consequence of a report of a reconnoitering patrol, a company (blue) is ordered to advance from Engineer camp to attack a force (brown) of about half its size which has occupied Merritt hill. Required: (a) dispositions for the attack; (b) sketch showing three phases of the attack.

During the morning the officers studied the situation, and in the afternoon, after further study, submitted a written solution to the instructor at his office.

On the forenoon of the second day the instructor again rode out with the detail of officers, and all of the solutions were read and discussed on the ground itself; the instructor indicated the points of the approved solution. In the afternoon of the same day the solution was again submitted to the instructor at his office, and finally approved.

Thus two instructors with two details prepared four problems with solutions in two days. In this way sixteen problems were made ready for the In-

fantry and Cavalry class, with solutions in every case fully studied, completed and approved.

The problems were as follows, two of each kind being solved:

Attack of a wood by infantry.
Attack of elevated ground by infantry.
Attack of buildings by infantry.
Attack of a defile by infantry.
Defense of a defile by infantry.
Cavalry in defense.
Cavalry in attack.
Artillery in attack.

Five days were sufficient in this way to have a set of problems prepared for the other class.

Staff Rides

Members of the class were taken out on two staff rides, covering, in all, seven whole days and two half-days. They prepared written reports on these exercises, and discussed them indoors under the direction of the instructor and assistant instructor in charge. The area covered was the country to the west and northwest of the post for about fifteen miles.

In the first exercise the class was divided into two parts representing the opposing sides. The size of the opposing forces was supposed to be a regiment, advancing from opposite directions so as to come in contact at Salt creek, which was supposed to be unfordable. The condition thus created gave rise to many military situations which formed the basis of the work for several days.

The second exercise started in the vicinity of Henderson's cross-roads, about fifteen miles northeast of the post, where a force of the three arms, retreating toward Leavenworth, was supposed to have been overtaken by a pursuing force of cavalry and artillery.

Contact was at once established in the hypothetical case and the active business began of harassing the retreat on one side and of delaying the advance on the other side.

If the infantry rear guard could be delayed it would be in danger of capture, and the same would be true of other parts of that command. It was therefore proper tactics for the pursuing force to follow with artillery so as to fire on the road of the retreating troops, while making constant endeavors to gain the flanks with mounted and dismounted troopers. The problem of the retreating force was to select such points for defense as would require the pursuers to make a wide turning movement and to retire in time to make good the retreat.

This exercise also, in the variety of situations presented, and in the clearness of the tactical principles involved, was valuable and instructive.

Recommendations

As with map maneuvers, so also with our staff rides, were we embarrassed by the lack of sufficient instructors for so large a class. To keep up interest it is necessary to have plenty of work in sufficient variety for every officer. The novelty of this sort of work in our service, and the large number of officers, combined to make the exercises less instructive than I hoped they would be. These defects can be remedied by assigning not over six or eight officers to a single exercise. It will also be better to give previous instruction in the character, purpose, and conduct of staff rides, in order that the officers may more clearly enter into the spirit of the work. It is recommended that next year the study of a typical ride, such as *A Tactical Ride*, by Verdy du Vernois, be made before the actual practice.

STRATEGY, MILITARY HISTORY, AND GEOGRAPHY

A list of the lectures delivered by the Staff class is given under this heading in my report on the Infantry and Cavalry School.

To get the greatest benefit out of such a course, used as a means of instruction for others, it was realized that there would be difficulties due to the varying personalities of the lecturers. Much attention was given to the correction of faults of manner and delivery, while careful instruction was given as to the subject-matter of the lectures.

The rule was laid down that each lecture in its general form and arrangement of ideas was to closely follow that in Hamley's *Operations of War*. The lecturers were warned not to elaborate details too fully, and to keep constantly in mind the objects of the course; these objects were briefly explained, to make the matter of detail merely an adjunct to the strategical, tactical, and geographical lessons to be learned. It was also stated that matters of organization, recruitment, and mobilization, when presenting points of interest, were also to be noted.

To complete this course a short manual of strategy should be studied. For this purpose probably von der Goltz's *Conduct of War* is the best now available.

LOGISTICS

In logistics the class recited in Baker's *Transportation of Troops and Materiel*, which they completed in six lessons.

Captain Connor, of the Staff class, prepared and delivered two lectures on *The operation and maintenance of a railroad in the theater of war.*

FIELD SERVICE REGULATIONS

Owing to the fact that the manual on this subject was new and that, as a consequence, the mem-

bers of the class had had no previous opportunity to study it, they recited from the beginning of the book to the bottom of page 180; this course consumed eleven lessons.

In the Staff class the same assistant instructors were employed as in the other class. Major C. H. Barth had entire charge of the work in map maneuvers, and the greater part of that in the staff rides.

Respectfully submitted,

EBEN SWIFT,
Major, 12th Cavalry,
Instructor.

[APPENDIX B]

STAFF COLLEGE

DEPARTMENT OF ENGINEERING

Fort Leavenworth, Kansas, August 31, 1905.

The Secretary,
Staff College,
Fort Leavenworth, Kansas.

Sir:

I have the honor to submit the following report on the work of this department for the year ending August 31, 1905:

From September 15 to December 23, 1904, 67 days were available for school work, of which 52 half-days were allotted to the department. From January 5 to June 30, 1905, 125 days were available, of which 73 half-days were allotted. Total for the year, 125 half-days.

EXERCISES DURING THE YEAR

SURVEYING

The class was divided into four parties of six (or five) members, and each party was required to make a careful instrumental survey of an allotted area and to submit a topographical map of the area on a scale of six inches to a mile. The allotted areas were contiguous, so that the maps could be combined into a single map of the whole area covered.

This map is entitled, "Progressive map of Fort Leavenworth and vicinity, from surveys by student officers of the Staff College (beginning with the class of 1904-5)." It is hoped that this work will be continued by successive classes, and that the map will receive additions of contiguous areas each year, until

a good map of the country surrounding Fort Leavenworth is completed. No such map is now in existence.

FIELD ENGINEERING, THEORETICAL

Theoretical instruction was given by lectures on the following subjects:

1. The principles of equilibrium
2. The principle of the parallelogram of forces
3. The conditions of equilibrium
4. Outline of graphical statics
5. The properties of material
6. Tension and compression of bars
7. Bending of beams
8. Bending moment and shear
9. The truss in roofs and bridges
10. The suspension bridge
11. The arch
12. Details of construction

And by problems as follows:

1. Composition and resolution of forces
2. Graphical solutions of stresses in trusses
3. Designing pieces to withstand stresses in tension, compression, and bending
4. Designing a suspension bridge
5. Designing a stone arch
6. Designing a trussed bridge

FIELD ASTRONOMY

Lectures:

1. Celestial coordinates
2. Azimuth and latitude
3. Longitude and time

Practical Work (problems):

1. Determination of true azimuth by observations on circumpolar star, with transit.
2. Determination of latitude by observations on circumpolar star, with transit.
3. Determination of time by equal altitudes of the sun, with sextant and chronometer.

FORTIFICATION

Lectures:

1. General classification and development, to the introduction of rifled ordnance.
2. Fortifications in the civil war, Federal and Confederate.
3. Fortifications in the Franco-Prussian war.
4. Fortifications in the Russo-Turkish war. Changes due to smokeless powder and high explosive shell.
5. Latest types of fortifications.
6. Auxiliary defenses; searchlights, land torpedoes, obstacles, etc.
7. Attack and defense of fortified places.
8. Development of sea-coast fortifications, to the present time.
9. The elements of coast defense.
10. Electricity.
11. Applications of electricity in coast and land defense.
12. Project for the defense of a sea port.

Practical work (problems):

1. *Prepare a project for the defense of an extended position.* The position selected extended from North hill along Sheridan's ridge and the high ground west of Leavenworth, and thence southeast to a point on the Missouri river south of the Soldiers' Home. A map of this position, prepared by a combined sketch, was used as the basis of the problem, and the defensive works were located on it after careful study of the ground.

2. *Prepare a project for the defense of a sea port.* Coast and geodetic survey maps of various harbors were used in the solutions of this problem.

With each solution there was submitted a descriptive memoir explaining the various elements of the defensive works and the reasons that led to their adoption and location.

TOPOGRAPHICAL SKETCHING

Members of the Staff class were detailed to assist and instruct the officers of the Infantry and Cavalry class in all their preliminary problems in sketching.

In the problem of combined position sketching, members of the Staff class were in charge of parties

of the Infantry and Cavalry class, and each was responsible for the production of a complete and accurate contoured sketch of his allotted area. The combined map was used in the problem in land fortification.

FIELD ENGINEERING, PRACTICAL

In all bridge construction the two classes worked together, members of the Staff class being designated as chiefs of working parties.

In the theoretical course each member of the Staff class had designed a road bridge of the Pratt truss type, with specifications and estimates of material, time, tools, labor, etc. A bridge of this type was actually erected at Corral creek by the student officers of both classes, members of the Staff class being detailed in charge of working parties. They therefore had practice in designing, preparing estimates and bills of material, and constructing a full sized road bridge of truss type—an opportunity seldom given to students in any institution of learning.

Another problem in bridge work was the construction of a trestle bridge of round timber across the south branch of Corral creek. This bridge consisted of five bays supported on four trestles and two abutments, and was sixty-three feet long. No measurements had been made prior to the beginning of the work, and no drawings or instructions had been prepared. The site had been selected, and an estimate was made, by judgment, of the total span and height and of the material and tools that would be necessary; these were hauled to the site on one day, and on the next day the bridge was constructed. After five hours of work the bridge was completed and a wagon driven across. Only about twenty-six members of the two classes were employed on this work.

REMARKS

The course for the Staff class, in the department of Engineering, was designed with a view to giving instruction and as much practical experience as possible in the more important duties of an engineering nature that pertain to the garrison and field service of all officers.

Subjects that have not received as much attention as they deserve, are the location, construction and drainage of roads; the selection of camp sites and the laying out of camps; the organizing, supervision, and control of parties of sketchers and the combining of sketches into a single map; and the selection and strengthening of defensive or offensive positions. It is hoped that in the future time may be found for developing these subjects more thoroughly.

In relinquishing charge of this department, I desire to speak in commendation of the services of the assistant instructor, Captain E. R. Stuart, Corps of Engineers. His work has been thoroughly, efficiently, and ably performed.

It is also a pleasure to report that the members of the staff class showed the greatest interest and zeal in their work and performed the duties required of them in a careful and attentive manner.

Very respectfully,

THOS. H. REES,

Major, Corps of Engineers,

Instructor.

[APPENDIX C]

STAFF COLLEGE

DEPARTMENT OF LAW

Fort Leavenworth, Kansas, August 31, 1905.

The Secretary,
Staff College,
Fort Leavenworth, Kansas.

Sir:

I have the honor to submit the following report of the work of this Department for the year ending August 31, 1905:

ALLOTMENT OF TIME

From September 15 to December 23, 1904, there were 67 days available for school work, of which this department used 40 one hour recitations. From January 4 to June 30, 1905, 125 days were available, of which 22 recitation hours and 5 half-days were allotted to this department. Of this time 59 recitation hours were devoted to quizzes on assigned lessons, the remainder being set aside for original research in the preparation of theses.

TEXT BOOKS

Black's Constitutional Law.

Birkhimer's Military Government and Martial Law.

Davis's International Law and various decisions of courts were used as references and collateral reading.

GRADUATING THESES

The following is a list of the graduating theses, with the names of the student officers to whom assigned:

1. Witnesses before courts martial—military and civilian: attendance; depositions; witness fees: illustrated by copies of all papers, writs, vouchers, etc., which a judge advocate may be called upon to prepare. Lieutenant Morgan.
2. Jurisdiction of courts martial over civilians; including a discussion of the constitutional questions involved. Lieutenant James.
3. Special pleas in military trials. Lieutenant Mears.
4. Jurisdiction on lands owned by the United States. . . . . Captain Brees.
5. Amenability of military persons for violations of the laws of the land, (*a*) to United States courts, (*b*) to state courts, (*c*) to military courts. Lieutenant Thorne.
6. Criminal intent as affected by mental capacity. . . . . Captain Naylor.
7. Opinions as evidence. . . . Lieutenant Castle.
8. Hearsay. . . . . Lieutenant Buchan.
9. The use of the military in the enforcement of the laws. . . . Captain Kelton.
10. Martial law and the suspension of the writ of habeas corpus in the United States. . . . Lieutenant Chapman.
11. Martial law under state authority. . Captain Booth.
12. Control of the militia by the United States government, (*a*) in time of peace, (*b*) in time of war. . Captain Ferguson.
13. Military commissions and provost courts. . . . Lieutenant Massee.
14. The right of asylum, including the rescue of belligerents by neutrals at sea. . . . . Captain Connor.
15. Contraband of war and liability of vessel carrying same. . . . Captain Spaulding.
16. Treatment of non-combatants, war traitors, war rebels and guerillas. Captain Ross.
17. International arbitration; its scope and purposes. . . . . Captain Sheldon.
18. The fifty-eighth article of war. . Lieutenant Haskell.
19. The sixtieth article of war and embezzlement. . . . . Captain Walton.

20. The provost marshal, his powers and duties. . . . . Captain Craig.
21. War; how begun and how ended. . Lieutenant Peck.
22. Prisoners of war; their rights, duties, and treatment. . . . . Captain Haight.
23. Advantages of a legal education to officers of the army. . . . . Captain Clark.

The department has critically examined the above theses, and finds that, as a whole, they possess a high order of merit and give evidence of careful research. Those applicable will be retained for future use in the department and will be printed for circulation.

LIST OF LESSONS

It having been necessary to shorten the course in law owing to a reduction of the time allotted that subject, the following is the list of lessons adopted for the scho ol year 1905-6.

Constitutional Law (Black) 28 recitations:

1. Page 1 to bottom page 26.
2. " " " 50 and Articles V., VI., VII., Const. and 11th Amend.
3. " " " 71.
4. " " " 88.
5. " par. 74, " 106 and Article II., Const. inc. 12 Amend.
6. " bottom " 122.
7. " " " 134 and Article III., Const.
8. " par. 93, " 153.
9. " bottom " 166.
10. " " " 185 and Article I., Const., except Sec. 9 and 10.
11. " "Naturalization", p. 207.
12. " Government of Ceded Districts, p. 225.
13. " bottom page 243 and Sec. 9 & 10, Article I., Const.
14. " " " 266 and Article IV., Const.
15. " " " 354. Omit Chaps. XI., XII. and XIII.
16. " " " 374.
17. " " " 396.
18. " par. 178, " 413.
19. " bottom " 442. Omit from beginning par. 185 to end of lesson.
20. " par. 205, " 464.
21. " par. 213, " 485. First ten and last three Amend., Const.
22. " Gen. Warrants p. 503.
23. " bottom " 521.
24. " " " 539.

25. To bottom page 564.
26. " par. 256, " 584.
27. " bottom " 603.
28. " end of text. Omit par. 282, 283, 284, 287, 288, 289.

Military Policy of the United States. One lecture and one recitation.

Military Government and Martial Law (Birkhimer), including instructions for the government of armies of the United States in time of war, 21 recitations:

1. Introduction and par. 667 to 679 of "Instructions," appendix VI.
2. To bottom page 69. Omit "Note," pp. 68-69.
3. " " " 100. Omit par. 55 and 56.
4. " " " 131. Omit par. 109, 110 and 111.
5. " sec. 142 " 153.
6. " bottom " 174.
7. " sec. 194 " 196 and Sec. II., "Instructions."
8. " " 225 " 220.
9. " bottom " 243.
10. " " " 267.
11. " " " 310 and Sec. IV. and V., "Instructions." Omit par. 278 to 284 incl.
12. " sec. 325, " 341. Omit par. 322, 323 and 324.
13. " bottom " 369. Omit par. 327.
14. " " " 391.
15. " " " 437. Omit Chap. XVIII.
16. " " " 456 and Sec. IV., "Instructions."
17. " " " 480.
18. " " " 507.
19. " sec. 617, " 534.
20. " bottom " 559.
21. " " " 580.

Problems—two half days.

Two problems involving questions of practical application will also form a part of this year's course.

The remaining twenty-three lecture hours will be devoted to original research necessary for the *preparation of graduating theses*, it being the purpose of the department to assign practically the same subjects that were assigned to this year's graduating class.

The time allotted will then be distributed as follows:

	Recitations	Lectures
Constitutional Law (Black),	28	
Military Policy of the United States,	1	1
Military Government and Martial Law (Birkhimer),	21	
Problems,	2	2
Preparation of graduating theses,		23
Total	52	26

SCOPE AND METHOD OF INSTRUCTION

The remarks under this heading in the report of this department for the Infantry and Cavalry School are, in the main, applicable here. Staff College students are supposed to be graduates of the Infantry and Cavalry School, or to possess an equivalent legal knowledge. Based upon this assumption the course in law is mapped out under the supposition that graduates of the Staff College are liable to become future staff officers of the United States army and should therefore be familiar with the broader questions that may come before them for action. The work for the year has been experimental, but crowned with such satisfactory results as to warrant a continuation of the course and method of instruction.

Respectfully submitted,

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Major, 11th Cavalry,
Instructor.