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ANNUAL REPORT
OF THE
SUPERINTENDENT OF THE
UNITED STATES
MILITARY ACADEMY

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ANNUAL REPORT
OF THE
SUPERINTENDENT, UNITED STATES MILITARY ACADEMY.

HEADQUARTERS UNITED STATES MILITARY ACADEMY,
West Point, N. Y., August 31, 1909.

SIR: I have the honor to submit the following report of the United States Military Academy for the year ending August 31, 1909:

I have performed the duties of superintendent throughout the year, except while absent for a few periods on business pertaining to the Military Academy.

PERSONNEL.

The number of officers and instructors on duty here at the present time is as follows:

Professors.....	8
Acting professor.....	1
Associate professors.....	2
Other commissioned officers.....	87
Librarian.....	1
Master of the sword.....	1
Chaplain.....	1
Contract dental surgeons.....	2
Teacher of music.....	1
Civilian instructors of languages.....	4
Civilian instructors in fencing, broadsword exercises, and other military gymnastics.....	3
Total.....	111

The total August 31, 1908, was 106.

The difference in total between this year and last is accounted for by the increase of 1 acting professor of English and history and 3 officers in the department of natural and experimental philosophy, which department, on account of the change in the curriculum, teaches for the first time two classes, and 1 officer on temporary duty to November 30, 1909. One officer, Lieut. Col. O. M. Lissak, is on detached service since April 13, 1908.

The accompanying roster (Appendix A)^a gives the names of all officers and the particular duties they perform.

^a See page 17.

The authorized strength of the Corps of Cadets is 533, and 5 foreign cadets receiving instruction under the provisions of joint resolutions of Congress:

Cuba.....	1
Costa Rica.....	2
Ecuador.....	1
Venezuela.....	1
Total.....	5

The academic year opened with 411 cadets on the rolls of the academy, divided among the four classes as follows:

First class.....	84
Second class.....	85
Third class.....	105
Fourth class.....	137
Total.....	411

The number of cadets discharged, resigned, dismissed, and graduated during the year is as follows:

Discharged for deficiencies in studies.....	34
Discharged for physical disability.....	7
Resigned.....	4
Dismissed.....	7
Graduated.....	103
Total.....	155

The usual examination of candidates for admission was held at various army posts beginning January 12. A supplemental examination was also held at West Point beginning February 23. Two special examinations, one in the Philippine Islands for the examination of two Filipinos, beginning January 29, and the other at West Point, beginning March 24, for the examination of a candidate who was accidentally injured just prior to the supplemental examination, were held. For these examinations there were appointed 482 candidates, including principals and alternates, and including also 5 former cadets.

This number was disposed of as follows:

Failed to report.....	116
Failed to complete the examination.....	9
Rejected by the medical board, being qualified mentally.....	5
Rejected mentally, being qualified physically.....	137
Rejected both mentally and physically.....	60
No vacancies for qualified alternates.....	4
Alternate appointments declined.....	4
Qualified and admitted.....	144
Qualified to be admitted March 1, 1910.....	3
Total.....	482

Admissions were as follows: In March, 146, including 2 foreigners for instruction. The following table gives the number of those admitted on examination, prior qualification, etc.:

Admitted on examination (113 principals and 23 alternates).....	136
Admitted on prior examination (4 principals).....	4
Ex-cadets admitted (physical examination only).....	4
Foreign cadets.....	2
Total.....	146

Three reappointed cadets who had been discharged by reason of physical disability were also admitted.

In this connection attention is invited to the large and increasing number of appointees in recent years who have failed to report (116 this year); to the fact that the Corps of Cadets is 123 below its authorized strength. It has always been a source of regret to the West Point authorities that the entrance requirements have been kept so low, but it is recognized that this can not well be otherwise. The class of candidates sent here, as to physical and moral characteristics, is in the hands of the appointing powers alone. Another source of regret is the number of vacancies which has always existed in the Corps of Cadets. At this time there are 123 vacancies existing.

It is believed that a plant is most economically administered when it is turning out its full capacity. It follows that at this time especially, when educated officers are in such great demand, West Point should be turning out its full capacity.

The following bill has been introduced into the Senate by Senator Warren and into the House of Representatives by Mr. Hull, entitled "A bill to increase the efficiency of the United States Military Academy, and for other purposes." (S. 2325, H. R. 9417.)

Whenever any cadet shall have finished three years of his course at the Military Academy, the succeeding appointment may be made from his congressional district, or at large, in accordance with the existing law.

If this were enacted into law it would result in appointments being made for the Military Academy every three years instead of every four years, as is now the case. As soon as a cadet reached the graduating class he would create a vacancy and his successor would enter as a fourth classman. The number of cadets graduated at the Military Academy during the ten years from 1898 to 1908 was 511 less than the number of vacancies in the Army caused by casualties, so that, without considering the increases in the Army, the cadets graduated from West Point have averaged 51 per year less than the vacancies caused by casualties. During the last five years the classes at West Point have been larger; they have averaged 105 per year, so that during the last five years the number of cadets graduated per year has averaged 35 less than the number of vacancies caused by

casualties. Very few persons, either in the Army or out of it, realize that during the past ten years the Military Academy has not only not furnished a single graduate to fill a vacancy made by increases in the Army, but that the graduating classes have averaged 51 short of the number necessary to replace ordinary casualties, such as deaths, resignations, retirements, etc.

The proposed increase in the Corps of Cadets would result in the graduation of about 130 cadets per year beginning five years hence. Without considering any future enlargement of the Army, this number will be necessary to fill the vacancies caused in the Army by ordinary casualties only. It is not contemplated to deprive the normal number of enlisted men and civilians from getting commissions as second lieutenants as heretofore. Congress has made generous appropriations for increasing the facilities at West Point, and this enlargement of the institution has now progressed to the extent that about 700 cadets can be accommodated.

Especial attention is invited to the output of the Military Academy. The average strength of the three upper classes at the present time is 89, so that the academy is now graduating annually only about one cadet per million of the population. The desired increase will turn out about $1\frac{1}{3}$ to $1\frac{1}{2}$ cadet per million of the population if the population remains stationary, but as this is not likely, the increase will probably merely amount to keeping pace with the growth of the country.

Not having compulsory military service for all young men puts this country at a dangerous disadvantage as compared with the principal foreign powers in Europe and Asia where generally military service is obligatory for all citizens between about the ages of 17 and 28 years, serving for two, three, or four years each in the active army and about five or six years in the reserve, they are, therefore, training millions, in fact their entire able-bodied male population.

Since the founding of the Military Academy in 1802 the graduates have been depended upon to perpetuate and advance the art and science of war and to furnish the bulk of the officers for the line and staff of the Army at all times, and in addition to advise, instruct, and train the citizen soldiery. In order to perform this duty effectively, one educated, trained, and disciplined graduate per year per million population is believed to be inadequate.

Rapid developments in the art and science of war in recent years, as in all other arts and sciences, have made education and training of more importance to-day than ever before.

It is therefore earnestly recommended that a provision authorizing the appointment of cadets every three years instead of every four years be passed, to take effect as early as possible, in order that the appointments may be made in time to permit candidates to

prepare themselves for the entrance examinations and enter with the class next year, i. e., 1910. If this provision is authorized by Congress now it will provide appointments of candidates to succeed the present second class of the Military Academy, which numbers 85 members. It will, therefore, make 85 additional vacancies, which, if filled at once in time to take the entrance examination next year, will graduate in June, 1914, by which time only about one-third will have survived the various physical, mental, and moral tests incident to the course; or, in other words, there will be an increase of about 28 graduated cadets in 1914.

HEALTH.

Attention is invited to the report of the surgeon herewith (Appendix B).^a The surgeon and his assistants have been most painstaking and skillful and have accomplished very satisfactory results. An abnormal number of cases of appendicitis (10 in the Corps of Cadets, 13 among enlisted men, and 2 civilians) have occurred during the year as compared with no cases among the cadets last year, and efforts have been made to ascertain the reason therefor without thus far any satisfactory results.

Persistent efforts have been made during the year to rid the post of mosquitoes by treating the pools, etc., in the neighborhood. It is believed, however, that this will not be successful so long as the large meadows behind Constitution Island are not properly treated, and it may be necessary in the future to acquire that property and drain it as well as the swamps on the island.

The new cadet shoe has continued to give satisfaction and has almost eliminated cases of foot trouble from the sick report. Attention is invited to the good results of the work of the dental surgeons.

CADET PAY AND ALLOWANCES.

The high standard of the treasurer's department under Capt. William R. Grove, treasurer of the Military Academy and quartermaster and commissary of cadets, has been advanced. Attention is invited to his report (Appendix C),^b which shows the price of clothing has been reduced and the quality maintained. The food is simple, healthful, palatable, and well cooked and served, and costs 66 cents per day for each cadet.

On August 31, 1908, 308 cadets were out of debt an average of \$33.02, and 110 cadets were in debt an average of \$25.28.

On August 31, 1909, 214 cadets were out of debt an average of \$26.97, and 193 cadets were in debt an average of \$37.74.

^a See page 25.

^b See page 38.

DISCIPLINE.

Discipline of the Corps of Cadets has continued at its usual high standard during the year with the exception of some cases of hazing which came to the knowledge of the authorities in June. The situation ended in the dismissal of one first and six third classmen. This evil has broken out almost yearly since the early days of the institution; it is at the bottom of most of the serious breaches of discipline, and must be held down with a strong hand.

Every possible step has been taken at the academy to eradicate it, but it appears that there are a few in almost every class who deliberately violate the act of Congress forbidding it, and whose ideas of their responsibility to the Government continue to be elementary notwithstanding all the teaching and warning that can be brought to bear upon them.

PRACTICAL INSTRUCTION.

The first class was ordered this year to Fort Hancock, N. J., for seacoast artillery target practice and service of the mines. The results were very satisfactory, as evinced by the following letter of Col. Henry L. Harris, the commanding officer of the Southern Artillery District of New York:

HEADQUARTERS SOUTHERN ARTILLERY DISTRICT OF NEW YORK,

Fort Hancock, N. J., August 22, 1909.

Col. H. L. SCOTT,

Superintendent, United States Military Academy,

West Point, N. Y.

MY DEAR COLONEL SCOTT: I was very much impressed with the excellent work of the first class during their recent tour of duty here; more than that, I was very much surprised, for, while I know that when the average cadet makes up his mind to do anything he will generally do it, I was quite unprepared to find them so well advanced in coast artillery work.

This good work could only have resulted from intelligent, painstaking, and tactful methods of instruction on the part of the officers having the class in charge which in turn seems to have aroused interest and stimulated desire to become proficient.

As a coast artillery officer I am delighted to see this, since in years gone by a young man joining this branch of the service from the academy has required instruction instead of being able to take his place at once as an instructor, while these young gentlemen of the first class who join my arm of the service when they graduate will be from the outset a valuable asset.

I am glad to know that you are personally interested in having as much attention paid to coast artillery work as is possible, and that through your efforts so much of the matériel necessary for proper instruction in this branch has been installed.

If I may be allowed to suggest any addition to this matériel, I strongly urge the installation of a 60-inch search and a 30 or 36 inch illuminating light and a mortar battery of two mortars.

The 6-inch battery answers admirably for instruction in heavy gun work and is better suited to the cadets than one of larger caliber, but the work at the mortars both in the primary station and in the pit differs materially from that used in direct fire. While it might not be practicable to use service charges, much valuable instruction can be obtained through the use of subcaliber ammunition.

The general bearing of the young gentlemen was just what was to be expected. Take it all in all, their brief visit was a pleasure to us all, and I regret that I can not look forward to a repetition while on the active list.

Believe me, my dear colonel,

Very sincerely, yours,

HENRY L. HARRIS,

Colonel, Coast Artillery Corps, Commanding District.

The installment last year of the 6-inch guns at West Point, through the courtesy of the Chief of Ordnance, and the building of the primary and secondary stations contributed to this end. A 60-inch searchlight is being purchased now for this battery, and it will then require only the installment of a mortar battery to complete the equipment for coast artillery instruction, with the exception of a few minor details. Owing to the preliminary practice at West Point with the newly installed seacoast artillery equipment mentioned above, the class was enabled to begin practice, upon their arrival at Fort Hancock, with the 6-inch guns. The result was a record of 100 per cent of hits.

Through the kindness of the Quartermaster-General a full pack train has been stationed here since the evacuation of Cuba. It is being improved daily. The first class has gone out with it alternately as cavalry and as a mountain battery, and camped in the hills west of the river. The cadets are instructed until competent in the setting up of the aparejo, adjusting for bunches, the various slings and hitches, the loading of cargoes, the organization and administration of the train, in camp and on the road.

A statement by the executive officer of the national match at Camp Perry, Ohio, 1908, contained in his report to The Adjutant-General of the Army dated December 3, 1908, is reproduced herewith for the reason that the statement was made and published before the Military Academy had had a hearing in its own behalf on the subject. The statement is as follows:

The absence of the team from the United States Military Academy was again the subject of adverse comment. This academy furnishes a large number of the officers who are to teach the subject of shooting to our Army, and they can not begin too early to learn the subject which will most occupy their time after they become officers. The team from the Naval Academy again proved its worth, and shot consistently throughout the match, coming out seventh in a field of 50. It was one point below Massachusetts, which won the sixth money prize, \$50. The experience these young men get at this match is of great benefit to them later on as officers.

The absence of a team of cadets of the Military Academy at the national match was the result of experience in the past and the requirements of the curriculum of the Military Academy.

In 1905, the experiment of training a team of cadets to represent the Military Academy at the national match was tried. That year the individual figure of merit for the entire class (including its team of experts), firing the regular course at West Point, was only 72.56.

The instruction of those cadets not on the team was reduced to a minimum in order that the maximum amount of instruction might

be given to those who were to represent the Military Academy at the national match; thus, those cadets that needed the practice the least were getting the opportunity to practice the most, while those cadets who needed the instruction the most received the least. At the same time it was found that to train a team of experts for a national match necessitates depriving them of other equally important instruction in favor of the small-arm rifle practice, namely, instruction in cavalry tactics and horsemanship; field, siege, and coast artillery tactics and target practice; service of the mines; infantry tactics; practical military engineering, including the construction of field fortifications; intrenchments; various kinds of bridges, etc.; surveying; military reconnaissance; map making; military signaling and telegraphy; camping expedients; practice marches and maneuvers; crossing streams and practical instruction in ordnance and the science of gunnery; as well as some of the academic courses in the spring and fall. It was therefore after mature consideration that the authorities of the Military Academy abandoned the project of sending a team to the national match, for the reason that it is impracticable and violates the principle of equal instruction for all. This decision has since been justified by the results. For example, the individual figure of merit for the entire class shooting the prescribed course at West Point in 1905 (the year in which the plan of sending a team to the national match was tried) was, as stated above, 72.56.

The individual figure of merit in 1906 was 87.43; 1907, 105.83; 1908, 119.71; 1909, 130.42.

This year was marked by the best record ever made at West Point.

In the first class this year there were—

Expert riflemen.....	18
Sharpshooters.....	24
Marksmen.....	13
First-class men.....	24
Second-class men.....	4
Third-class men.....	0
Present, not firing.....	0
Total number of cadets in class.....	83

The course in small-arm rifle practice for the four classes at the academy is as follows:

First year, fourth class:

1. Position and aiming drills.
2. Use of subtarget gun machine.
3. Gallery practice.

Second year, third class:

1. Special course "A" as prescribed in the Small-Arms Firing Regulations.
2. Some additional instruction practice in mid-range and skirmish firing.

Third year, second class:

This class is on furlough during the summer.

1. Act as assistant instructors at gallery practice.
2. Preliminary instruction in revolver practice.

Fourth year, first class:

1. Complete marksman's course as prescribed in the Small-Arms Firing Regulations.
2. Regular course in revolver firing, both mounted and dismounted.

It will thus be seen that small-arm rifle practice is given all the attention and time that it is possible to devote to it, and a constant effort is being made to improve the cadet's course of instruction in this important subject.

It will be seen from the above that the statement of the executive officer of the national match is in error and is not warranted by the facts.

The Military Academy would be only too pleased, if it could be arranged without interfering with the course of instruction in other equally important subjects, to shoot a team from the Naval Academy on alternate years at West Point and Annapolis, the teams to be chosen by drawing lots from the first class of each institution. This will make every cadet in the class a candidate for the team, and does away with the objectionable and defective practice of training a few at the expense of the many.

A space is being allotted in the new gymnasium, now 50 per cent completed, for gallery practice, which will admit of this practice all through the winter. The range is an inadequate one, which can be improved greatly by the straightening of the track of the West Shore Railroad. Correspondence has been had with the railroad during a long period with the hope that the railroad would straighten the track for its own benefit, as is frequently done on many roads. The railroad now offers to do the work, which will cost \$166,019.50, the United States to bear one-half of the expense of straightening the track and to pay for the filling in of the landward space in addition. This would cost the United States approximately \$122,009.75, for which no funds are available. A careful search has been made in the adjacent country by a board detailed for the purpose to find a suitable range that can be accessible and economical, without finding one.

DEPARTMENT OF TACTICS.

The commandant of cadets, Col. R. L. Howze, was relieved at the expiration of a successful term of four years. Maj. (now Lieut. Col.) F. W. Sibley, Fourth Cavalry, detailed in his place, assumed his office February 1. Attention is invited to his report herewith, marked "Appendix D,"^a which describes the work accomplished during the year of the high class always expected from this department.

ATHLETICS.

Athletics, engaged in during release from quarters and after the recitations of the day are over, are continuing to show good results,

^a See page 39.

counteracting the effects of hard study, developing a healthy mind and body, improving the discipline, and perpetuating a resolute and sportsman-like spirit in the Corps of Cadets, and are encouraged in every proper way. All cadets engaging in athletic contests do so under the constant supervision of the surgeons, instructors in physical training, and the trainer. An expert trainer has been found to be an indispensable assistant to the instructor of physical training, and one has been employed for years by the athletic association. An item has been inserted in the estimates for the coming year to provide for this office on the Military Academy rolls so that it will not be dependent upon private subscriptions. It is contemplated that the trainer will then also be used as custodian of the new gymnasium, which will also be necessary.

Cadets who are low in studies or not sufficiently well developed physically are not permitted to play on the teams.

The cadets were very successful during the past year, having won all their championship games, football, fencing, and baseball.

DEPARTMENT OF PRACTICAL MILITARY ENGINEERING, MILITARY SIGNALING, AND TELEGRAPHY.

This department is ably presided over by Capt. William P. Wooten, Corps of Engineers, whose report is appended, marked "Appendix E."^a Attention is invited to the fact that those cadets crossing the Hudson with such means as can be picked up anywhere, improvised the means and crossed to Constitution Island and back in one and three-quarters hours. This part of the education of the soldier is regarded as most important.

ACADEMIC.

The revised curriculum adopted by the academic board and approved by the War Department in 1907 is now in operation with the fourth and third classes, the second and first classes following the old schedule. The benefits of the revision are already apparent, particularly in the advantages derived from the correlation of the allied subjects taught by the different departments.

The academic board is still engaged in filling in the details of the general plan of the revision, and for the better accomplishment of this work the board has been divided into subcommittees, one for each department, and a general committee whose duty it is to coordinate the work of the subcommittees, the final recommendations of all these committees then being thoroughly discussed and carefully considered and acted upon by the entire academic board.

In connection with the revision the heads of five of the departments of instruction have been engaged in the preparation of new text-books

^a See page 42.

adapted to the revised course as well as corrected to keep pace with the improvements and inventions in the respective arts and sciences of which they treat. All this has devolved an immense amount of additional labor upon the academic board.

When all the details have been finally worked out, copies of the reports of the subcommittees, general committee, and the academic board, with recommendations for the necessary changes in the Military Academy Regulations, will be forwarded to the War Department.

OFFICERS ON DETACHED SERVICE AT THE MILITARY ACADEMY.

The recommendation made for years by superintendents and by boards of visitors that officers serving on tours of duty at the Military Academy be placed on the same footing as members of the detailed staff, in order that the best talent may be secured for the important duty at the Military Academy without crippling the regiments, is renewed.

MILITARY ACADEMY DETACHMENTS.

The Military Academy has been fortunate in securing the services of Mr. Philip Egner as teacher of music and leader of the Military Academy band. Under his leadership the band has been reorganized and greatly improved.

The cavalry detachment (colored) has continued to demonstrate the advantages of colored over white men for the duties required of this detachment.

The field artillery detachment has continued its high standard of excellence, for which great credit is due to its commander, Capt. Charles P. Summerall, Second Field Artillery.

The engineer detachment has demonstrated its efficiency by keeping pace with the improvements in practical military engineering, military signaling and telegraphy, and military reconnaissance and sketching, and has been of great assistance in the course of instruction of cadets in these subjects.

The great advancement in the course of instruction in cavalry tactics and horsemanship, in field, siege, and coast artillery tactics and target practice, and in practical military engineering, military signaling and telegraphy, and military reconnaissance and sketching, has made heavy and increasing demands on the services of these three detachments, to such an extent that the time has now arrived when the assistance of a company of infantry is also required. This is particularly necessary during the season for small-arm rifle practice, and it is contemplated to request that a company or detachment of infantry be ordered to West Point and be placed under the orders of the superintendent of the Military Academy, hereafter, for temporary duty during the target season to assist in the instruction of cadets in small-arm rifle practice.

THE LIBRARY.

Attention is invited to the report of the librarian herewith, marked "Appendix F."^a The present librarian, Dr. Edward S. Holden, has done much to place this library on the highest possible plane of usefulness, and deserves much credit therefor.

WATER SUPPLY.

Attention is invited to the report of the officer in charge of the water supply (Appendix G).^b The plan for protecting that portion of the watershed outside the reservation from all possible contamination has been halted by a court decision in case of the supply of the town of Chester, Orange County, N. Y. In the meantime the purity of the water here exceeds that of most cities, and when the litigation has ceased, action will be taken to purify the water up to the limit of possibilities.

BUILDINGS AND GROUNDS.

Maj. J. M. Carson, jr., quartermaster, has conducted the quartermaster department and the construction of the new buildings in a very able manner. Attention is invited to his report herewith, marked "Appendix H,"^c showing buildings completed and under way.

In addition to what he reports, the drill ground for mounted troops, adjoining Highland Falls, has been completed.

There has been delay on the new administration building and the bachelor officers' quarters that has been annoying.

The percentage plan has been in use in later contracts which are going ahead with great rapidity. The new administration building is now occupied, is almost completed, and is proving most satisfactory.

Eight views showing the progress of the improvements at the Military Academy up to date are inclosed herewith.

WEST POINT HOTEL.

Recommendation is again made to purchase the Ladycliffe grounds and building for a hotel, the reasons for which are mentioned in last report and in estimates before Congress.

DEPARTMENT OF ORDNANCE AND SCIENCE OF GUNNERY.

The report of the professor of ordnance and science of gunnery (Appendix I)^d is inclosed herewith.

Plans have been made with a view to giving this important department its much needed machine shops for the practical instruction of cadets in wood and metal working in so far as it applies to the manufacture of military material. This project has been delayed for lack of space, but it is expected that upon the completion of the east

^a See page 46.

^b See page 54.

^c See page 60.

^d See page 73.

academic building there will be ample facilities for the installation of ordnance shops and the necessary tools and machinery required for this part of the cadets' instruction. These shops can be doubly useful by manufacturing and repairing such pieces of ordnance as facilities may permit.

FORESTRY.

Report of the forester, Prof. Roy L. Marston, M. F., is inclosed herewith, marked "Appendix J."^a

THE RECONSTRUCTION OF FORT PUTNAM.

The last appropriation of \$5,000 (making \$25,000 in all) became available July 1, 1909, and is expected to finish the placing of one of the fortifications, which had much to do with the fact that we are now Americans and not English, in a condition to last for ages as a memorial.

MONEY AND PROPERTY ACCOUNTABILITY.

The growth of the Military Academy has reached a point where the extent of money and property responsibility makes necessary an additional clerk at Headquarters of the Military Academy, to be qualified as an expert accountant, to assist in auditing money accounts and property returns, for the correctness of which the superintendent of the Military Academy is responsible. It is contemplated to embody such an item in the next annual estimates.

ESTIMATES.

As directed by the War Department the estimates for the next year were forwarded in advance of the usual time.

OFFICIALS OF THE GOVERNMENT.

By the retirement during the year of the distinguished soldier and jurist, Gen. Edgar S. Dudley, who has been on duty as professor of law at the Military Academy for the past eight years, the academy has lost one of its most honored and beloved teachers and advisors.

The superintendent takes this method of acknowledging the unvarying courtesy and helpfulness extended to him by the officers of the War Department, and also the strict attention to duty and the efficiency of the members of the military and academic staffs of the Military Academy shown by the high results that have been obtained during the past year.

Very respectfully,

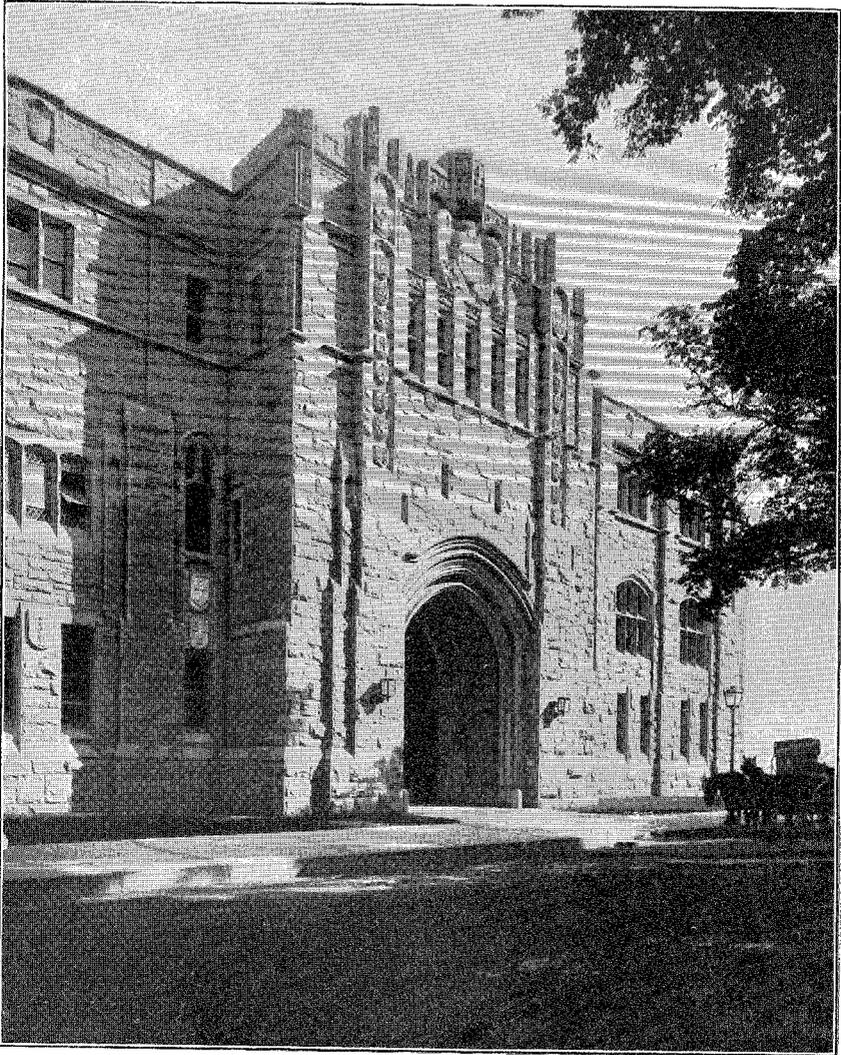
H. L. SCOTT,

Colonel, U. S. Army, Superintendent.

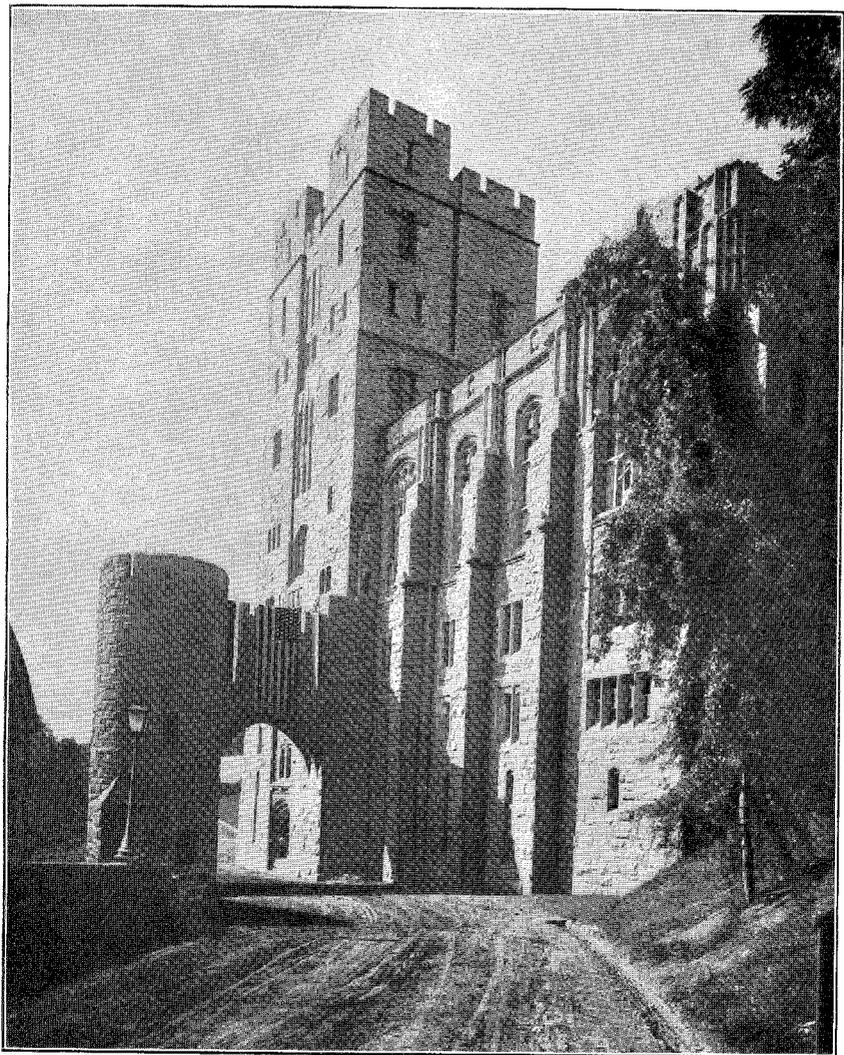
THE ADJUTANT-GENERAL, U. S. ARMY,

War Department, Washington, D. C.

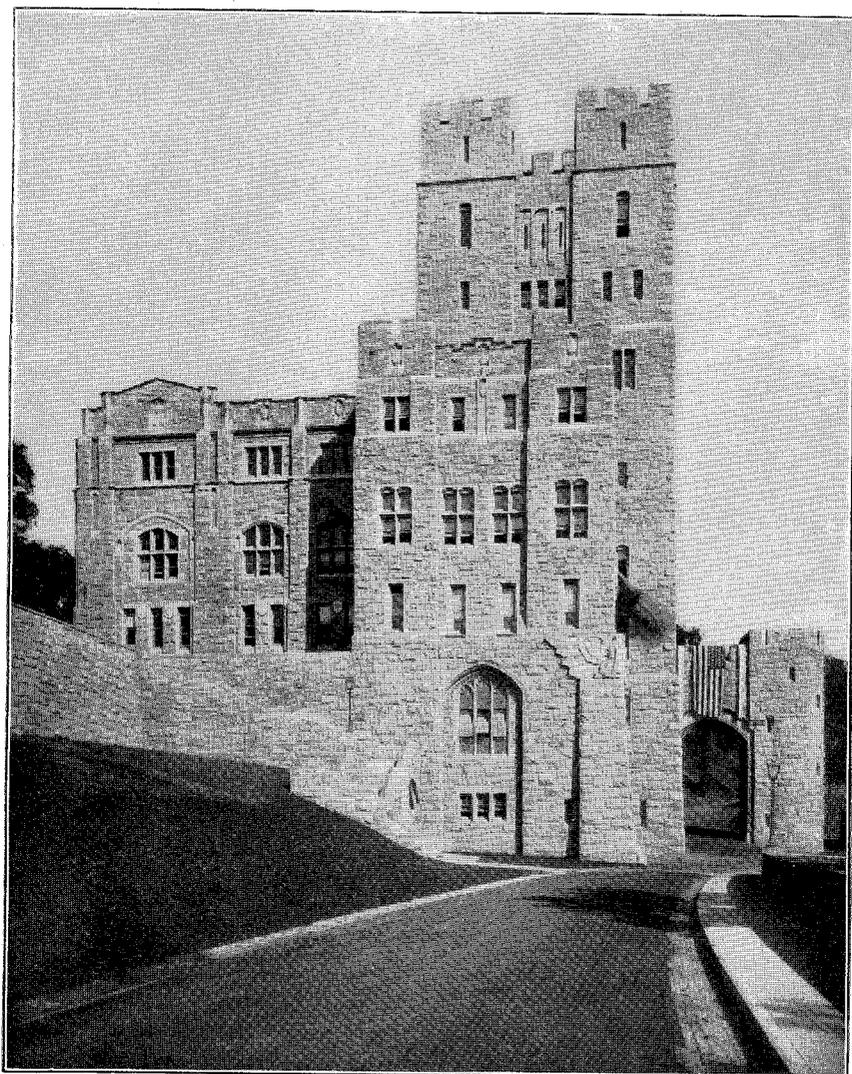
^a See page 78.



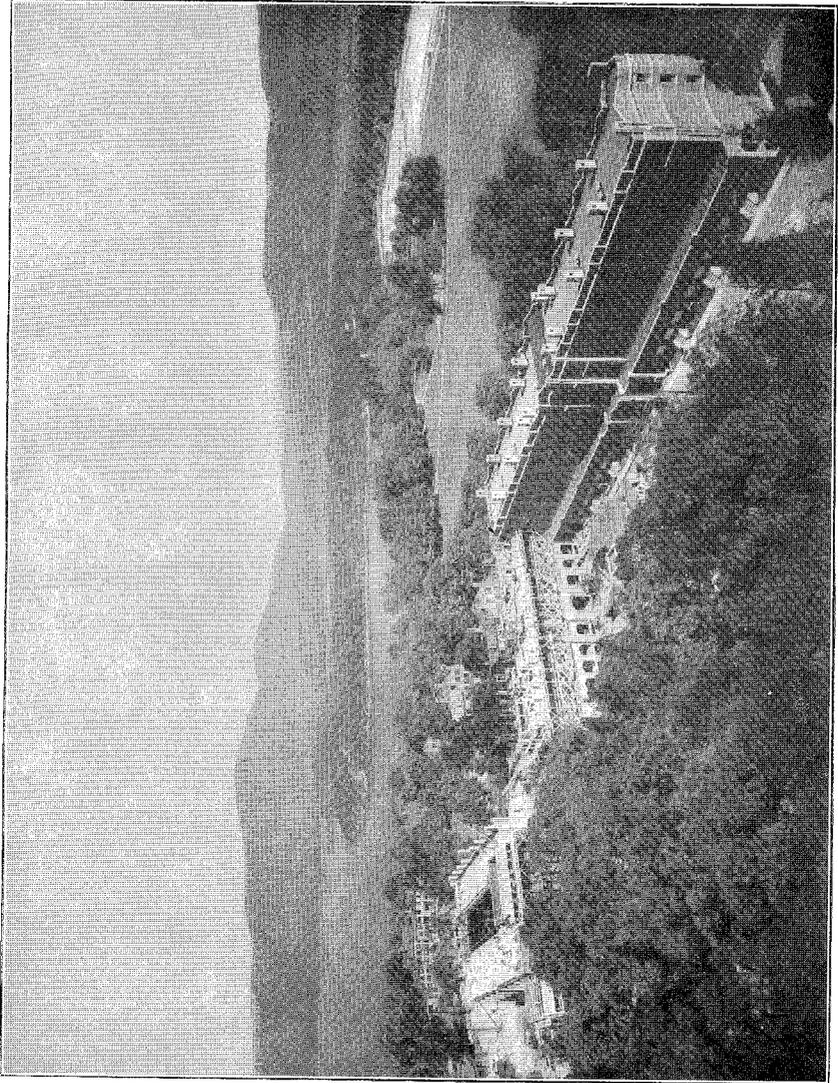
WEST VIEW OF NEW HEADQUARTERS BUILDING.



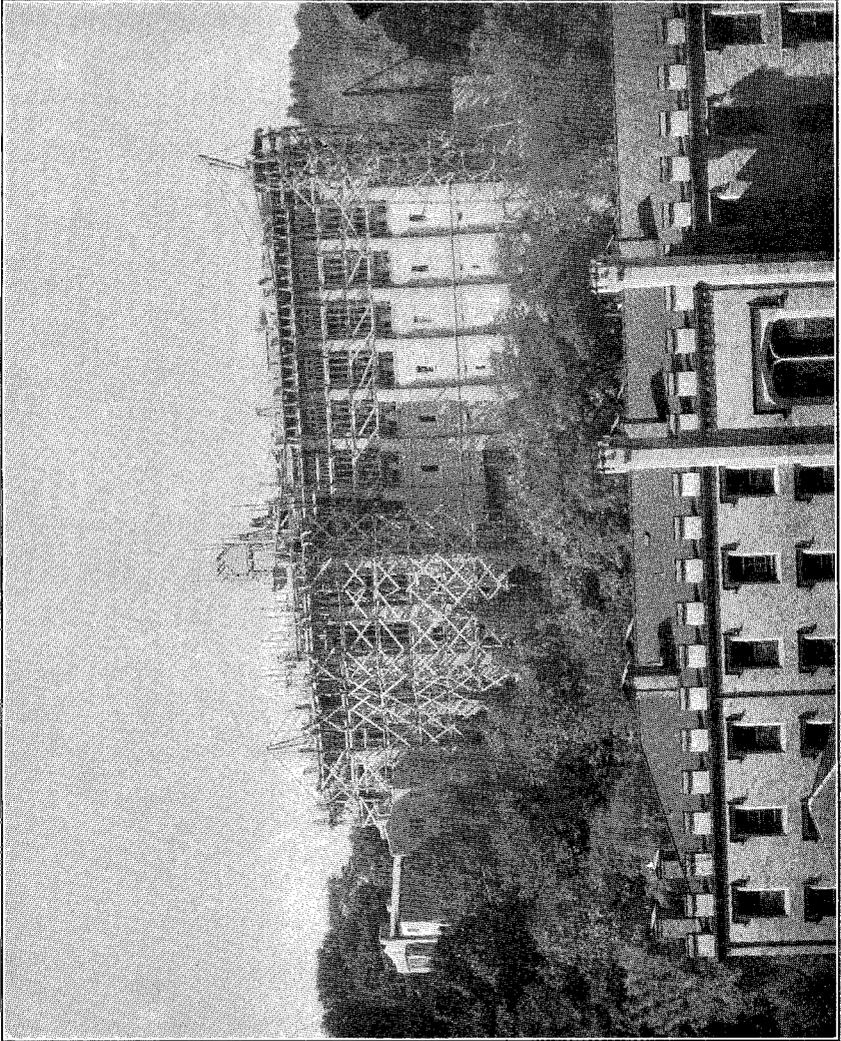
NORTHEAST VIEW OF NEW HEADQUARTERS BUILDING.



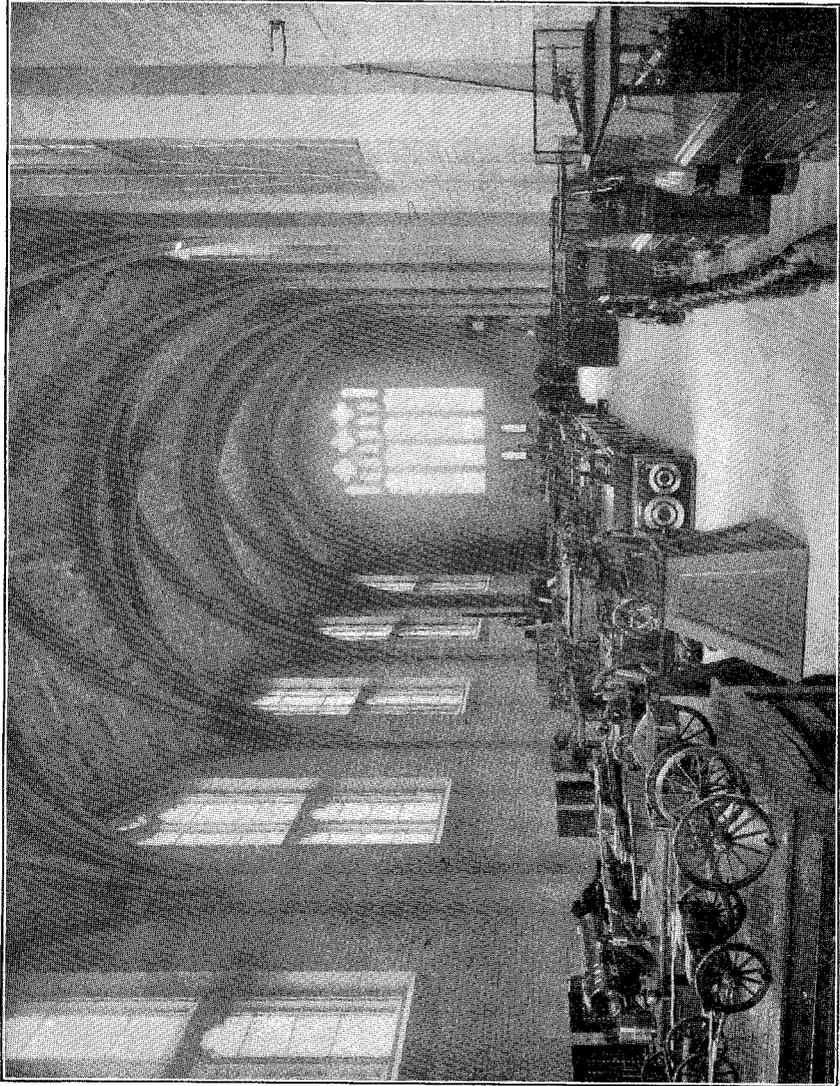
SOUTH VIEW OF NEW HEADQUARTERS BUILDING.



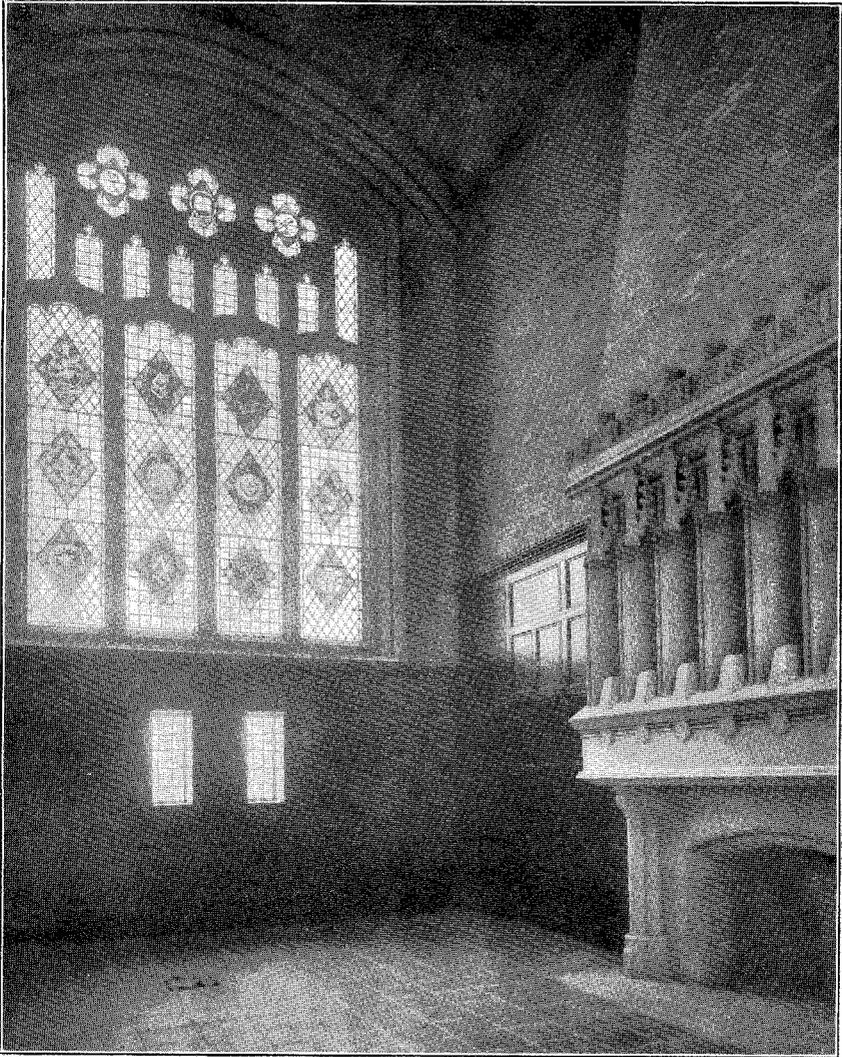
NEW GYMNASIUM AND NEW WEST WING OF NORTH CADET BARRACKS (PARTIALLY COMPLETED).



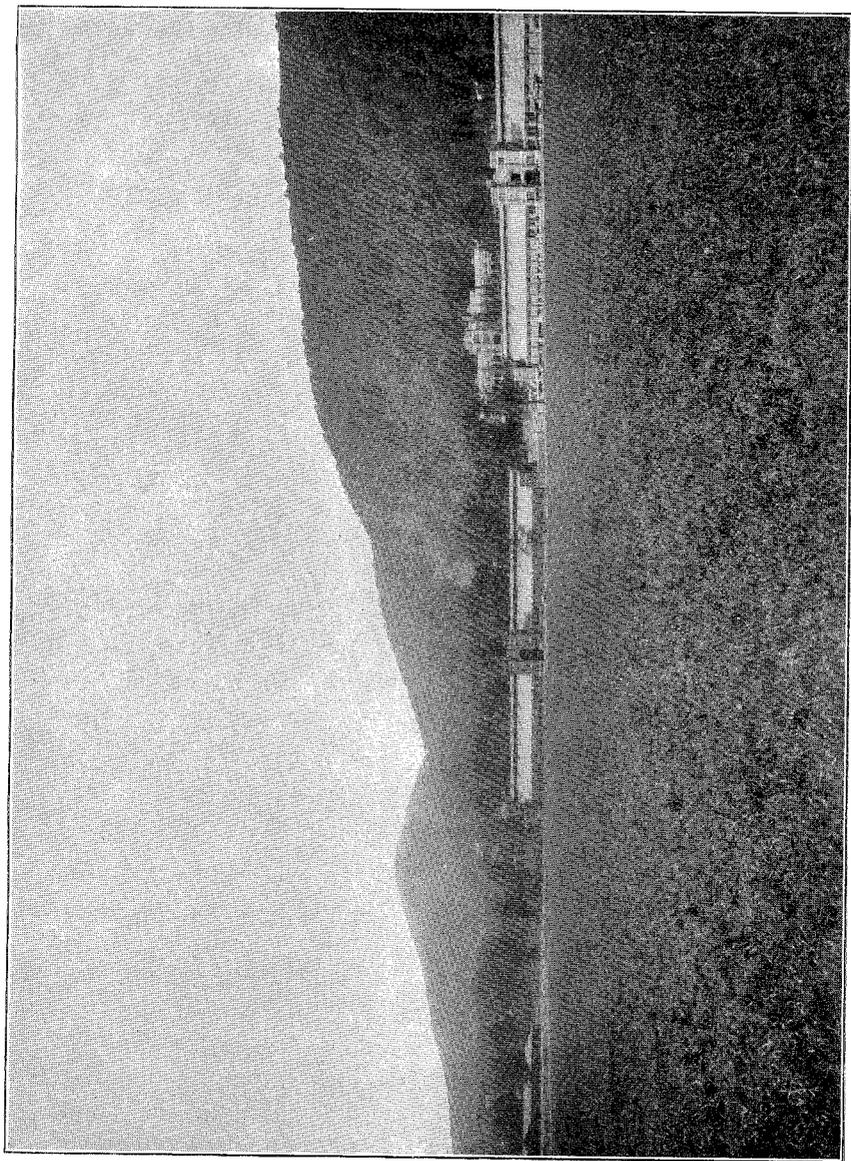
NEW CHAPEL (PARTIALLY COMPLETED).



PORTION OF ORDNANCE MUSEUM IN NEW HEADQUARTERS BUILDING (PARTIALLY COMPLETED).



ACADEMIC BOARD ROOM IN NEW HEADQUARTERS BUILDING (PARTIALLY COMPLETED).



PORTION OF NEW CAVALRY AND ARTILLERY DRILL PLAIN, WITH CAVALRY AND ARTILLERY BARRACKS
AND STABLES AND GUN SHED IN BACKGROUND.

APPENDIX A.

ROSTER OF OFFICERS AND TROOPS.

SUPERINTENDENT AND COMMANDANT.

Col. Hugh L. Scott, major, Fourteenth Cavalry.

MILITARY STAFF.

Capt. Joseph S. Herron, Second Cavalry, adjutant of the Military Academy and of the post; secretary of the academic board; recruiting officer.

Maj. John M. Carson, jr., quartermaster, quartermaster of the Military Academy and of the post; disbursing officer; in charge of construction.

Capt. William R. Grove, commissary, treasurer of the Military Academy, and quartermaster and commissary of the Corps of Cadets.

Lieut. Col. Charles M. Gandy, Medical Corps, surgeon.

Capt. Charles D. Herron, Eighteenth Infantry, assistant to quartermaster.

Capt. John W. Hanner, Medical Corps.

Capt. Robert C. Loving, Medical Corps.

Capt. Lloyd L. Smith, Medical Corps.

First Lieut. William B. Wallace, Twentieth Infantry, post treasurer and commissary; in charge of post exchange; assistant to commissary of the Corps of Cadets.

First Lieut. Richard M. Thomas,^a Fifteenth Cavalry, on duty at Headquarters Military Academy; inspector of small-arm rifle practice; summary court.

First Lieut. Guy Kent, First Cavalry, assistant to quartermaster.

Capt. Joseph W. Beacham, jr., Ninth Infantry, on temporary duty at Headquarters Military Academy to November 30, 1909.

Second Lieut. Arthur J. Hanlon, Twenty-eighth Infantry, on temporary duty at Headquarters Military Academy to November 30, 1909.

Second Lieut. Wallace C. Philoon, Fourteenth Infantry, on temporary duty at Headquarters Military Academy to November 30, 1909.

ACADEMIC STAFF.

Professors whose service at the academy as professor exceeds ten years have the rank, pay, and allowances of colonel, and all other professors the rank, pay, and allowances of lieutenant-colonel. The academic departments are arranged in the order in which they were created by law.

^a Also on duty in department of English and history.

DEPARTMENT OF TACTICS.

Lieut. Col. Frederick W. Sibley, Fourth Cavalry, commandant of cadets and instructor of tactics.

Capt. Morton F. Smith, Twentieth Infantry (commanding First Battalion), senior assistant instructor of infantry tactics.

Capt. Oscar J. Charles, Seventeenth Infantry (commanding Second Battalion), instructor of tactics.

Capt. Isaac Newell, Twenty-second Infantry, instructor of tactics; commanding company of cadets.

Capt. Charles P. Summerall, Second Field Artillery, senior assistant instructor of artillery tactics.

Capt. Herman J. Koehler, U. S. Army, master of the sword; instructor of military gymnastics and physical culture.

Capt. Guy V. Henry, Twelfth Cavalry, senior assistant instructor of cavalry tactics.

Capt. John D. Long, Twelfth Cavalry, instructor of tactics.

Capt. Alfred A. Maybach, Coast Artillery Corps, instructor of tactics; commanding company of cadets.

First Lieut. Edward H. De Armond, Sixth Field Artillery, instructor of tactics; commanding company of cadets.

First Lieut. Frederic H. Smith,^a Coast Artillery Corps, instructor of tactics.

First Lieut. Quinn Gray,^b Coast Artillery Corps, instructor of tactics.

First Lieut. Henry M. Nelly,^c Twentieth Infantry, instructor of tactics.

First Lieut. Francis H. Farnum, Twenty-fourth Infantry, instructor of tactics; commanding company of cadets.

First Lieut. Benjamin E. Grey, Twenty-first Infantry, instructor of tactics and gymnastics; commanding company of cadets.

Second Lieut. E. Llewellyn Bull, Twenty-second Infantry, instructor of tactics; commanding company of cadets.

Francis Dohs, civilian instructor in fencing and military gymnastics.

Louis Vauthier, civilian instructor in fencing and military gymnastics.

Thomas Jenkins, civilian instructor in fencing and military gymnastics.

DEPARTMENT OF CIVIL AND MILITARY ENGINEERING.

Col. Gustav J. Fiebeger, U. S. Army, professor.

First Lieut. William A. Mitchell, Corps of Engineers, assistant professor.

First Lieut. Harold C. Fiske, Corps of Engineers, instructor.

First Lieut. Julian L. Schley, Corps of Engineers, instructor.

First Lieut. Charles R. Pettis,^d Corps of Engineers, instructor.

First Lieut. William D. A. Anderson, Corps of Engineers, instructor

^a On duty in department of mathematics.

^b On duty in department of philosophy.

^c On duty in department of drawing.

^d Also on duty in department of mathematics.

DEPARTMENT OF NATURAL AND EXPERIMENTAL PHILOSOPHY.

Lieut. Col. William B. Gordon, U. S. Army, professor.

First Lieut. William F. Morrison, Second Field Artillery, assistant professor.

First Lieut. Quinn Gray,^a Coast Artillery Corps, instructor.

First Lieut. Matthew A. Cross, Coast Artillery Corps, instructor.

First Lieut. Benjamin H. L. Williams, Coast Artillery Corps, instructor.

First Lieut. Halsey Dunwoody, Coast Artillery Corps, instructor.

First Lieut. Joseph H. Pelot, Ordnance Department, instructor.

Second Lieut. Frederick E. Shnyder, Second Cavalry, instructor.

Second Lieut. Jay L. Benedict, Fourteenth Infantry, instructor.

DEPARTMENT OF MATHEMATICS.

Lieut. Col. Charles P. Echols, U. S. Army, professor.

Capt. George B. Pillsbury, Corps of Engineers, associate professor.

First Lieut. Samuel Frankenberger, Third Field Artillery, assistant professor.

First Lieut. Charles R. Pettis,^b Corps of Engineers, instructor.

First Lieut. Frederic H. Smith,^a Coast Artillery Corps, instructor.

First Lieut. Clifford Jones,^c Coast Artillery Corps, instructor.

First Lieut. Charles R. Alley, Coast Artillery Corps, instructor.

First Lieut. Chauncey L. Fenton, Coast Artillery Corps, instructor.

First Lieut. William Bryden, Fifth Field Artillery, instructor.

First Lieut. Francis W. Honeycutt, Fifth Field Artillery, instructor.

First Lieut. George M. Morrow, jr., Coast Artillery Corps, instructor.

First Lieut. Rolland W. Case, Ordnance Department, instructor.

First Lieut. Charles S. Donavin, Ordnance Department, instructor.

Second Lieut. Charles Telford, Twelfth Cavalry, instructor.

Second Lieut. Vaughn W. Cooper, Twelfth Cavalry, instructor.

DEPARTMENT OF CHEMISTRY, MINERALOGY, AND GEOLOGY.

Col. Samuel E. Tillman, U. S. Army, M. A., professor.

Maj. Wirt Robinson, Coast Artillery Corps, assistant professor.

Capt. Thomas W. Darrah, Twenty-seventh Infantry, instructor.

Capt. William F. Nesbitt, Fourth Infantry, instructor.

Capt. Charles B. Clark, Fourteenth Infantry, instructor.

Capt. Henry C. Jewett, Corps of Engineers, instructor.

First Lieut. Clifford Jones,^d Coast Artillery Corps, instructor.

First Lieut. Samuel M. Parker, Twentieth Infantry, instructor.

DEPARTMENT OF DRAWING.

Col. Charles W. Larned, U. S. Army, professor.

First Lieut. Pelham D. Glassford, Second Field Artillery, assistant professor.

^a Also on duty in department of tactics.

^b On duty in department of civil and military engineering.

^c On duty in department of chemistry, mineralogy, and geology.

^d Also on duty in department of mathematics.

Capt. Frederick W. Lewis, Twenty-ninth Infantry, instructor.
 First Lieut. Henry M. Nelly,^a Twentieth Infantry, instructor.
 Second Lieut. Richard J. Herman, Twenty-third Infantry,
 instructor.
 Second Lieut. Frederick W. Manley, Thirteenth Infantry,
 instructor.

DEPARTMENT OF MODERN LANGUAGES.

Col. Edward E. Wood, U. S. Army, professor.
 Capt. Peter E. Traub, Twelfth Cavalry, associate professor.
 Capt. Ora E. Hunt,^b Thirtieth Infantry, assistant professor of the
 Spanish language.
 First Lieut. George M. Russell, Fifteenth Cavalry, assistant professor
 of the French language.
 First Lieut. Lewis S. Morey,^b Twelfth Cavalry, instructor.
 First Lieut. Owen G. Collins, Coast Artillery Corps, instructor.
 First Lieut. Donald C. McDonald, Coast Artillery Corps, instructor.
 First Lieut. Thomas M. Spaulding, Coast Artillery Corps, instructor.
 First Lieut. Edward J. Moran,^b Twenty-second Infantry, instructor.
 Second Lieut. Edward M. Zell,^b Seventh Cavalry, instructor.
 Second Lieut. Robert C. Richardson, jr., Fourteenth Cavalry,
 instructor.
 Second Lieut. Joseph W. Stilwell, Twelfth Infantry, instructor.
 Second Lieut. Martin C. Wise,^b Twentieth Infantry, instructor.
 Georges Castegnier, civilian instructor in French.
 Justin M. Chenal, civilian instructor in French.
 José M. Asensio, civilian instructor in Spanish.
 N. T. Quevedo, civilian instructor in Spanish.

DEPARTMENT OF LAW AND HISTORY.

Lieut. Col. Walter A. Bethel (major and judge-advocate, U. S.
 Army), professor. (By assignment under act of June 6, 1874.)
 Capt. Daniel G. Berry, Twenty-second Infantry, assistant professor.
 Capt. Samuel T. Ansell, Eighth Infantry, instructor.
 Capt. Clement A. Trott, Fifth Infantry, instructor.
 First Lieut. Kerr T. Riggs,^b Fourteenth Cavalry, instructor.
 Second Lieut. Henry E. Mitchell, Third Cavalry, instructor.
 Second Lieut. Harry S. Grier, Twenty-fifth Infantry, instructor.
 Second Lieut. John de B. W. Gardiner, Eleventh Cavalry,
 instructor.

DEPARTMENT OF PRACTICAL MILITARY ENGINEERING, MILITARY SIGNALING, AND
TELEGRAPHY.

Capt. William P. Wooten, Corps of Engineers, instructor.
 First Lieut. Mark Brooke, Corps of Engineers, senior assistant
 instructor.

^a Also on duty in department of tactics.

^b Also on duty in department of English and history.

DEPARTMENT OF ORDNANCE AND GUNNERY.

Lieut. Col. Colden L'H. Ruggles, U. S. Army (major, Ordnance Department), professor. (By detail August 21, 1908, under act of March 2, 1907.)

First Lieut. Ned B. Rehkopf, Second Field Artillery, senior assistant instructor.

First Lieut. George R. Allin, Sixth Field Artillery, assistant instructor.

Capt. Otho V. Kean, Ordnance Department, on duty in the department.

DEPARTMENT OF MILITARY HYGIENE.

Lieut. Col. Charles M. Gandy, Medical Corps, instructor.

DEPARTMENT OF ENGLISH AND HISTORY.

John C. Adams, instructor (acting professor). (By appointment September 12, 1908.)

Capt. Ora E. Hunt,^a Thirtieth Infantry, instructor.

First Lieut. Lewis S. Morey,^a Twelfth Cavalry, instructor.

First Lieut. Richard M. Thomas,^b Fifteenth Cavalry, instructor.

First Lieut. Kerr T. Riggs,^c Fourteenth Cavalry, instructor.

First Lieut. Edward J. Moran,^a Twenty-second Infantry, instructor.

Second Lieut. Edward M. Zell,^a Seventh Cavalry, instructor.

Second Lieut. Martin C. Wise,^a Twentieth Infantry, instructor.

LIBRARIAN.

Edward S. Holden, M. A., Sc. D., LL. D. (July 1, 1902.)

CHAPLAIN.

Edward S. Travers. (December 1, 1905.)

EXAMINING AND SUPERVISING DENTAL SURGEON.

Robert T. Oliver. (January 16, 1905.)

DENTAL SURGEON.

William H. Chambers. (June 30, 1907.)

TEACHER OF MUSIC.

Philip Egner. (June 17, 1909.)

FORESTER.

Roy L. Marston, M. F. (April 1, 1905.)

^a On duty in department of modern languages.

^b On duty at Headquarters Military Academy.

^c On duty in department of law and history.

ORGANIZATIONS.

CORPS OF CADETS.

Lieut. Col. Frederick W. Sibley, Fourth Cavalry, commanding.

First Battalion.

Capt. Morton F. Smith, Twentieth Infantry, commanding.

Company A, Capt. Alfred A. Maybach, Coast Artillery Corps, commanding.

Company B, Capt. Isaac Newell, Twenty-second Infantry, commanding.

Company C, First Lieut. Benjamin E. Grey, Twenty-first Infantry, commanding.

Second Battalion.

Capt. Oscar J. Charles, Seventeenth Infantry, commanding.

Company D, Second Lieut. E. Llewellyn Bull, Twenty-second Infantry, commanding.

Company E, First Lieut. Edward H. De Armond, Sixth Field Artillery, commanding.

Company F, First Lieut. Francis H. Farnum, Twenty-fourth Infantry, commanding.

UNITED STATES MILITARY ACADEMY BAND AND DETACHMENT OF FIELD MUSIC.

Capt. Joseph S. Herron, Second Cavalry, commanding.

DETACHMENT OF HOSPITAL CORPS.

Lieut. Col. Charles M. Gandy, Medical Corps, commanding.

Capt. John W. Hanner, Medical Corps.

Capt. Robert C. Loving, Medical Corps.

Capt. Lloyd L. Smith, Medical Corps.

DETACHMENT OF ENGINEERS.

Capt. William P. Wooten, Corps of Engineers, commanding.

First Lieut. Mark Brooke, Corps of Engineers.

DETACHMENT OF ORDNANCE.

Capt. Otho V. Kean, Ordnance Department, commanding.

UNITED STATES MILITARY ACADEMY DETACHMENT OF CAVALRY.

Capt. Guy V. Henry, Twelfth Cavalry, commanding.

First Lieut. Edward H. De Armond, Sixth Field Artillery.

UNITED STATES MILITARY ACADEMY DETACHMENT OF FIELD ARTILLERY.

Capt. Charles P. Summerall, Second Field Artillery, commanding.

UNITED STATES MILITARY ACADEMY DETACHMENT OF ARMY SERVICE MEN.

Capt. Charles D. Herron, Eighteenth Infantry, commanding.

First Lieut. Guy Kent, First Cavalry.

List of officers at the United States Military Academy.

Name.	Corps or regiment.	On duty at academy since—
SUPERINTENDENT.		
Scott, Hugh L.	Colonel, U. S. Army (major, Fourteenth Cavalry).	Aug. 31, 1906.
COLONELS.		
Larned, Charles W.	Professor (July 25, 1876)	Aug. 28, 1874.
Tillman, Samuel E.	Professor (Dec. 21, 1880)	Aug. 28, 1879.
Wood, Edward E.	Professor (Oct. 1, 1892)	Aug. 28, 1889.
Fiebeger, Gustav J.	Professor (May 4, 1896)	May 30, 1896.
LIEUTENANT-COLONELS.		
Gordon, William B.	Professor (Mar. 27, 1901)	May 2, 1901.
Echols, Charles P.	Professor (June 29, 1904)	Dec. 27, 1898.
Lissak, Ormond M. ^a	Lieutenant-colonel, Ordnance Department.	July 1, 1904.
Ruggles, Colden L/H.	Professor (Aug. 21, 1909) (major, Ordnance Department).	Aug. 21, 1908.
Gandy, Charles M.	Medical Corps	June 20, 1906.
Sibley, Frederick W.	Fourth Cavalry, commandant of cadets.	Feb. 1, 1909.
Bethel, Walter A.	Professor (Aug. 22, 1909) (major and judge-advocate).	Aug. 22, 1909.
ACTING PROFESSOR.		
Adams, John C.	Acting professor, United States Military Academy.	Sept. 12, 1908.
MAJORS.		
Carson, John M., jr.	Quartermaster's Department	July 8, 1903.
Robinson, Wirt	Coast Artillery	Dec. 30, 1906.
CAPTAINS.		
Traub, Peter E.	Twelfth Cavalry	July 1, 1907.
Hunt, Ora E.	Thirtieth Infantry	Aug. 22, 1908.
Darrah, Thomas W.	Twenty-seventh Infantry	Aug. 22, 1907.
Grove, William R.	Subsistence Department	Dec. 16, 1907.
Smith, Morton F.	Twentieth Infantry	Feb. 26, 1906.
Charles, Oscar J.	Seventeenth Infantry	Nov. 14, 1906.
Newell, Isaac	Twenty-second Infantry	Aug. 22, 1908.
Lewis, Frederick W.	Twenty-ninth Infantry	Aug. 22, 1905.
Summerall, Charles P.	Second Field Artillery	Do.
Herron, Joseph S.	Second Cavalry	Jan. 3, 1907.
Nesbitt, William F.	Fourth Infantry	Aug. 22, 1907.
Berry, Daniel G.	Twenty-second Infantry	Do.
Koehler, Herman J.	Captain, U. S. Army	Feb. 1, 1885.
Wooten, William P.	Engineers	Aug. 25, 1908.
Henry, Guy V.	Twelfth Cavalry	Aug. 28, 1908.
Long, John D.	do	Aug. 6, 1909.
Pillsbury, George B.	Engineers	Aug. 22, 1908.
Clark, Charles B.	Fourteenth Infantry	Aug. 22, 1906.
Ansell, Samuel T.	Eighth Infantry	June 14, 1906.
Trott, Clement A.	Fifth Infantry	Aug. 22, 1906.
Herron, Charles D.	Eighteenth Infantry	Aug. 22, 1908.
Hanner, John W.	Medical Corps	May 19, 1906.
Loving, Robert C.	do	Nov. 23, 1906.
Smith, Lloyd L.	do	Aug. 25, 1906.
Beacham, Joseph W., jr.	Ninth Infantry	Aug. 18, 1909.
Jewett, Henry C.	Engineers	Aug. 22, 1907.
Kean, Otho V.	Ordnance Department	Aug. 22, 1909.
Maybach, Alfred A.	Coast Artillery	Aug. 22, 1907.
FIRST LIEUTENANTS.		
Morey, Lewis S.	Twelfth Cavalry	Oct. 1, 1908.
Thomas, Richard M.	Fifteenth Cavalry	Aug. 22, 1907.
Mitchell, William A.	Engineers	Aug. 28, 1907.
Brooke, Mark	do	Aug. 1, 1907.
Fiske, Harold C.	do	Aug. 22, 1908.
Schley, Julian L.	do	Do.
Wallace, William B.	Twentieth Infantry	Dec. 30, 1907.
Russell, George M.	Fifteenth Cavalry	Aug. 28, 1906.
Pettis, Charles R.	Engineers	Aug. 22, 1909.
Riggs, Kerr T.	Fourteenth Cavalry	Do.
Anderson, William D. A.	Engineers	July 30, 1908.
De Armond, Edward H.	Sixth Field Artillery	June 14, 1909.
Kent, Guy	First Cavalry	Feb. 4, 1907.

^a Absent on detached service since April 13, 1908.

List of officers at the United States Military Academy—Continued.

Name.	Corps or regiment.	On duty at academy since—
FIRST LIEUTENANTS—continued.		
Frankenberger, Samuel	Third Field Artillery	Aug. 22, 1907.
Morrison, William F.	Second Field Artillery	Oct. 29, 1906.
Rehkopf, Ned B.	do	Sept. 26, 1907.
Collins, Owen G.	Coast Artillery	Oct. 5, 1907.
Smith, Frederic H.	do	Aug. 22, 1908.
Jones, Clifford	do	Aug. 22, 1909.
Gray, Quinn	do	Aug. 22, 1908.
Alley, Charles R.	do	Aug. 22, 1906.
Fenton, Chauncey L.	do	Do.
Allin, George R.	Sixth Field Artillery	Aug. 22, 1908.
Glassford, Pelham D.	Second Field Artillery	Aug. 22, 1907.
Bryden, William	Fifth Field Artillery	Aug. 22, 1908.
McDonald, Donald C.	Coast Artillery	Aug. 22, 1909.
Honeycutt, Francis W.	Fifth Field Artillery	Aug. 22, 1907.
Cross, Matthew A.	Coast Artillery	Aug. 22, 1909.
Spaulding, Thomas M.	do	July 1, 1908.
Williams, Benjamin H. L.	do	Aug. 22, 1909.
Dunwoody, Halsey	do	Do.
Morrow, George M., jr.	do	Do.
Pelot, Joseph H.	Ordnance Department	Do.
Moran, Edward J.	Twenty-second Infantry	Aug. 22, 1906.
Nelly, Henry M.	Twentieth Infantry	Aug. 22, 1907.
Parker, Samuel M.	do	Aug. 22, 1908.
Farnum, Francis H.	Twenty-fourth Infantry	Aug. 22, 1907.
Grey, Benjamin E.	Twenty-first Infantry	Aug. 22, 1906.
Case, Rolland W.	Ordnance Department	Aug. 22, 1908.
Donavin, Charles S.	do	Do.
SECOND LIEUTENANTS.		
Mitchell, Henry E.	Third Cavalry	Aug. 22, 1907.
Telford, Charles	Twelfth Cavalry	Do.
Shnyder, Frederick E.	Second Cavalry	Do.
Zell, Edward M.	Seventh Cavalry	Aug. 22, 1908.
Bull, E. Llewellyn	Twenty-second Infantry	Dec. 19, 1907.
Grier, Harry S.	Twenty-fifth Infantry	Aug. 22, 1907.
Cooper, Vaughn W.	Twelfth Cavalry	Do.
Richardson, Robert C., jr.	Fourteenth Cavalry	Nov. 1, 1906.
Benedict, Jay L.	Fourteenth Infantry	Oct. 24, 1908.
Stillwell, Joseph W.	Twelfth Infantry	Aug. 22, 1906.
Herman, Richard J.	Twenty-third Infantry	Aug. 22, 1907.
Wise, Martin C.	Twentieth Infantry	Do.
Gardiner, John de B. W.	Eleventh Cavalry	Sept. 1, 1907.
Manley, Frederick W.	Thirteenth Infantry	Aug. 22, 1908.
Hanlon, Arthur J.	Twenty-eighth Infantry	Aug. 15, 1909.
Philon, Wallace C.	Fourteenth Infantry	Do.

HEADQUARTERS UNITED STATES MILITARY ACADEMY,

West Point, N. Y., August 31, 1909.

Official:

J. S. HERRON,
Captain, Second Cavalry, Adjutant.

APPENDIX B.

REPORT OF THE SURGEON.

OFFICE OF THE SURGEON,
UNITED STATES MILITARY ACADEMY,
West Point, N. Y., July 31, 1909.

SIR: In compliance with instructions contained in Memorandum No. 64, dated Headquarters United States Military Academy, West Point, N. Y., July 20, 1909, I have the honor to submit the following report showing the work of the medical department for the fiscal year ending June 30, 1909:

CORPS OF CADETS.

The general health of the cadets has been excellent.

While the total admissions to sick report have exceeded those of the preceding year by 68, the total number of days lost to cadets in study on account of sickness was 540 less, and 354 less than for the fiscal year 1906-7.

There has been an increase in the percentage of admissions on account of malarial fevers, the ratio being 126.3 per thousand, as against 91.1 for the preceding year. These cases have all been of a nonmalignant type.

One case of typhoid fever has occurred. The victim admitted having drunk water from two wells while riding off the reservation. Inasmuch as these wells were both situated in infected districts, and the disease manifested itself within the limits of the incubation period after the taking of these waters, the source of the infection is apparent. I might add that prior to the occurrence of this case circulars had been published to the Corps of Cadets, as well as to all other members of the command and the civilian residents of the post, warning them of the infected condition of the surrounding country, and cautioning them of the dangers of eating and drinking off the reservation and from undetermined sources of supply.

During the year the cadets have been entirely free from scarlet fever, measles, and other exanthematous infectious diseases.

During the spring and early summer there have been a considerable number of cases of appendicitis; 10 of these came to operation, the result being highly satisfactory in each instance. A special report has been rendered discussing the probable etiology of these cases.

During the autumn, winter, and spring there have been many cases of catarrhal troubles of the respiratory tract, varying from a mild coryza to a bronchitis of moderate severity.

The cold and humid climate affords a sufficient explanation of the frequency of such cases.

There has not been a case of pneumonia during the year.

There have been 14 cases of acute rheumatism, for which the climate is to a considerable extent responsible. One of these cases was complicated by a severe rheumatic endocarditis. After he had sufficiently convalesced to be in a condition to travel, the patient was given a sick leave with the idea of having him return in time

to join the next incoming class should his physical condition warrant his so doing.

Throughout the year there have been many cases of indigestion, often attended by headache, vertigo, nausea, and vomiting. These cases were ordinarily due to carelessness on the part of the sufferer.

In the attempt to save time during the busy days of the academic year the average cadet almost involuntarily falls into habits of rapid eating and the violation of other laws of personal hygiene to the detriment of his physical well-being.

There have been the usual number of accidents and injuries resulting from the various drills, from athletics, and from athletic sports. In no case has permanent injury resulted.

Seventy-one surgical operations have been performed for cadets during the year. Successful results have been obtained in all cases.

There has been a decided decrease in the number of cases of sore feet since the introduction of the new model shoe. The constant wearing of a shoe of black, polished, and impervious leather during the hot days of the summer must of necessity give rise to a certain amount of perspiration, irrespective of the shape of the shoe. As a result of this the cuticle becomes macerated and softened, excoriation occurs between the toes, and blisters form on various parts of the feet. I believe that a light-weight canvas shoe might with advantage be issued for wear in camp when not on duty.

There have been no deaths during the year.

OFFICERS AND ENLISTED MEN.

The general health of officers and enlisted men has been good.

There have been the usual number of cases of catarrhal troubles of the upper air passages.

There has been an increase in the number of admissions on account of malarial fevers—97.2 per thousand as against 69.4 per thousand during the preceding year.

There have been the usual number of accidents and injuries.

Aside from venereal cases, the only infectious diseases have been 1 case of erysipelas, 2 of scarlet fever, and 1 of typhoid fever. These have all been traced to sources of infection from without the post.

There have been a number of cases of appendicitis, the greater proportion of which have come to operation. As a rule these have been young recruits, the disease having manifested itself within a few months after arrival at the post.

There have been the usual number of accidents and injuries. The total number of recruits examined was 133. Of these, 13 were rejected and 1 declined enlistment. Identification records were made in all accepted cases.

One enlisted man was transferred for treatment to the general hospital at Hot Springs, Ark., and one to the Government Hospital for the Insane.

Two men have been discharged on surgeon's certificate of disability.

There have been no deaths among the officers.

Two enlisted men have died during the year. One of these deaths resulted from suicide by hanging.

CIVILIAN POPULATION.

The civilian population of the post is a large one, probably proportionately, if not actually, larger than that of any military post in our service. It comprises not only the families and guests of officers and enlisted men—a large proportion of the latter being married—and the civilian employees of the various departments, but also the citizens and laborers employed upon the extensive construction work now in progress here.

While the latter class of persons have absolutely no claim upon the medical department, except the claim of humanity, they have always received prompt and cheerful medical and surgical aid in every case of emergency. As a result of this many of them appear to have come to the conclusion that free medical attendance is their right, and have demanded this for all sorts of minor ailments.

This practice finally interfered with the official work of the department to such an extent that I was obliged to insist that this class of cases should be denied gratuitous medical attendance.

Inasmuch as the town of Highland Falls, which adjoins the post, has several civilian physicians, this entails no hardship upon them. Indeed, a strict interpretation of paragraph 1490, Army Regulations, would also deprive all civilian employees of the right of free medical attendance.

Even with the restriction noted above there has been a great amount of work, both medical and surgical, done for civilians.

As an illustration, I might note 4 appendectomies, 2 enucleations of eyes injured in blasting, 1 spinal laminectomy after gunshot wound, 2 cases of trephining for fracture of skull, etc.

The cases of infectious diseases have been fewer in number than last year. They have included typhoid fever, measles, scarlet fever, and chicken pox.

This is rather remarkable, in consideration of the large number of people, and particularly of the lower class foreign laborers who are constantly coming on the reservation.

There have been 9 deaths during the year. This number includes the teacher of music, who had a quasi-military status. Of these deaths, 1 was suicidal and 1 homicidal.

HOSPITALS.

The cadet hospital as originally constructed had the wards finished with wooden floors and plastered walls. When the south wing was added in 1903, the two wards therein, and also the attached lavatories and toilet rooms, were built with tiled floors and walls in accordance with advanced ideas of hospital construction.

Subsequently the upper north (old) ward was remodeled to correspond with the newer portion of the building, leaving the lower ward of that wing in the original condition. The Military Academy appropriation bill for the fiscal year ending June 30, 1909, contained an item for putting this, the last untiled ward, in the same condition as the others.

This work is now in progress, and when completed the ward proper will compare favorably with any in the building. It has been found, however, that the appropriation is insufficient to include lavatories,

toilet rooms, and the vestibule in the work of rejuvenation; hence it will be necessary to procure additional funds. An item for this purpose has been included in my estimates for the fiscal year ending June 30, 1911.

The appropriation bill for the same year also contained an item for repainting all ceilings and side walls not faced with tiles and refinishing all interior woodwork. This work has not yet been completed. When it is done a greatly needed improvement will have been accomplished.

Another item appears in the same appropriation bill for renewing leaders, repairing roof, and repainting all tin work. A portion of this work has been completed, and the painting will be done later.

The soldiers' hospital, a semimodern building of 24 beds, is inadequate for the rapidly increasing requirements of the post, and particularly so in consideration of the fact that in addition to its use as a military hospital it is rapidly becoming an emergency hospital for civilians—civil employees of the Government and employees of the various contractors engaged in the extensive construction work on the post.

In an indorsement dated January 9, 1909, I made the following statement: "At the present writing 25 per cent of the total capacity of the soldiers' hospital is taken up by civilians." This state of affairs is by no means exceptional.

It is evident that a 24-bed hospital is insufficient for a command of 700 enlisted men, and is entirely inadequate for the accommodation of the sick of the command plus the injured of a large civilian population engaged in hazardous occupations.

In suggesting a remedy, I am confronted by two alternative propositions: (1) To recommend the increase of the capacity of the present hospital; (2) to recommend the construction of a new hospital.

I believe the latter to be the more desirable and in the end the more economical solution of the problem.

If new wards are added to the present building, it will be necessary either to build an additional story on those now existing or to construct entirely new wards.

I doubt if the foundations of the existing wards are sufficiently strong to enable them to carry the weight of an additional story. If new pavilions are built, it will be a difficult matter to so locate them as to provide convenient and satisfactory administration.

If additional ward capacity is provided, then the kitchen, mess room, hospital corps squad room—in fact, almost the entire administration portion of the establishment—would be inadequate for a hospital of the increased size. It is believed that the cost of making a patchwork and makeshift expansion would go far toward building a satisfactory new hospital.

The water supply of the present building is inadequate, and it is frequently impossible to get water in the second story, and occasionally the first-floor fixtures fail to furnish a supply.

I am informed that this is due to the small size of the main supplying that part of the post, and that a new main will be required to furnish a satisfactory pressure.

Finally, the present building is located at the extreme north end of the post, while the expansion, so far as barracks are concerned, is in the opposite direction.

The hospital is now between 1 and 2 miles from the new barracks for the cavalry and artillery detachments, and a considerable distance north of the older barracks, which are still occupied by the other detachments.

A new hospital in convenient proximity to the barracks would be of decided advantage, both for purposes of administration and to sick soldiers requiring transportation thereto.

SANITATION, ETC.

The general sanitary condition of the post is good, and this despite the presence of the large number of civilian mechanics and laborers employed on the reservation. Many of the latter are of a class which is ignorant of even the existence of the simplest principles of sanitation.

Since the beginning of the fiscal year the two new filter beds have been put in commission and the two old ones modernized. As a result, we now have a filter area more than sufficient to supply the demands of the post, even when the beds are worked at their most efficient rate.

Even before filtration the water is unusually good.

A weekly examination by biological methods is made in the laboratory of the cadet hospital, both raw and filtered waters being included in the test. During the months of May, June, and July these tests have shown an average of 145.3 colonies per cubic centimeter in the raw and 12 in the filtered water. The greatest number of colonies found at any time during this period were 235 in the raw and 20 in the filtered water. Both raw and filtered waters have been uniformly free from bacilli of the colon group.

Owing to the mildness of the past winter, there was a shortage in the crop of ice cut on the reservation, and as a consequence it has been necessary to husband the supply.

An investigation into the sources from which outside ice can be purchased had disclosed the fact that much of this ice has been harvested from polluted water. This has led to the publication of a circular cautioning the residents of the post of the danger attending the use of such ice in drinking water or in contact with foods that are not to be subsequently subjected to the cooking process. It has now become rather a difficult matter to procure even this inferior grade of ice.

Inasmuch as the population of the post is progressively increasing, it is not improbable that it will again be confronted with the same problem in the near future. In consideration of the low cost at which artificial ice can be manufactured, and the absolute control which can be exercised over the purity and wholesomeness of such ice, I recommend the establishment of an ice plant at West Point. It is possible that the small refrigerating plant now used in connection with the cadet mess might serve as nucleus for a plant of larger size.

The war on the mosquito has been carried on and with some apparent success, although there is still a superabundance of both the malarial and nonmalarial varieties. As stated elsewhere, there has been an increase in the number of cases of malaria over that of last year, the number, however, being smaller than during the preceding year.

It has been found that in a number of cases men have been suffering from malaria for some time before presenting themselves for treatment, they in the meantime serving as sources of infection from which the disease was conveyed to their fellows. One cadet recently reported with a well-defined case of the disease, and stated that he had been having chills on alternate days for a period of about ten days.

After an official case has been located it is carded and kept under observation and prophylactic treatment continued.

Attention is invited to the appended exhibits, which furnish more detailed information concerning the work of the medical department.

I also append the reports of the two dental surgeons.

In closing I desire to commend the faithful and efficient work of my assistants, Capts. John W. Hanner, Robert C. Loving, and Lloyd L. Smith, of the Medical Corps of the Army.

Very respectfully,

CHAS. M. GANDY,

Lieutenant-Colonel, Medical Corps, U. S. Army, Surgeon.

The ADJUTANT, UNITED STATES MILITARY ACADEMY.

EXHIBIT A.—*Sickness in command, etc.*

Admissions to cadet hospital, fiscal year—	
1908-9	1,021
1907-8	953
Increase	68
Number of days lost to cadets in study through sickness during fiscal year—	
1907-8	6,043
1908-9	5,503
Decrease	540
Admissions to soldiers' hospital during the fiscal year	833
Number of prescriptions filled at cadet hospital dispensary (exclusive of routine prescriptions in wards)	7,470
Number of prescriptions filled at the soldiers' hospital dispensary (exclusive of routine ward prescriptions) and at subdispensary	4,058
Recruits examined (accepted 119, rejected 13, declined 1)	133
Number of births on post	22
Number of enlisted men discharged on surgeon's certificate of disability	2
Number of enlisted men transferred to general and special hospitals	2

EXHIBIT B.—*Classification of admissions to hospital, with reference to causes, and ratio per thousand of mean strength.*

Diseases.	Cadets.		Officers and enlisted men.	
	Admissions.	Ratio per 1,000 of mean strength.	Admissions.	Ratio per 1,000 of mean strength.
Abrasions	25	60.75	22	28.16
Abscess	2	4.86	11	14.08
Abscess, dental, alveolar	4	9.72	6	7.68
Acne	1	2.43		
Adenoids	1	2.43		
Adenitis:				
Nonvenereal			2	2.56
Venereal			5	6.40

EXHIBIT B.—Classification of admissions to hospital, with reference to causes, and ratio per thousand of mean strength—Continued.

Diseases.	Cadets.		Officers and enlisted men.	
	Admissions.	Ratio per 1,000 of mean strength.	Admissions.	Ratio per 1,000 of mean strength.
Alcoholism.....			20	25.60
Angio-neurotic edema.....			2	2.56
Appendicitis.....	12	29.16	17	21.76
Arthritis, gonorrheal.....			1	1.28
Arthralgia.....			1	1.28
Asthma.....	1	2.43		
Asthenopia.....			2	2.56
Astigmatism.....			1	1.28
Blisters.....			1	1.28
Bronchitis.....			1	1.28
Burns.....	28	68.04	55	70.40
Bunions.....	2	4.86	5	6.40
Bursitis.....			3	3.84
Caries of teeth.....	3	7.29	2	2.56
Callosities.....			2	2.56
Cellulitis.....			3	3.84
Chancreids.....			7	8.96
Cholecystitis.....			6	7.68
Circumanal papillomata.....			1	1.28
Colic.....			1	1.28
Concussion of the brain.....	38	92.34	7	8.96
Conjunctivitis.....	3	7.29		
Constipation.....	4	9.72	7	8.96
Contusions.....	46	111.78	46	58.88
Corns.....	67	162.81	66	84.48
Coryza.....	6	14.88	11	14.08
Cystitis.....	134	325.62	5	6.40
Dacryocystitis.....			5	6.40
Deflected nasal septum.....			1	1.28
Delirium tremens.....	1	2.43		
Delirium tremens.....			1	1.28
Dermatitis (rhus tox).....	15	36.45	2	2.56
Diarrhea.....	4	9.72	22	28.16
Dislocations.....	7	17.01	6	7.68
Eczema.....			4	5.12
Endocarditis.....	1	2.43		
Epididymitis.....			2	2.56
Epilepsy.....			1	1.28
Epistaxis.....	1	2.43		
Epistaxis.....			1	1.28
Erasion of nail.....			1	1.28
Erysipelas.....			1	1.28
Excoriations.....	4	9.72		
Exhaustion.....	1	2.43		
Fever:				
Malarial, nonmalignant, intermittent, tertian.....	52	126.36	76	97.28
Simple, continued.....	11	26.73		
Scarlet.....			2	2.56
Typhoid.....	1	2.43		
Fissure in ano.....			1	1.28
Fractures.....	5	12.15	10	12.80
Furuncle.....	13	31.59	9	11.52
Gastritis.....			19	24.32
Gastro-enteritis.....			1	1.28
Hallux valgus.....			1	1.28
Headache.....	5	12.15		
Headache.....			1	1.28
Heat exhaustion.....			1	1.28
Hemorrhages:				
Subconjunctival.....			1	1.28
Retina.....	3	7.29		
Hemorrhoids.....	5	12.15	7	8.96
Hemoptysis.....			1	1.28
Hernia.....	1	2.43	7	8.96
Herpes facialis.....			1	1.28
Herpes zoster.....	2	4.86		
Hordeolum.....			3	3.84
Hydrocele.....			3	3.84
Incontinence of urine.....	1	2.43		
Indigestion.....	145	352.35	8	10.24
Infection, various abrasions and wounds.....	3	7.29		
Ingrowing toe nail.....	8	19.44	6	7.68
Influenza.....	5	12.15	18	23.04
Insomnia.....	1	2.43		
Intestinal obstruction.....			1	1.28
Irritability of bladder.....	1	2.43		
Irritable testicle.....	1	2.43		
Iodism.....	1	2.43		
Jaundice.....	1	2.43	1	1.28
Lacerations.....			3	3.84

EXHIBIT B.—*Classification of admissions to hospital, with reference to causes, and ratio per thousand of mean strength—Continued.*

Diseases.	Cadets.		Officers and enlisted men.	
	Admissions.	Ratio per 1,000 of mean strength.	Admissions.	Ratio per 1,000 of mean strength.
Lead poisoning.....			2	2.56
Laryngitis.....			1	1.28
Lumbago.....	5	12.15	3	3.84
Melancholia.....			1	1.28
Migraine.....	1	2.43		
Mitral regurgitation.....			1	1.28
Morphinism.....			1	1.28
Myalgia.....	5	12.15	13	16.64
Mydriasis.....			1	1.28
Myocarditis.....			2	2.56
Myositis.....	3	7.29		
Nephritis.....			2	2.56
Neuralgia.....	5	12.15	7	8.96
Neurasthenia.....	1	2.43	9	11.52
Neuritis.....	1	2.43		
Odontalgia.....	4	9.72		
Opacity of cornea.....			2	2.56
Orethritis:				
Venereal.....			3	3.84
Nonvenereal.....			3	3.84
Osteo-myelitis.....			1	1.28
Otalgia.....	1	2.43		
Otitis media.....	12	29.16		
Palpitation of the heart.....	1	2.43	3	3.84
Paresis, lips.....			2	2.56
Paronychia.....			2	2.56
Pediculosis.....	1	2.43	1	1.28
Periostitis.....			1	1.28
Pharyngitis.....	12	29.16	9	11.52
Pinguicula.....			1	1.28
Pleurisy.....	1	2.43	2	2.56
Pleurodynia.....			4	5.12
Pneumonia.....			2	2.56
Prostatitis.....			1	1.28
Psoriasis.....	1	2.43		
Pterygium.....			4	5.12
Ptomaine poisoning.....			2	2.56
Purpura rheumatica.....			1	1.28
Pyorrhea, alveolaris.....			1	1.28
Redundant prepuce.....	8	19.44	2	2.56
Rheumatism.....	14	34.02	27	34.56
Rheumatism, gonorrhoeal.....			1	1.28
Renal colic.....	1	2.43		
Retinitis.....			1	1.28
Scabies.....	4	9.72	5	6.40
Suicide, attempted.....			1	1.28
Singultus.....			1	1.28
Sinusitis.....	3	7.29		
Sprains.....	44	106.92	22	28.16
Stomatitis.....			1	1.28
Strains.....	4	9.72	9	11.52
Strictures, gonorrhoeal.....			1	1.28
Subluxation.....	1	2.43		
Sunburn.....			1	1.28
Syncope.....	4	9.72		
Synovitis.....	11	26.73	5	6.40
Syphilis.....			4	5.12
Tachycardia.....			3	3.84
Tonsillitis.....	109	264.87	47	60.16
Torticollis.....	2	4.86	2	2.56
Trachoma.....			1	1.28
Traumatism.....	1	2.43		
Ulcers.....			2	2.56
Under observation.....	4	9.72	1	1.28
Undergoing dental treatment.....	1	2.43		
Urethritis:				
Gonorrhoeal.....	4	9.72	41	52.48
Nonspecific.....	1	2.43	6	7.68
Urticaria.....			1	1.28
Vaccinia.....			10	12.80
Varicocele.....	5	12.15	5	6.40
Varicose veins.....			2	2.56
Warts.....	1	2.43	1	1.28
Wounds:				
Gunshot.....	1	2.43	2	2.56
Miscellaneous.....	19	46.17	34	43.52

EXHIBIT C.—Deaths.

ENLISTED MEN.

Exhaustion and heart failure, due to delirium tremens.....	1
Suicide by hanging.....	1
Total.....	<u>2</u>

CIVILIANS.

Families of officers and enlisted men:	
Acute lobar pneumonia.....	1
Chronic pulmonary tuberculosis.....	1
Marasmus and general congenital weakness.....	1
Tumor of brain.....	1
Quartermaster's employees: Acute edema of both lungs.....	1
Employee of construction company: Revolver shot of spine (homicidal).....	1
Civilian residents: Tumor of brain.....	1
Civilian guest of enlisted man: General suppurative peritonitis.....	1
Civilian (teacher of music): Suicide by illuminating gas.....	1
Total.....	<u>9</u>

SUMMARY.

Enlisted men.....	2
Civilians.....	9
Total.....	<u>11</u>

EXHIBIT D.—Surgical operations.

OPERATIONS PERFORMED BY CAPT. JOHN W. HANNER, MEDICAL CORPS, U. S. ARMY.

Nature of operation.	Officers.	Cadets.	En-listed men.	Civil-ians.	Total.
Abscess, peritonsillar, incision of.....		1		1	2
Adenoids, curettment of.....		1		5	6
Amputation of distal phalanx, middle finger.....				1	1
Amputation of left breast for cystic tumor.....				1	1
Amputation hammer toe, left foot.....			1		1
Amputation little toe.....			1		1
Appendicitis.....	3	10	13	4	30
Breaking and splinting of deflected septum.....		1			1
Breaking up of adhesions, ankylosis right knee joint.....				1	1
Breaking up of adhesions, left elbow.....		1			1
Cellulitis, acute, incisions multiple.....				1	1
Circumcision.....		10		1	11
Chalazion, incision and curettment of.....				4	4
Curettment of uterus.....				1	1
Cyst, sebaceous, dissection of.....		4		1	5
Dislocations, reduction of.....		4			4
Dissection of infected sore.....			1		1
Dilatation and curettage, cervix of uterus.....				1	1
Excisions:					
Encysted piece of glass in triceps.....		1			1
Sac of bunion, great toe, with partial excision head of metatarsal bone.....			1		1
Bursa, left elbow.....		1			1
Portion of left internal semilunar cartilage.....		1			1
Corns.....		6			6
Warts, sole both feet.....		1			1
Ingrowing toe nails.....		8	4		12
Inferior turbinate body, nasal.....			1		1
Inferior tissues, inferior turbinate bone.....			1		1
Extirpation of right inguinal gland, adenitis.....	1				1
Fractures:					
Simple.....		3		1	4
Comminuted.....		1			1
Hernia.....	1	1	4		6
Hernia, second operation for cure after return.....			2		2
Hemorrhoids, excision of.....		3	1		4
Hordeolum, incised and curetted.....	1	1	1		2

EXHIBIT D.—*Surgical operations*—Continued.

OPERATIONS PERFORMED BY CAPT. JOHN W. HANNER, MEDICAL CORPS, U. S. ARMY—Continued.

Nature of operation.	Officers.	Cadets.	En-listed men.	Civilians.	Total.
Hydrocele:					
Excision of.....			2		2
Spermatic cord, excision of.....			1		1
Incision and drainage of tuberculous gland.....			1		1
Laparotomy for intestinal obstruction.....			1		1
Perineorrhaphy.....				1	1
Pyemia, multiple abscesses.....				1	1
Resection, submucous, nasal septum.....			1		1
Salpingo-oöphorectomy with abdominal and vaginal drainage.....				1	1
Tonsillectomy, bilateral.....		4	1		6
Trephining for simple fracture.....				1	1
Varicocele, excision of.....		4	4	2	10
Varicose veins, both legs, excision of.....			2		2
Wounds, incised, sutured.....		1			1
Total.....	6	68	43	30	147

OPERATIONS PERFORMED BY CAPT. ROBERT C. LOVING, MEDICAL CORPS, U. S. ARMY.

Circumcision.....				2	2
Dislocation, left elbow joint, reduction of.....				1	1
Excisions:					
Ingrowing toe nail.....	1				1
Saphenous veins.....				1	1
Sebaceous cyst.....		1			1
Circumanal papillomata.....			1		1
Erasion, ingrowing portion of toe nail.....			1		1
Fractures:					
Simple, reduction of.....			2	1	3
Comminuted, compound.....				1	1
Comminuted.....			1	1	2
Incisions:					
Carbuncle.....				1	1
Ischio-rectal abscess.....				1	1
Infected left forearm.....			1		1
Tonsils.....				1	1
Tonsillectomy.....		1			1
Varicocele.....				1	1
Total.....	1	3	6	10	20

OPERATIONS PERFORMED BY CAPT. LLOYD L. SMITH, MEDICAL CORPS, U. S. ARMY.

Abscess:					
Tonsillar, incision of.....			1	1	2
Peritonsillar, incision and drainage of.....			1		1
Ischio-rectal, incision, curettment, and drainage of.....			3		3
Adenitis, incision, curettment, and drainage of.....			1		1
Adenoids, removal of.....				5	5
Bubo, chancroidal, incision, curettment, and drainage of.....			1		1
Breaking up adhesions right knee joint.....			1		1
Circumcision.....			4	3	7
Dislocations.....			4	1	5
Enucleation of eyes.....				2	2
Fracture:					
Colles, reduction of.....			1		1
Simple, complete, reduction of.....			1	4	5
Compound, reduction of.....			2		2
Comminuted, reduction of.....				1	1
Comminuted, removal of piece of bone.....				1	1
Hemorrhoids, removal of.....			3		3
Hordeolum, incision of.....	1				1
Incision and drainage for suppurative cellulitis.....			1		1
Incision and drainage of felon.....			1		1
Inguinal glands, removal of.....			1		1
Ingrowing toe nails, removal of.....			3		3
Laminectomy, for gunshot wound of spine.....				1	1
Tonsillectomy.....				2	2
Trephining for fissured fracture of skull with extra dural hemorrhage.....				1	1
Wounds, sutured.....				1	1
Total.....	1		29	23	53

EXHIBIT E.—*Diseases of the eye treated by Capts. John W. Hanner, Robert C. Loving, and Lloyd L. Smith, Medical Corps, U. S. Army.*

Disease.	Captain Hanner.	Captain Loving.	Captain Smith.
Anisometropia.....	2		1
Astigmatism.....	11	3	
Astigmatism, hyperopic.....	33	6	
Astigmatism, mixed.....	6	3	1
Astigmatism, myopic.....	17	8	
Blepharitis, acute.....	1	1	
Conjunctivitis:			
Acute.....	2		
Follicular.....	6	1	
Foreign bodies imbedded in cornea removed.....	6		
Hyperopia.....	10	12	1
Iritis, acute.....	1		1
Keratitis, acute, interstitial.....	2		1
Myopia.....	1		
Presbyopia, with astigmatism.....	7	3	
Presbyopia.....	10	3	
Retinitis, albuminuric.....	1		
Trachoma, chronic.....	3		1
Ulcer, corneal.....	3		1
Total.....	122	40	7

EXHIBIT F.

OFFICE OF EXAMINING AND SUPERVISING
DENTAL SURGEON, U. S. ARMY,
West Point, N. Y., July 28, 1909.

SIR: I have the honor to present the following report for the fiscal year ending June 30, 1909:

Number of cases presented.....	1,843
Number of operations performed.....	2,650
Number of different persons treated.....	860
Number of sittings recorded.....	2,341

The personnel of the post was officially represented in the following proportions:

	Per cent.
Officers.....	25.2
Cadets.....	46.7
Enlisted men.....	28.1

In addition to the duties of dental surgeon for the academy and post, the undersigned has examined two classes of candidates to determine upon their professional qualifications for employment in the army dental corps, December 1, 1908, to January 8, 1909, and has handled 190 official communications covering matters pertaining to the corps, its personnel, supplies, examinations, etc.

The following tables of cases presented and operations performed show the amount of professional service rendered during the period:

Table of cases presented.

DENTAL.

Abrasion.....	1	Defective gold inlays.....	1
Broken retaining appliance.....	1	Defective porcelain inlays.....	8
Caries.....	681	Defective root fillings.....	10
Deciduous teeth.....	1	Displaced fillings.....	1
Defective bridges.....	6	Erosion, chemical.....	8
Defective crowns.....	22	Exposed pulps.....	101
Defective fillings.....	240	Fractured denture, lower (vulcanite).....	2

Table of cases presented—Continued.

DENTAL—continued.			
Fractured teeth.....	113	Pericementitis, acute.....	48
Gingivitis, acute.....	23	Pulpitis, acute.....	188
Irregularities (accepted).....	3	Pulp stones.....	1
Malposed teeth.....	1	Putrescent pulps.....	64
Necrotic teeth.....	21	Putrescent root canals.....	40
Odontalgia.....	110	Recession of gum.....	10
Partial edentulous, lower jaw.....	3	Salivary deposits.....	45
Partial edentulous, upper jaw.....	7	Temporary fillings.....	7

SURGICAL.

Abscesses of jaw.....	1	Inflammation submaxillary, sublingual, and cervical glands, left side.....	1
Cellulitis, acute, floor of mouth and neck.....	1	Lacerated tongue.....	1
Dento-alveolar abscess.....	30	Necrosis of jaw, alveolar.....	4
Edema of face.....	2	Pericemental abscess.....	1
Fractured jaw, alveolar.....	2	Pyorrhea alveolaris.....	29
Impacted third molar.....	2	Trigeminal neuralgia.....	1
		Tumor of gum.....	1

Table of operations performed.

DENTAL.

Cavities cut together.....	23	Prepared for gold inlays.....	80
Calculus removed.....	49	Prepared for gold and porcelain inlays.....	2
Defective bridge remodeled.....	1	Prepared for porcelain inlays and restorations.....	4
Defective bridges removed.....	5	Pulps capped.....	43
Defective bridge reset.....	1	Pulps devitalized.....	142
Defective crowns removed.....	16	Pulps extirpated.....	179
Defective fillings removed.....	221	Regulating ligatures.....	1
Defective fillings repaired.....	5	Retaining appliance (metal).....	3
Defective porcelain inlays removed.....	4	Retaining appliance repaired.....	1
Denture repaired (vulcanite).....	2	Roots filled (gutta-percha).....	116
Gutta-percha removed.....	23	Root fillings removed.....	4
Ligatures removed.....	1	Teeth cleaned and polished.....	29
Local applications.....	3	Teeth ground to normal contour.....	2
Oxyphosphate removed.....	29	Teeth ligated (wire).....	4
Partial lower denture.....	3	Teeth opened.....	22
Partial upper denture.....	3	Teeth treated.....	931
Prepared for gold crown.....	5		

FILLINGS.

Amalgam.....	117	Gutta-percha.....	111
Cast-gold restoration.....	1	Oxyphosphate.....	158
Filling reset as inlay (gold).....	1	Oxyphosphate and amalgam.....	43
Gold fillings.....	13	Porcelain inlays and restorations.....	19
Gold inlays.....	87	Silicate.....	8
Gutta-percha and oxyphosphate.....	1	Tin and gold filling.....	1
Gold and porcelain inlay.....	1		

CROWNS.

Crowns repaired.....	8	Porcelain crowns.....	1
Crowns reset.....	9	Richmond crowns (cast).....	2
Gold crowns.....	15		

BRIDGES.

Cast-gold bridge.....	1	Gold and porcelain bridge reset.....	1
Gold and porcelain bridges.....	5		

SURGICAL.

Abscesses lanced.....	13	Pockets curetted.....	2
Alveolectomy.....	2	Pressure anesthesia.....	9
Gum cauterized.....	1	Socket curetted.....	1
Gum excised.....	1	Teeth extracted.....	61

It will be observed that there are a greater number of operations and sittings than of cases presented or individuals treated. This is accounted for from the fact that an individual may present two or more cases, and a single case may require two or more operations for its completion the accomplishment of which may require several sittings.

Very respectfully,

ROBERT T. OLIVER,
Examining and Supervising Dental Surgeon, U. S. Army.

The SURGEON, UNITED STATES MILITARY ACADEMY,
West Point, N. Y.

EXHIBIT G.

UNITED STATES MILITARY ACADEMY,
West Point, N. Y., July 8, 1909.

SIR: I have the honor to submit the following report of cases presented and operations performed by me for the fiscal year ending June 30, 1909:

Table of cases presented.

Abrasions, mechanical.....	1	Neuralgia, facial.....	1
Defective fillings.....	50	Pulpitis, acute.....	1
Dental caries.....	909	Pulpitis, chronic.....	3
Dento-alveolar abscesses.....	9	Putrescent pulps.....	27
Discoloration of teeth due to injuries.....	2	Putrescent root canals.....	5
Erosion, chemical.....	3	Pyorrhea alveolaris.....	1
Exposed pulps.....	40	Pericementitis, acute.....	2
Fractured roots.....	1	Recession of the gums.....	2
Fracture of the teeth.....	2	Salivary deposits.....	44
Impacted teeth.....	1		

Table of operations.

DENTAL AND SURGICAL.

Abscesses lanced.....	6	Teeth treated, medicated.....	85
Pulps capped.....	19	Cocaine anesthesia.....	44
Pulps extirpated.....	85	Teeth extracted.....	8
Pulps devitalized.....	2	Teeth extracted (roots).....	12
Roots filled (gutta-percha).....	78	Teeth extracted (malformed).....	1
Salivary deposits removed.....	44	Tartar solvent applied for pyorrhea..	1
Teeth cleaned and polished.....	30		

FILLINGS.

Amalgam.....	279	Gutta-percha and amalgam.....	1
Amalgam removed (defective).....	23	Oxyphosphate removed (defective)..	5
Gold.....	57	Repaired (amalgam).....	22
Oxyphosphate.....	51	Repaired (gold).....	3
Oxyphosphate and amalgam.....	268	Root-canal fillings removed.....	4

INLAYS.

Gold.....	97	Porcelain removed (defective).....	2
Porcelain.....	56	Porcelain recemented.....	1

BRIDGES.

Gold.....	1	Removed (gold).....	1
Gold and porcelain.....	1	Facing replaced.....	2
Repaired and reset.....	1		

Table of operations—Continued.

CROWNS.			
Gold shell.....	1	Logan recemented.....	1
Gold shell removed (defective).....	11	Logan removed (fractured).....	1
Gold shell repaired and recemented...	7	Logan with gold inlay base.....	2
Logan.....	11	Teeth prepared for gold shell crowns.	2
ARTIFICIAL DENTURES.			
Vulcanite, partial superior.....	1	Broken plate repaired (superior vul-	
Broken plate repaired (vulcanite)...	1	canite).....	1
Total number of sittings during this period.....			1,548
Total number of persons treated during this period.....			834

Very respectfully,

WM. H. CHAMBERS,
Dental Surgeon, U. S. Army.

The SURGEON, UNITED STATES MILITARY ACADEMY.

APPENDIX C.

REPORT OF THE TREASURER.

UNITED STATES MILITARY ACADEMY,
West Point, N. Y., August 4, 1909.

SIR: In compliance with instructions contained in Memorandum No. 64, I have the honor to submit the following report of the operations of the departments under my supervision for the fiscal year ending June 30, 1909:

TREASURER'S OFFICE.

The financial transactions of the treasurer for the year ending June 30, 1909, were as follows:

	Dr.	Cr.
Assistant treasurer.....	\$312,039.97	\$333,789.22
Athletic council.....	6,073.00	5,281.00
Balances paid.....	53,977.18	54,021.31
Barber.....	1,479.00	1,479.00
Cadet cash.....	24,917.56	25,036.39
Cadet hospital.....	2,920.66	2,920.66
Cadet laundry.....	18,488.17	20,959.90
Cadet store.....	146,006.91	134,199.70
Cadet mess.....	110,351.76	122,395.98
Confectioner.....	60.30	60.30
Corps of Cadets.....	462,547.37	402,319.82
Damages:		
Ordnance.....	216.02	216.02
Gas and electric supplies.....	51.92	51.92
Dancing.....	731.00	731.00
Dentist.....	797.75	797.75
Deposits.....	24,481.12	24,339.03
Dialectic society.....	1,025.38	757.58
Equipment fund.....	54,883.27	69,937.09
Expressage.....	47.52	42.17
Hops and german.....	2,652.88	2,887.72
Miscellaneous fund.....	47.82	89.89
Miscellaneous items.....	5,430.77	5,430.77
Oath.....	35.50	35.50
Paymaster.....	264,659.31	264,659.31
Purchasing commissary.....	48,198.60	48,198.60
Periodicals.....	62.08	62.08
Photographer.....	15.75	15.75
Telephone and telegraph.....	24.90	24.90
Travel pay.....	4,796.90	4,805.00
Young Men's Christian Association.....	326.24	482.82

The last inspection, August 4, 1909, showed the following:

ASSETS.		LIABILITIES.	
Assistant treasurer	\$46,902.40	Balances paid.....	\$444.12
Cadet cash	463.47	Cadet laundry.....	3,073.54
Cadet store	35,232.60	Corps of Cadets.....	6,691.43
Cadet mess	11,289.12	Deposits.....	100.00
Dialectic society.....	194.72	Equipment fund.....	87,854.65
Y. M. C. A	204.95	Glee club.....	43.59
Athletic council.....	792.00	Miscellaneous fund.....	161.77
Expressage	5.35	Travel pay.....	8.10
Cash	3,292.59		
	98,377.20		98,377.20

An effort is now being made to improve and harmonize the systems of the cadet mess, cadet store, and cadet laundry, as well as the treasurer's office.

CADET STORE.

The price of each garment manufactured for cadets was, on July 1, 1909, reduced as follows: Overcoats, \$2 each; flannel blouses and dress coats, \$1 each; cloth blouses, gray cloth trousers, flannel trousers, and riding breeches, 50 cents each.

These reductions are from 3 1/4 to 8 per cent of the cost of the garments, and the store has been able to reduce these prices notwithstanding that the cost of all woolen cloths has been recently advanced by the manufacturers.

CADET LAUNDRY.

On January 1, 1909, the prices for laundering articles for cadets were reduced so as to effect a saving of over \$100 per month, or more than 8 per cent on the total cost of work turned out for them.

CADET MESS.

The question of a proper poultry supply is quite a serious one, and an effort is being made to get some one in this vicinity to raise enough to supply the mess with good fresh-killed chickens and turkeys.

A new line of toasters and broilers has been installed, and it will now be possible to supply toast for the entire corps, and their steaks, chops, and poultry can be broiled in half the time heretofore required.

Very respectfully,

WM. R. GROVE,

Captain and Treasurer, United States Military Academy.

The ADJUTANT, UNITED STATES MILITARY ACADEMY.

APPENDIX D.

REPORT OF THE COMMANDANT OF CADETS.

HEADQUARTERS UNITED STATES CORPS OF CADETS,
West Point, N. Y., August 1, 1909.

SIR: In compliance with Memorandum No. 64, Headquarters United States Military Academy, dated July 20, 1909, I have the honor to submit the following report:

The undersigned assumed command as commandant of cadets February 1, 1909, per paragraph 22, Special Orders, No. 272, War Department, Washington, D. C., dated November 20, 1908.

The usual programme of exercises for the year was carried out to successful completion. The field training given on the reservation and during the practice march on the west side of the river proved, as before, entirely satisfactory. The instruction was carefully given, the problems well handled, and officers, cadets, and enlisted men entered keenly and intelligently into the spirit of the work. The march was made under service conditions, problems were had each day, and the camps were made according to the regulations. The results were satisfactory. This occurred prior to my assumption of command. A similar practice march will take place this year, August 23 to 28, inclusive, and will include valuable instruction in marching, construction of camps, camp sanitation, making of route sketches, solution of problems in minor tactics, etc. This practice march is the termination of the practical work of the summer, the preliminary work prior to it being conducted in a progressive way and leading up to this week's field work.

COAST ARTILLERY.

The new primary and secondary stations have been completed and a standard system of fire control has been installed by the Signal Corps. A searchlight station has also been constructed and a meteorological and wireless telegraph station has been provided in a wing of the ordnance laboratory. All the buildings are of excellent design and have been well finished and equipped by the department of practical military engineering. A 60-inch searchlight has been ordered, and it is expected in time for installation this summer. An estimate has been submitted for the construction of an emplacement for 12-inch mortars. This is urgently needed, and as soon as it is completed the instruction in coast artillery will be thoroughly efficient.

The first class had its coast artillery target practice at Fort H. G. Wright, N. Y., in August, 1908. The commanding officer, Col. C. D. Parkhurst, Coast Artillery Corps, and the officers and men of the garrison contributed largely to the success of the work by their constant labor as instructors and by their willing help in all matters pertaining to the stay of the cadets at the post.

The following records were made by the class at practice:

Gun.	Number of shots.	Number of hits.	Mean range.	Speed of target per hour.	Time.	Figure of merit.
			<i>Yards.</i>	<i>Miles.</i>	<i>Min. sec.</i>	
10-inch.....	6	5	6,488	4	3 20	23.19
6-inch.....	10	8	4,187	5	2 40	27.55
3-inch.....	10	6	1,500	4	29	67.466

These figures show a high degree of efficiency in this important arm.

In addition to target practice, the class received instruction in night exercises with the searchlight and the armament, and in submarine mining on a mine planter.

FIELD ARTILLERY.

Target practice was held with the 5-inch siege guns and the 7-inch howitzers only. No ammunition could be obtained for the 3-inch batteries, and that for the mountain battery arrived too late for use.

For the current year a battery's allowance of ammunition for the 3-inch field guns, the 2.95-inch mountain gun, the 5-inch siege gun, and the 7-inch howitzer has been authorized.

Additional battery commander's telescopes and rulers and plotters have been furnished by the Ordnance Department, and a self-contained base range finder has been purchased. This equipment will afford the means for thorough instruction in the preparation of firing data.

Butts have been constructed for 12 targets for subcaliber practice with field, mountain, and siege guns, and funds are available for a track for moving targets for these guns.

A battery of the new siege guns is expected this summer.

The detachment of field artillery was increased July 1, 1908, to 135 men, including an electrician sergeant, first-class, and a master gunner for coast artillery. Additional horses and mules for a section of mountain artillery have been furnished, making the total number of animals 121.

Two men were sent to the school of wireless telegraphy at Fort Wood, N. Y., last winter and they are efficient operators for the sets of wireless instruments used for coast artillery and for field work.

There has been a shortage of officers in the department which has restricted the scope of artillery instruction. The situation has been improved by the detail of two officers as instructors from other departments; but one more officer is required. The size of the artillery detachment and the numerous duties that devolve upon the detachment commander in connection with the equipment and with the instruction of cadets make it necessary that an assistant should be provided.

The permanent assignment of a lieutenant to the detachment would give an additional instructor and would greatly add to the efficiency of the organization.

CAVALRY.

During the past year the general scope of instruction of cadets has not been changed.

In horsemanship, however, greater attention has been given to teaching the individual cadet the use of the aids and their proper application in the training and management of the cavalry horse.

Section-room recitations in hippology were done away with, and all reciting was in the riding hall where the cadet had to use the actual horse in demonstrating. An addition was also made in requiring the cadets to make both descriptive and conformation cards of horses, these cards showing all distinguishing marks, defects, and blemishes, and the grading of the horse compared with a perfect service mount, together with a statement as to whether or not the horse should be purchased for cavalry purposes, and if not, why not.

The condition of the horses used by the cadets has been good, but many of the animals are unsuited for the work. It is hoped that this will be bettered during the coming year by a new supply already authorized from Fort Reno remount depot.

INFANTRY.

During the summer drill periods, until the corps went on the annual practice march, infantry drills, both close and extended order, took

place daily except Saturdays and Sundays from 7.15 a. m. to 7.45 a. m. Saturdays were devoted to field instruction, and consisted in practical instruction in the formation and use of advance and rear guards, establishing outposts, making reconnaissance and the attack and defense of positions with small forces. This work was preliminary to the practice march which took place August 24 to 29, 1908.

During the fall and spring drill periods the instruction consisted of drills daily from 3.40 to 4.40 p. m., and comprised close and extended order, through the school of the battalion, tent pitching, and a limited amount of instruction in field work.

In target practice the first class was given the entire marksmen's course, and the following records were made:

Expert riflemen, 15; sharpshooters, 29; marksmen, 17; first-class men, 39; second-class men, 3; third-class men, 2; individual figure of merit, 119.71. The record made was far better than ever made by any other class at the Military Academy.

The third class fired special course A.

The infantry instruction, especially in extended order, is badly handicapped on account of lack of ground. It is recommended that as soon as possible the field artillery and cavalry drills take place on the new drill ground in front of the artillery and cavalry stables and the entire plain west of camp be used for infantry drills.

Considerable improvement has been made in the range since last year, but the plans for constructing a new range on the site of the present one should be carried out as soon as possible.

Lectures and map problems were given this year as was done last year to the first class with satisfactory results.

The battalion of cadets is proficient in all drills, and on the whole the instruction given and progress made have been satisfactory.

Instruction in gymnastics, fencing, wrestling, boxing, and swimming of the Corps of Cadets was carried out in accordance with the prescribed programme during the past year, and the results have been equal to those of previous years in spite of the inadequacy of the present gymnasium, which was more apparent than ever before.

Very respectfully,

F. W. SIBLEY,

Lieutenant-Colonel Fourth Cavalry, Commandant of Cadets.

THE ADJUTANT, UNITED STATES MILITARY ACADEMY.

APPENDIX E.

REPORT OF THE INSTRUCTOR OF PRACTICAL MILITARY ENGINEERING.

UNITED STATES MILITARY ACADEMY,
West Point, N. Y., July 31, 1909.

SIR: In compliance with the instructions contained in Memorandum No. 64, Headquarters United States Military Academy, West Point, N. Y., July 20, 1909, I have the honor to submit the following report upon the work of the department of practical military engineering, military signaling, and telegraphy covering the period from June 14, 1908, to June 11, 1909. The financial report covers the period from June 30, 1908, to June 30, 1909.

DEPARTMENT OF PRACTICAL MILITARY ENGINEERING.

The annual appropriation of \$2,000 for the use of the department during the fiscal year ending June 30, 1909, was expended for the purchase of tools, instruments, materials for instruction purposes, for the repair of equipment, and for the extra pay of skilled mechanics from the engineer detachment as authorized by law.

CADET INSTRUCTION.

Two officers of the Corps of Engineers were on duty in the department throughout the year, and twelve additional officers were on duty during a portion of the year—five during the summer instruction period, one in the fall, one in the spring, and five during the instruction of the fourth class in the theory of surveying in February.

Fourth class.—Throughout the whole month of February a course of theoretical instruction in surveying was given to the fourth class, the whole class attending daily, Saturdays and Sundays excepted, for one hour in the afternoon. Four instructors from the department of modern languages and one from the department of engineering were temporarily assigned to this department to assist in giving instruction in this course. The text-book used was Johnson's Theory and Practice of Surveying. The value of the course has been made evident by the increased intelligence and facility with which these cadets have taken up their practical instruction in the field in the course now being given them.

Third class.—During the summer instruction period the third class was given a course in practical surveying. This class entered upon the course without having had any previous instruction along this line. The instruction was purely practical; the instruments were carefully explained to them and they were shown the adjustments and uses; the instruments were then placed in the hands of the cadets, and, under the supervision of their instructors, they were required to make the different adjustments and to use the instruments in making a survey of a portion of the reservation. Pence and Ketchum's Survey Manual was used as a reference book for this course and proved a valuable aid to both instructors and cadets. The class made gratifying progress, but was somewhat handicapped by the fact that it had had no previous instruction in theoretical surveying. The class now receiving this instruction is making more satisfactory progress because of the theoretical course which it received last February.

Second class.—During the fall instruction period one-fourth of this class attended drill each week day, Wednesdays and Saturdays excepted, and was given instruction in signaling with the flag, heliograph, and acetylene lantern. The department was assisted in this instruction by the temporary detail of one officer from the department of engineering. During the spring instruction period one-fourth of this class attended each week day, Wednesdays and Saturdays excepted, and was given instruction in electrical methods of signaling, including the use of field and cavalry buzzers and the wireless telegraph outfit. In this course the department was assisted by the temporary detail of one officer from the department of chemistry. A detail of signal corps men was ordered here to assist in this instruction also.

First class.—During the summer instruction period one-half of this class attended daily, Saturdays and Sundays excepted, and was given instruction in building pile, trestle, and ponton bridges, and in improvised methods of crossing streams.

This last subject was included in the course at the suggestion of the superintendent; one attendance of each half of the class was devoted to it. The object of the instruction was to show the cadets the adaptability of the various kinds of material commonly met with, or carried by an army in the field, for purposes of ferrying troops across streams.

The cadets were divided into five squads, which constructed, respectively, a "bull boat;" a raft of small logs, lashed together with hickory withes and wire; a canvas boat of hickory saplings, lashed with wire and covered with a canvas ponton cover; a canvas boat of chestnut and other stiff material for the frame, nailed together and covered with a tent fly; and a boat formed by removing an escort wagon body from the running gear and covering it with the wagon cover, the running gear itself being floated by means of several logs lashed to the axles.

The "bull boat" was constructed of hickory saplings, bent and lashed into a circular shape and covered with canvas. It was explained to the cadets that ordinarily this form of water conveyance would be covered with the hide of a beef slaughtered for food.

All these parties succeeded in constructing their boats or rafts and crossing the river to Constitution Island and back within the drill period, which was one hour and forty-five minutes.

The month of August was devoted to instruction in military topography. This course included the use of the sketching case and the engineer notebook, both dismounted and mounted, and combined position sketching. During the practice march road sketches and combined position sketches were made by the members of this class each day. During the fall instruction period one-fourth of the class attended daily and were instructed in making knots, lashings, improvising and using field appliances for engineer work, erection of spar bridges, and the use of explosives in making demolitions. During the spring period one-third of the class attended daily and received instruction in laying out and constructing works of field fortification.

INSTALLATION OF FIRE-CONTROL SYSTEM.

On July 1, 1908, an appropriation became available for the construction of a system of fire control for use in connection with the various batteries on the post constructed and proposed.

Owing to a pressure of work relating to the water supply, the construction of these stations was not begun until September 30 of the same year, but the primary and secondary stations were both roofed over before the advent of inclement weather, so that the work of interior finish could proceed under cover. On account of the prevalent frosty nights at this time, it was not considered advisable to attempt the placing of the stucco which formed the outside finish, so the metal lath was put in position, the walls rendered weatherproof by a layer of building paper under the inside sheathing, and the interiors finished complete by about February 15, 1909. The plastering was done during the latter part of this spring.

An electrician and two enlisted men of the Signal Corps installed the wiring and necessary electrical apparatus, under the direction of the senior instructor of artillery tactics, who has charge of the operation of the stations.

The original plans contemplated a 36-inch searchlight and station of the same type as the other buildings and located in the vicinity of the post-office. However, upon the advice of Maj. W. C. Davis, of the Coast Artillery Corps, who was sent to this post for the purpose of recommending a satisfactory location for the projector, the size of the proposed light was increased to 60 inches and its position changed to a point on Flirtation Walk, about 150 yards east of the primary station and looking directly up the river. The lateness of the season prevented its construction at that time, but the building was completed early in the present summer and now awaits the installation of the searchlight, which has been ordered through the Engineer Department, U. S. Army, and will be of the latest improved type now being manufactured for the seacoast defenses.

The necessity for a meteorological station having been made apparent, a small closet was secured in the corner of the ordnance building, enlarged to the required dimensions, an outside door formed by cutting down a window, and all communication with the main building cut off by the erection of a doorless partition. This station will be fitted with the necessary appliances for meteorological observation as related to fire control.

The complete system consists of (1) a primary station 21 by 35 feet, with three rooms and a cellar, three stories in front and one in the rear, located at the right flank of the siege battery near the recently constructed battery of 6-inch disappearing guns; (2) a secondary station, 11 by 11 feet, with one room, located on the side hill in front of and below the Catholic Chapel, about 30 feet below the road level; (3) a searchlight station 11 by 13 feet, with a concrete floor and an operating platform 7 by 14 feet in front; and (4) a meteorological station as described above.

These stations, with the exception of the meteorological station, are of a similar type, consisting of wooden frame buildings with concrete foundations, tin roofs, painted green, wide overhanging eaves, outside finish of Portland cement plaster divided into panels by battens of oak stained green, inside finish of beaded yellow pine ceiling.

The primary station follows very closely the accepted type plan, containing a plotting room for two plotting boards, observing room, allowing a clear view around the entire horizon, and equipped with both a type A and a type B instrument, and an instrument room for switchboards, motor generators, etc. An added feature, however, has been the construction of a cellar within the concrete foundation under the front of the building. This form of construction was facilitated by the side hill upon which the station was built, and permits the separation of the storage battery from the remainder of the apparatus, which is desirable on account of the corrosive gases and spray thrown off by the battery when in use.

The secondary station consists of but a single room 10 by 10 feet inside, and will be fitted with a type A instrument.

The primary station is connected by telephone with all the units of the command, the 6-inch gun battery, seacoast battery, secondary

station, searchlight station, and meteorological station. The usual telautographs, signal bells, etc., are also installed between the base-end stations and batteries.

The amount originally appropriated was \$12,960, of which \$6,469 was expended for construction, building materials, electrical apparatus, etc., leaving for the projector \$6,491, the price quoted by the General Electric Company, of Schenectady, N. Y., for this light.

RECONSTRUCTION OF FORT PUTNAM.

The appropriation of \$5,000 for continuing the work of restoring Fort Putnam was expended in completing the rebuilding of the outer walls, in repairing the casemates and interior wall at the southeast end of the fort, and in excavating the débris from the casemates on the east side.

The appropriation for the fiscal year 1910 will be expended in finishing off the top of the outer walls, rebuilding the four casemates and interior wall on the east side, and restoring and grading the superior slope on the north and west sides.

MARKING HISTORIC SITES.

On April 13, 1909, the report of a board of officers appointed the preceding year for the purpose of recommending methods of marking and preserving historic works in the vicinity of West Point was referred to the instructor of practical military engineering, who was at the same time charged with the duty of preserving and marking Revolutionary forts, redoubts, and sites, and other points of patriotic interest in accordance with the recommendation of the board. For this purpose \$1,500 becomes available on July 1 of this year.

Very respectfully,

W. P. WOOTEN,
Captain, Corps of Engineers, U. S. Army,
Instructor of Practical Military Engineering, U. S. M. A.

The ADJUTANT, UNITED STATES MILITARY ACADEMY,
Present.

APPENDIX F.

REPORT OF THE LIBRARIAN.

THE LIBRARY, UNITED STATES MILITARY ACADEMY,
West Point, N. Y., July 23, 1909.

SIR: I have the honor to submit herewith a brief report of the work of the library during the past year. I respectfully refer to previous reports for data referring to matters not mentioned here.

USERS OF THE LIBRARY.

The library is available to 90 officers stationed at West Point, to 412 cadets, to all enlisted men of the post whose applications are approved by their detachment commanders, and to 159 civilians to whom its privileges have been extended by order of the superintendent.

ACCESSIONS.

Five thousand four hundred books, pamphlets, etc., have been recorded as received since July 1, 1908. Maps, bound volumes of periodicals, and the separate numbers of the publications of various departments of the United States are not separately accessioned.

SPECIAL GIFTS.

The library has received many gifts during the year. A list of these is given at the end of this report. The more important are a collection of 4 atlases and 224 maps from Col. W. C. Church; a large collection of military books, pamphlets, and periodicals from the library of the late Maj. E. L. Zalinski, U. S. Army, retired—about 1,500 pieces (Lieutenant Allin, Sixth Field Artillery, has been good enough to assist me in sorting out the pamphlets of this collection); a valuable collection of military books from Col. W. B. Wetmore, United States Military Academy, 1872 (68 pieces); the manuscript diary (Nov. 24, 1846, to July 1, 1848) of Gen. B. S. Roberts, United States Military Academy, 1835, during the Mexican war, given by his son, Gen. B. K. Roberts; the letters of Gen. Z. Taylor from May 9, 1846, to December 10, 1848, printed in 1908 from the originals in the collection of W. H. Bixby, esq., of St. Louis, and given by him. The ordnance department, United States Military Academy, has kindly transferred to the keeping of the library a small Coehorn mortar surrendered with Burgoyne's command at Saratoga in 1777. The Library of Congress continues the generous policy of transferring such of its duplicates as are needed here to this library. In September, 1909, Col. C. D. Parkhurst, Coast Artillery Corps, U. S. Army, presented an album of photographs of Fort H. G. Wright, made by himself. The Chief of the Military Information Division, General Staff, has been good enough to send to the library, first, weekly lists of subjects carded in the Military Information Division; second, typewritten translations of important articles in foreign journals, thus putting the latest military information at the disposition of the officers and cadets of the United States Military Academy.

Mrs. Hugh Lenox Scott, daughter of Gen. Lewis Merrill, has been kind enough to deposit in the library, as a loan, his sword of honor, together with sash and spur.

The grateful thanks of the library are returned to all those who have been good enough to add to our collections.

NOTABLE ACCESSIONS.

Besides the gifts just named, a few purchases of specially important works have been made, notably, British and Foreign State Papers, 1812-1903 (97 volumes).

Manuscript reports of our military attachés on the military museums of Europe (and Mexico) have been received through the kindness of the Chief of the Military Information Division, General Staff, and several important purchases of books on this subject have been made during the year.

CHANGES IN THE BUILDING.

Galleries have been provided in all the rooms of the main and second floor and new shelving where it was needed. This work was finished November 29, 1908, at which date the library, for the first time since 1901, contained sufficient room to shelve all its books.

ELECTRIC LIGHTING.

The scheme for lighting the library was completed in October, 1908, under the direction and according to the plans of the quartermaster, United States Military Academy. It is highly satisfactory in every respect.

ADDITIONS TO THE LIBRARY BUILDING.

The new map room spoken of in the report of the librarian for 1906 and elsewhere is much needed. It is to be built in connection with the new academic building. If the map room (which is only a one-story room about 34 by 38 feet) could be pushed to completion immediately after the work is begun it would be a great benefit to all concerned.

A receiving and packing room about 20 by 20 feet, built underground east of the east entrance to the basement, would be a great advantage in the library economy. Boxes of books would be delivered there and unpacked. From thence they would be carried for a short distance to the present basement. The basement itself could then be kept free of dust and would contain no inflammable materials. The necessity for some room of the sort was demonstrated in a report made to the library committee early in 1901 (before I was officially connected with the United States Military Academy). I respectfully request that this (comparatively inexpensive) project be studied.

VENTILATION.

The attic requires a thorough system of ventilation, and it will then become available for the storage of books. At the present time the intense heats of summer quickly destroy the bindings of books. Ventilation for the galleries in the two main floors will be provided in the next fiscal year. When the attic is also well ventilated an immense amount of storage will become available.

PORTRAITS.

In October, 1908, Mr. Arthur Dawson retouched and revarnished various portraits in the library that were in bad condition. Some of the portraits have been covered with glass and their frames regilded. The cost, which was considerable, has been met from the library appropriation. It is hoped that the cost of retouching other pictures that still need attention can be met from other funds.

Mr. Frederick Bartlett gave to the library in the summer of 1908 a new frame for the portrait of his distinguished father, Prof. W. H. C. Bartlett, for many years head of the department of natural philosophy, United States Military Academy.

The portrait of Col. Jonathan Williams, by Sully, was hung in the library in the autumn, its place in the cadet mess hall being taken by the portrait of Colonel Williams formerly displayed in the library. The library now contains all the portraits by Sully owned by the United States Military Academy (eleven in number) except one, viz, that of Gen. J. G. Swift. By authority of the superintendent, a copy of this will be made for the cadet mess hall at the expense of the library, and the original will be displayed in the main room of the library, thus bringing together in one place all the Sully portraits owned by the academy.

THE POE MEMORIAL.

When the memorial to the artist Whistler (formerly a cadet) was erected in the library, it was at once suggested that a memorial to another man of genius, also an ex-cadet, was called for. Plans for a memorial to Edgar Allan Poe were made, without charge, by Mr. Henry Bacon, architect, and a plan was devised that was duly approved by the superintendent. The total cost of the work will be \$4,250. Subscriptions were asked for mostly from personal friends, and on the centenary of Poe's birthday, January 16, 1909, a marble tablet was set up near the Whistler memorial. The plan contemplates the erection of a marble doorway beneath the tablet and other alterations to the vestibule. A large part of this work is just being finished. It still remains to line the vestibule with marble at a cost of \$1,750. The work already done has cost \$2,500, a part of which has been paid, and funds are available to pay the rest and still leave a small balance in the hands of the librarian.

The memorials to these men of genius connect their lives and works with that of the academy. Neither of them was of the fiber that is required for a soldier, but each of them has left a name to be honored by his country and the world. Subscriptions to the Poe memorial fund have been made, and are here gratefully acknowledged, by the following persons (the names are arranged chronologically): Charles S. Freer; Edward S. Holden; Maj. Wirt Robinson; Prof. W. W. Bailey; Monsignor O'Keeffe; Rev. E. S. Travers; Hon. Stuyvesant Fish; A. S. Frissell; John Jay Chapman; Loyall Farragut; Mrs. Herbert Satterlee; Prof. William Lyon Phelps; Hon. Henry A. Du Pont; Hon. Frank O. Briggs; the students of Yale University; Capt. M. F. Smith; Bancel La Farge; F. W. Whitridge; Mrs. T. H. Barber; J. P. Morgan, jr.; Capt. G. B. Pillsbury; Mrs. J. P. Morgan; Capt. C. D. Herron; Prof. H. F. Osborn; Gen. H. C. Hasbrouck; Hon. William Holabird; Prof. J. C. Adams; Mrs. G. H. Kent; Lieut. H. C. Clark; Lieut. V. W. Cooper; Lieut. N. B. Rehkopf; Maj. W. E. Ellis; Col. W. B. Gordon; Col. S. E. Tillman; Lieut. Col. C. L'H. Ruggles; Capt. I. Newell; Capt. F. W. Lewis; Capt. L. W. Oliver; Lieut. W. F. Morrison; Lieut. F. E. Shnyder.

REARRANGEMENT OF BOOKS ON THE SHELVES.

In 1901 the shelf room provided was not sufficient to accommodate the volumes then owned. Since that time some 26,000 books have been added, as well as the stacks to receive them. The books as now arranged will not need to be moved for many years. The basement

now contains all folio periodicals; the tower contains all our octavo periodicals except those issued since 1904; the latter are shelved in the two main floors of the library on the upper shelves. As soon as the space allotted to them there is crowded the earlier years will be moved to the tower. The tower contains, in its upper story, our large collection of congressional documents with a liberal provision for growth, and its lower story and part of the middle story are assigned to periodicals. Space is left in the tower for many years' accessions. No changes need be made in the present arrangements except the small ones that will be necessary in taking possession of the new map room. The plan of rearrangement was made by the librarian and the details ably carried out, chiefly by Private Rathke, library attendant.

MAPS.

During the years 1901-1908 the maps most used were catalogued and made easy of access. For want of shelf room other maps were safely stored, but they were practically useless, as they were not catalogued and not in order. During the summer of 1908 Miss Pope made one card for each map then owned by the library (with the exception of a number catalogued in the autumn by Mr. Ostrander). The original cards were copied by Miss Scott during the winter and spring (1909), and the maps placed in drawers marked to contain them. This difficult and tedious task that I almost despaired of accomplishing is now substantially completed. Any map owned can be quickly found. When the new map room is occupied access to our maps will be far more convenient even than now.

It is proper to record here that the number of maps set down in the librarian's report for 1908 (p. 51) was so reported to me after a count specially made. It has since been found that that count was erroneous. After excluding duplicate maps (some 1,000 in number) it was found in November, 1908, that our collection of maps is registered on 2,600 cards. The number of single maps is not likely to be more than 6,000. This enumeration does not include atlases.

In the librarian's report for 1908 (p. 48) the number of works of fiction in English is recorded from a written report made to me. The number there set down refers to the number of cards, not volumes, and should have been so reported.

LIBRARY OF CONGRESS DEPOSITORY CARD CATALOGUE.

The Library of Congress sends to this library, free of cost, a proof sheet of every card printed for Library of Congress books. On this proof the librarian of the United States Military Academy marks the title of every book that he would recommend for purchase if this library had an income ten times as large as at present—that is, the title of every book that in his judgment might conceivably be called for here. Among the titles marked are those of the Library of Congress books of which copies are, in fact, purchased by the library of the United States Military Academy from its annual appropriations. A single printed card is sent, free of charge, by the Library of Congress corresponding to the marks on the proof sheet. Those cards that relate to books owned by the United States Military Academy are placed in our regular catalogue cases. Other cards are

placed in order in the depository catalogue. In this way printed cards are supplied corresponding to books on our shelves, and printed cards are to be found in the depository catalogue corresponding to the books that we should buy if our income were, say, \$100,000 a year. The catalogue last mentioned is, therefore, a list of the books in the Library of Congress that we would own if we could afford the expense. The other catalogues furnish a list of the books that we actually do own. The arrangements made with the Library of Congress are of the highest value to us, and the business is conducted in a very simple, prompt, and generous fashion.

INSTRUCTION THROUGH THE EYE.

The report of the Board of Visitors for 1885 contains a recommendation respecting maps in cadet rooms and suggests that the method spoken of has wide application. The display of pictures and manuscripts in the library is a part of the plan outlined. The commandant of cadets has set up a series of military pictures in the cadet guard-house. The department of drawing proposes to exhibit in a frieze of the new academy a series of maps to illustrate the history of topography from the earliest times. Many such maps have been selected for this purpose by Capt. C. B. Hagadorn. The department of engineering proposes to use the same method in displaying a series of plans of fortifications arranged chronologically. The library is fortunate in owning a great number of maps and plans suitable for these purposes. An appropriation of \$5,000 would enable this plan to be well started, and annual appropriations of \$2,000 would enable it to be kept up, to the great advantage of our teaching.

LIBRARY STATISTICS.

The library contained in June, 1909, about 71,000 volumes; its card catalogues contain 253,560 cards, or some 3+ cards to a volume. The New York Public Library (1908) contained less than 1 card per volume. This difference is due to the endeavor at West Point to save the time of cadets by making our card catalogues very full.

Cards in the catalogues.

Card catalogues.	June 30, 1909.	July 30, 1908.
Author catalogue.....	67,200	59,650
Subject catalogue.....	108,240	101,000
Shelf catalogue of all books not military.....	33,480	31,000
Shelf catalogue of military books.....	10,200	9,100
Dictionary catalogue in the officers' study.....	34,440	23,800
Total.....	a 253,560	224,550

a Increase in eleven months, about 29,010 cards.

Many of the additions in the author and subject catalogues have been printed analytical cards of the Library of Congress and the American Library Association publishing board.

Atlases.—The collection is represented by 69 cards in the shelf catalogue (Dec. 9, 1908). (A considerable number of ancient works is owned.)

Bibliography.—December 8, 1908, the collection in the librarian's office contained 695 volumes by count. Only a few of these are catalogues of libraries. Most are bibliographies of special subjects.

Manuscripts.—Several thousand manuscripts, mostly military, are owned. Only a few are catalogued as yet.

Memorabilia, etc.—(See Library Manual, II.)

Military works.—On August 1, 1908, the shelf catalogue contained 9,100 cards (one card may represent several volumes). In May, 1906, we owned:

	Volumes.
Military education.....	184
Art of war, strategy, etc.....	877
Infantry.....	486
British army.....	241
Fortifications.....	566
History of volunteer regiments, 1861-1865.....	416
General orders, War Department, 1809-1906.....	191
Military history.....	2,376

Science.—The shelf catalogue contained, May 22, 1907, 4,420 cards. The collection in ancient mathematics and astronomy is especially good, also in modern mathematics.

Technology, etc.—May 22, 1907, the shelf catalogue contained 2,465 cards.

West Point (the place), United States Military Academy (the institution).—A practically complete collection is owned of books, maps, and views—about 699 numbers.

OVERDUE BOOKS.

On January 10, 1909, there were 165 books overdue from officers and civilians.

MISSING BOOKS.

A considerable number of books is missing. Most of them have been taken from the library shelves and not charged, and many of them will return after a longer or shorter period.

MUTILATED BOOKS.

A few cases of mutilation of books have occurred during the year. In a library like ours (used only by officers, cadets, and a few civilians) there should be no cases of the sort.

TRANSFERS TO OTHER LIBRARIES.

To the library of the United States Artillery School this library transferred (March, 1909) 447 duplicate books and a considerable number of duplicate maps. These volumes, the property of the Government, will be useful at Fort Monroe. They have no value here. In like manner 21 duplicate books were transferred to the library of the Army Service Schools, Fort Leavenworth (June 12, 1909), and 40 volumes were transferred to the library of the United States Military Academy detachment of engineers (June 25, 1909). All the duplicate maps of the library that were needed by the department of drawing were transferred in October, 1908. At the request of the library of the bureau of education a large number of college catalogues (1838-1908) were transferred to the bureau (about 1,689 pieces). All these transfers were ordered by the superintendent by authority of the honorable Secretary of War.

LOANS FROM THE LIBRARY.

By direction of the President of the United States the bronze bust of General Sherman was lent to the St. Gaudens exposition in Washington in November, 1908. It was afterwards sent to Pittsburg and again to Chicago. It will be returned to West Point in the autumn of 1909.

ASSISTANT LIBRARIAN.

Mr. W. L. Ostrander was appointed in 1903 to be librarian's assistant. It is respectfully suggested that his title be changed to assistant librarian. This title has been earned by six years of intelligent, faithful, and assiduous work and study.

CONCLUSION.

As in previous years, it has not been possible to do all the work seen to be necessary in the library. The most important items (the selection of new books and their cataloguing) are thoroughly done. Others scarcely less important (recataloguing of old books, frequent examination of the shelves to discover misplaced or lost volumes, revision of our catalogues, especially of serials, periodicals, and government documents, substitution of printed for written cards, binding books and pamphlets, etc.) have been done as thoroughly as the circumstances permitted. It is only fair to record that the entire library force has done its best not only to keep the current work well in hand (it is now and has been since 1901 up to date), but to attack the arrears that were inherited in that year.

GIFTS.

Besides the gifts elsewhere mentioned, the library has received presents of books, pamphlets, manuscripts, photographs, etc., from the following institutions and persons, for which sincere thanks are returned:

Adjutant-general of Connecticut, 1; adjutant-general of Georgia, 1; adjutant-general of Illinois, 1; adjutant-general of Indiana, 1; adjutant-general of New Hampshire, 1; adjutant-general of Wisconsin, 1; American-Irish Historical Society, 2; American Philological Society, 5; American Scenic and Historic Preservation Society, 1; Army and Navy Preparatory School, 1; Army Service Schools, Fort Leavenworth, 2; Astronomical Laboratory at Groningen, 2; Atlas Portland Cement Company, 4; Prof. W. W. Bailey, 1; Captain Baird, 1; Julian A. Benjamin, 1; Bethel Military Academy, 1; Hon. John Bigelow, 1; Bingham School, 1; W. H. Bixby, 1; New York board of water supply, 1; Bordentown Military Institute, 2; Lieut. M. Brooke, 10; Carnegie Foundation for the Advancement of Teaching, 1; Carnegie Institute, 4; Carnegie Institute of Washington, 9; Chicago and Northwestern Railway Company, 1; Chief of Engineers, U. S. Army, 7; Chief of Ordnance, U. S. Army, 41; Chief of Staff, U. S. Army, 1; Colonel Church, 1 roll of maps; W. C. Church, 45 maps; Coast and Geodetic Survey, 14 maps; Mrs. J. S. Cobb, 2; Colorado State Historical and Natural History Society, 1; Colonial Society of Pennsylvania, 1; Columbia University, 2; Commercial National Bank of Chicago, 1; Commissioner of Education, 2; Commissioner of Navigation, 3; Connecticut State Library, 1; Cornell University, 3; H. C. Cushing, 2; Dartmouth College, 1; Arthur Dawson, artist, 1; Maj. H. P. De Forest, 1; Department of the Interior, 4; Department of State, 2; Hon. C. M. Depew, LL. D., 2; C. H. Dickey, 1; Director geological survey of Canada, 1; Professor Dudley, 3; E. I. Du Pont de Nemours Powder Company, 1; Ecole Polytechnique, 1; Engineer School, U. S. Army, 4; C. W. Exton, general orders and circulars; Fishburne Military School, 1; W. L. Fleming, 1; Fordham University, 8; Freehold Military School, 1; W. T. Gage, envelopes of civil war; Ginn & Co., 1; Lieutenant Grier, 2; Capt. C. B.

Hagadorn, 5; Miss Eleanor Hague, 24 photographs; the Hansen Type Foundry, 2; Dr. W. T. Harris, 4; Harvard College Observatory, 1; Harvard University, 3; Headquarters Department of the East, 1; Col. H. O. S. Heistand, 1; Capt. C. D. Herron, 4; Captain Hilton and Lieutenant Harris, 1; E. S. Holden, 6; Mr. Howard, 3; R. L. Howze, 4; A. S. Hubbard, copies of the Yale News; Capt. A. P. S. Hyde, U. S. Army, 2; Inspector-General's Department, 2; Mrs. Julian James, 1; Maj. Henry Jervey, 1; Capt. E. N. Johnston, U. S. Army, 1; R. M. Johnson, 3; Journal United States Artillery, 1; Kentucky Military Institute, 1; Gen. J. B. Kerr, 2; B. A. Langer, 1; O. W. Larned, 6; Library of Congress, 199; Mrs. Marrs, 1; Capt. F. C. Marshall, 1; Lieut. A. A. Maybach, 1; McClure's Magazine, 1; Miss McGuire, 2; Mexican Boundary Commission, 2; Miami Military Institute, 1; Military Historical Society of Massachusetts, 1; Military Information Division, General Staff, U. S. Army, 2; Military Information Division, War Department, 12 photographs, 152 translations; Military Order of Foreign Wars in the United States, 1; Montclair Academy, 1; N. F. Morrison, 1; Capt. J. A. Moss, 2; National Association of Railroad Commissioners, 7; National Education Association, 1; Navy Athletic Association, 1; Mrs. Newell, 8; New Jersey Military Academy, 1; W. H. Newlin, 18; Col. J. P. Nicholson, 3; Cadet R. R. Nix, 1; North Side Board of Trade, New York City, 2; Norwich University, 2; Observatory of Helsingfors, Finland, 1; Rev. L. J. O'Hern, 1; Ohio Military Institute, 1; C. H. Owen, 1; Peabody Museum, Harvard University, 1; Howland Pell, 3; Pennsylvania Military College, 1; S. W. Pennypacker, 1; John Pierce, 1; Capt. G. B. Pillsbury, 1; Major Piorkowski, 4; Gen. John Pitman, 1; Pittsburgh Filter Manufacturing Company, 7; Princeton, 1; quartermaster, West Point, 7; Republican national committee, 1; River View Academy, 1; Gen. B. K. Roberts, 2; J. Watts Robinson, 11; Maj. W. Robinson, 4; Rockland Military Academy, 1; Royal Military Academy, Sandhurst, 1; St. John's Military Academy, 1; H. L. Scott, 2 copies of letters, 1 book; School of Submarine Defense, 1; E. J. Selleks, 1; Semicentennial commission, St. Marys Falls, 1; P. T. Sherman, 1; M. F. Smith, 1 map; W. D. Smith, U. S. Army, 2; Society of the Order of the Founders and Patriots of America, 1; Society of American Wars, 1; Society of Naval Architects and Marine Engineers, —; Major Squier, 1; Staunton Military Academy, 1; Standard Oil Company, 6; G. S. Stanton, 1; state commissioner of excise, New York, 1; Carl Stoeckel, 3; Arthur Hopkins Strong, 6; W. H. Taylor, 2; Capt. P. E. Traub, 1; W. H. Tripp, 1; Colonel Turnley, 1; Ulster and Delaware Railroad, 1; Union Club, 1; United States Census Office, 1; United States Engineer School, —; United States Geological Survey, 47; United States Lake Survey, 4; United States Naval Academy, 1; United States Naval Observatory, 1; University of Colorado, 1; University of Illinois, 1; University of Missouri, 2; University of Tokyo, Japan, 1; Dr. J. W. Van Dusen, U. S. Army, 1 photograph; Gen. T. M. Vincent, 1; lieutenant-governor of Virginia, 1; War Department, 1; Hon. J. W. Weeks, 1; A. S. Williams, 1; W. H. Williams, 1.

Respectfully submitted.

EDWARD S. HOLDEN,
Librarian.

The ADJUTANT, UNITED STATES MILITARY ACADEMY.

APPENDIX G.

REPORT OF OFFICER IN CHARGE OF WATER SUPPLY.

JULY 31, 1909.

SIR: In compliance with the instructions contained in Memorandum No. 64, Headquarters United States Military Academy, West Point, N. Y., July 20, 1909, I have the honor to submit the following report covering the fiscal year ending June 30, 1909:

WATERWORKS.

The annual appropriation of \$2,000, for the care and maintenance of the waterworks, was expended in cleaning the filter beds, washing and replacing filter sand, in the general police of the reservoir, and for other necessary work of maintenance and repair.

NECESSARY INCREASE OF THE WATER SUPPLY.

The work under this appropriation during the last year will be grouped under the following subheadings:

- (1) Enlargement of the filter plant.
- (2) Regulations for the protection of the West Point water supply.
- (3) Acquisition of land and water rights in connection with the Popolopen Creek supply.
- (4) Road and bridge work on the watershed.

ENLARGEMENT OF THE FILTER PLANT.

The filtration plant, mentioned in the last report as nearing completion, was finally accepted and put into commission in October, 1908.

The total improvement comprised (1) the construction of two new beds, each with an area of one-sixth of an acre, facing the old beds and at a distance of 40 feet from them; (2) a covered sand court, occupying the intervening space; and (3) the modernization of the old filters, by renewing some of the filtering materials and installing a new system of piping in order that the entire plant might be controlled from the new regulator house.

The old beds have an area of about one-eighth of an acre each, and are built of stone masonry, faced inside with brick. The roofing system consists of parallel elliptical arches, also of brick, running the full length of the beds, about 90 feet. There are four arches over each bed, with a clear span of $13\frac{1}{2}$ feet and a rise of 3 feet. The necessary operating valves, supply, effluent, and drain, are located in a gatehouse at the end opposite the sand court, and have been left intact since the installation of the new piping system, so that, in case of necessity, these two beds can be operated independently of the new regulator house.

There are no indicating or regulating devices in the old gatehouse, and consequently there was formerly no way of determining the rate of filtration, although the loss of head could be roughly gauged by a comparison of the water levels in the filter and in the effluent well of the gatehouse. The rate of consumption on the post was measured by shutting off the beds and observing the rate of fall on the clear-water house. As its capacity was only about eight hours' supply, however, this observation extended over three days, determining the quantity drawn off for a different period each day. This approximate method gave the daily consumption as 800,000 gallons per twenty-four hours, of which over half was undoubtedly used during the eight hours comprising the working day. When, therefore, one bed was supplying the post, during the cleaning of the other one, it must have filtered, during the period of greatest demand, at the rate of 1,200,000 gallons per day through one-eighth of an acre, or 9,600,000 gallons per acre per day. As the maximum rate recommended for efficient filtration is 3,000,000 gallons per acre per day, and as it is estimated that the enlargement of the Military Academy will double the water consumption, the necessity for the new beds is at once apparent.

The underdrainage of the old filters consists of 12-inch plain tile, laid with 3-inch open joints, and leading to the main effluent pipe at the old gatehouse. In modernizing the old plant, a main collector

of concrete was built across the ends of the tile drains in each bed, and pipe connections made to the new regulator house. The rate of filtration is measured by Venturi meters placed in these lines, and indicating the rate and loss of head for each bed on dials in the new regulator house. The regulation is under the control of the operator, who has the readings of these indicators to guide him.

The new beds are of concrete throughout, and roofed with groined elliptical arches of 11 feet 4 inches span and 2 feet rise. The floor is of inverted groined arches, segmental in section. The thickness of both roof and floor arches at the center is 6 inches. As the floor rests on earth, the inverted-arch form was necessary to properly distribute the weight carried by the piers.

The sand court is roofed with arches of the same type as those of the new filters, and has two floor levels, one at the elevation of the sand in the filters and the other, 3 feet lower, for the storage of washed sand. Communication between the two levels is by means of two inclined runways. Access is had to each bed by a water-tight door, through which, when cleaning a bed, the sand may be wheeled to the washer.

The underdrainage system of the new filters is composed of half-round tile, laid flat, with 1-inch open joints, and all leading to the main collector, which runs lengthwise through the center of each bed and connects with the effluent pipe at one end.

The indicating apparatus and dials in the regulator house are similar to those described for the old beds, except that the rate of filtration is measured by standard submerged orifices between open wells, instead of by Venturi meters. The advantage of the Venturi meters lies in a great saving of space and the elimination of the open wells.

The filtering materials in the new beds consist of 1 foot of broken stone, graded in size from $2\frac{1}{2}$ inches to three-eighths inch, and 3 feet of sand, with an effective size of about 0.22 millimeter; normally there will be 4 feet of water over the sand. The old beds originally contained about 2 feet of stone and gravel, graded in size from 8-inch to 10-inch at the bottom to $\frac{1}{2}$ -inch gravel at the top; then 20 inches of very coarse sand, useless for filtering, with an effective size of 0.40 millimeter; the filtering layer consisted of only 8 to 10 inches of fine sand, effective size 0.30 millimeter. The sand in the old filters was all removed down to the upper course of gravel, and the fine sand was washed and replaced with enough new sand to take the place of the coarse, which was entirely removed.

The regulator house, underground, is of concrete, and contains an operating floor from which all the valves for regulating the plant may be controlled. This floor opens directly into the sand court, and is also accessible from the upper entrance landing by an iron staircase. The superstructure is of brick, trimmed with concrete stone, and is intended for use as a laboratory for the testing and bacteriological examination of the water. At present these examinations are made weekly at the cadet hospital by the medical department, and indicate a bacteriological efficiency of 90-95 per cent. The average efficiency of the old filters, before overhauling, was 60-75 per cent.

An automatic recording Venturi meter has been installed on the post main, leading from the clear-water house, and indicates a present daily consumption of about 1,200,000 gallons per day. Normally

the post is supplied by three beds, with one out of commission, for draining, cleaning, or refilling. The rate of filtration is then 2,400,000 gallons per acre per day.

The cost of the plant, complete, was as follows:

I. *Contract of Mr. E. A. Matthews.*

Excavation.....	\$11,905.25	
Extra work.....	123.68	
		\$12,028.93

II. *Contract of Mr. F. N. Lewis.*

Concrete in floor, walls, and regulator house, 1,243 cubic yards, at \$8.....	9,944.00	
Concrete in piers and roof, 554.7 cubic yards, at \$12.50.....	6,933.75	
Concrete in sand washer, 5 cubic yards, at \$9.....	45.00	
Regulator-house superstructure.....	1,800.00	
Pipes and drains.....	2,500.00	
Fixtures.....	2,500.00	
Filter gravel, 478 cubic yards, at \$2.20.....	1,051.60	
Filter sand, 2,328 cubic yards, at \$3.65.....	8,497.20	
Back fill, 2,777 cubic yards, at 60 cents.....	1,666.20	
Modernization of old filters.....	3,500.00	
Extra work.....	573.15	
		39,010.90

III. *Contract of Mr. J. J. Garrett.*

Washing fine sand from old filters, 216 cubic yards, at \$0.55..	118.00	
Removing coarse sand from old filters, 432 cubic yards, at \$0.70.....	302.40	
Sodding slopes of embankment, 6,120 square feet, at \$0.10...	612.00	
Placing top soil on filters, 190 cubic yards, at \$1.40.....	266.00	
		1,298.40

IV. *Amount expended by the United States.*

Labor, grading, sodding, laying pipes, etc.....	2,037.50	
Engineering and inspection.....	2,226.27	
Materials.....	1,246.10	
Printing.....	63.25	
Advertising.....	112.20	
		5,685.32
Total cost.....		58,023.55

REGULATIONS FOR THE PROTECTION OF THE WEST POINT WATER SUPPLY.

Directly after the last report was submitted, describing the measures taken to prevent pollution of the water supply, this work received a check in the shape of a decision of the supreme court of Orange County, N. Y., in the case of Stephen B. Heaton against the village of Chester, in which it was held that the municipal authorities had no legal right to enforce these regulations without the consent of the property owner.

Practically all the violations of the regulations along the Queensboro Brook had been remedied previous to this time, but two of the largest landowners around Popolopen Pond, the banks of which are occupied by summer camps, had declared their intention of resisting any supervision outside of actual purchase.

A letter was received from Mr. Eugene H. Porter, the state commissioner of health, in response to an inquiry of this office, in which he admitted the inability of the State to cope with such cases under existing laws, and advised that an effort would be made to secure the passage of competent laws under which the regulations could be enforced.

The matter stands in abeyance at present, awaiting the result of an appeal by the village authorities.

Of the original allotment of \$5,000, the following amounts have been expended:

Originally allotted.....	\$5,000.00
Advertising and printing.....	\$598.29
Mrs. Lavinia Lewis, for moving stable.....	250.00
For improving sanitary conditions on the John Montross property.....	216.50
For improving sanitary conditions on the Merritt property.....	90.00
For improving sanitary conditions on the Weyant property.....	80.00
For improving sanitary conditions on the Harriman property.....	191.10
For improving sanitary conditions on the Brooks property.....	160.10
For improving sanitary conditions at the Queensboro schoolhouse.....	110.00
Engineering and inspection.....	333.34
Labor hired by the United States.....	266.97
	<hr/>
Expended.....	2,296.30
Balance.....	2,703.70

ACQUISITION OF LAND AND WATER RIGHTS IN CONNECTION WITH THE POPOLOPEN CREEK SUPPLY.

At the date of the last annual report four cases under this heading remained unsettled, to wit, (1) the Pavek condemnation suit, (2) the Reuben Rose condemnation suit, (3) right of way for the pipe line over the lands of Mrs. Frances Pell Archer-Shee, and (4) right of way for the pipe line over the lands of Charles Edward Tracy.

(1) The condemnation suit for the acquisition of the Pavek or Weyant farm, which was begun in October, 1905, was settled during the past year. The commissioners made an award of \$8,500, to which an appeal was taken by the defendant in the appellate division of the supreme court of Orange County, N. Y., which appeal was denied. He then appealed to the court of appeals of the State of New York and this appeal also was denied in October, 1908. No further appeal being possible under the laws of this State, payment was made as directed by the court, and the case finally settled.

(2) The Reuben Rose condemnation suit was settled in January, 1909, and the title to this property is now vested in the United States.

(3) The right of way over the Archer-Shee property has been settled, and the deed received by the United States.

(4) The Tracy case is now practically settled, the only question being one as to the exact form of deed to be given to the United States.

The settlement of the latter case will close up the matter of the acquisition of land and water rights in connection with the Popolopen Creek supply.

ROAD AND BRIDGE WORK ON THE WATERSHED.

Out of an allotment of \$3,500 from the appropriation for the increase of the water supply, a 50-foot reenforced concrete arch was constructed in July and August of 1908 over Popolopen Creek, on the West Point watershed, in connection with the road improvement described in the last annual report.

In order that a favorable site might be secured, where the abutments would rest on ledge rock, it was necessary to locate the arch about 200 yards upstream from the old wooden bridge, and to relocate about 400 yards of the main road. This also resulted in raising the road above the flood level where it had always been badly washed in the freshets.

The arch is a semiellipse, of 50-foot span, and 8-foot rise, and the crown is about 10 feet above the normal water level. The width is 20 feet over all, allowing a 17-foot roadway. The length over all is 76 feet. The thickness of the arch ring at the crown is 1 foot, increasing toward the abutments.

The arch ring is reenforced, top and bottom, with $\frac{3}{4}$ -inch deformed steel bars, anchored in the abutments, and with transverse bars which tie the spandrel walls to the ring.

The construction occupied just two months, and the cost was:

For materials.....	\$1, 181. 73
For hauling.....	152. 88
For labor.....	1, 312. 69
For general expense; camp, tools, etc	202. 70
For engineering and superintendence, including design	650. 00
Total.....	3, 500. 00

The items of work were as follows:

Excavation, 97 cubic yards, at \$0.52 per cubic yard	\$50. 44
Forms, 169 cubic yards concrete, at \$6.06 per cubic yard	1, 024. 84
Reenforcement, 5,960 pounds, in place, at \$0.05 per pound.....	290. 75
Concrete, 169 cubic yards, in place, at \$6.28 per cubic yard.....	1, 060. 83
Backfill, 465 cubic yards, at \$0.45 per cubic yard.....	209. 06
Tarring arch ring, etc., 220 square yards, at \$0.05 per square yard.....	11. 38
General expense	202. 70
Engineering and superintendence	650. 00
Total.....	3, 500. 00

Price of concrete per cubic yard, including forms:

Spandrel walls.....	\$13. 72
Abutments.....	6. 42
Arch ring, centering.....	14. 64
Average cost per cubic yard.....	12. 34

An allotment of \$1,500, approved this spring, will be used in macadamizing the road over the bridge, regrading and ditching that portion lying beyond the bridge to the reservation line, and repairing the macadam which was placed on the Queensboro road last year.

Very respectfully,

W. P. WOOTEN,
Captain, Corps of Engineers, U. S. Army,
In Charge of Post Water Supply.

The ADJUTANT, UNITED STATES MILITARY ACADEMY,
Present.

APPENDIX H.

REPORT OF THE QUARTERMASTER AND DISBURSING OFFICER.

AUGUST 1, 1909.

SIR: In compliance with Memorandum No. 64, current series, Headquarters United States Military Academy, I have the honor to submit herewith the following report, in triplicate, of the operations of the quartermaster's department of the post of West Point and Military Academy and the gas works for the fiscal year ending June 30, 1909:

QUARTERMASTER'S DEPARTMENT, POST OF WEST POINT.

The duties pertaining to this office are enumerated in paragraph 1010, Army Regulations, 1908.

Contracts entered into during the year and prior thereto, remaining in force in part or for the whole of the fiscal year, are indicated in statement hereto attached, marked "No. 1."^a

TRANSPORTATION.

In addition to the daily demands made upon this office for hauling and policing of the post, transportation has been furnished for hauling freight and material during the year, amounting approximately to 60,000 tons, an increase of 10,000 tons over last year. For this purpose there have been available 82 horses, 17 mules, and 2 motor trucks—one of 2-ton capacity and one small delivery truck. The 2-ton truck has rendered good service, but the small one has not been of much use on account of its constantly getting out of order.

The two electric passenger wagonettes that we obtained in February of 1908 have given good service and have been of the greatest convenience to residents of the post.

POST CEMETERY.

The cemetery has been in use for ninety-four years. The number of interments made between July 1, 1908, and June 30, 1909, was 27, making the total number at the latter date 1,394. Its care and maintenance are provided for in the appropriations for the support of the Military Academy. For this purpose there was appropriated for the last fiscal year \$1,500. With this amount we have been able to keep the grounds in satisfactory condition.

Receipts and disbursements are shown in statement attached, marked "No. 2."^b

QUARTERMASTER'S DEPARTMENT, UNITED STATES MILITARY ACADEMY.

The duties under this head are defined in paragraph 14, Regulations United States Military Academy, 1902.

Contracts entered into during the year and prior thereto, remaining in force in part or for the whole of the fiscal year, are enumerated in statement attached, marked "No. 3."^c

Receipts and disbursements are shown in statement attached, marked "No. 4."^d

^a See page 68.^b See page 69.^c See page 69.^d See page 71.

DETACHMENT ARMY SERVICE MEN.

Attention is invited to my remarks about this detachment in the last annual report. The members of the detachment have performed the numerous duties required of it, on the whole, in a satisfactory manner.

PUBLIC WORKS.

Since my last annual report the heating and lighting plant has been completed, and for the year has been supplying steam heat for cadet mess hall, cadet hospital, academic building, south cadet barracks, north cadet barracks, gymnasium, cadet guardhouse, cadet store, riding hall, and such as was required to heat the new administration building to enable the work on the inside to go on. Branch connection from the main line to the new battalion guardhouse in rear of north cadet barracks was completed last fall, and extension of the main tunnel to the gymnasium will be taken up this fall.

Plans for a children's school and for quarters for superintendent and staff officers at north end of the plain have not yet been completed. Those for the former have been held up, pending decision as to location; those for the latter group of buildings are still in the hands of the architects at their Boston office.

The wiring of old officers' quarters and Catholic Chapel, and rewiring of cadet mess, cadet hospital, library, officers' mess and quarters, and Memorial Hall for electric lighting was completed early in the fall, thus enabling all of these buildings to be supplied with current from the main plant. The wiring and installation of lighting fixtures in the south cadet barracks was also completed early in the fall. Portions of the street-lighting system which were postponed as stated in my last annual report until certain road work could be completed have been finished, so that the entire post is now lighted by electricity.

The lighting of the cadet camp by electricity was taken up in the spring and completed by the middle of June, when the camp was occupied by the cadets.

Early in the fall the New York Central and Hudson River Railroad Company completed construction of the switch for delivery of coal to the power house, which enables us to carry coal from the cars directly to the bunkers by the coal-handling machinery.

The work of remodeling the basement of the south cadet barracks was completed last fall; also the angle of the south barracks for use as quarters for four tactical officers.

Work on the administration, or post headquarters, building was prosecuted during the year. The building was practically completed by August 1, and is now partially occupied.

Work on the bachelor officers' quarters did not proceed satisfactorily under the subcontractors engaged by the Empire State Surety Company for the purpose. It became evident last fall that the subcontractors would be unable to finish the building, owing to financial embarrassment, and the surety company was thereupon required to make other arrangements. It did so by engaging the Oscawana Building Company, of New York, to complete the building. The usual delays occurred which always follow the failure of one contractor and the assumption of the work by another. The building, however, is now nearing completion, and will probably be

ready for occupation by September 15, some of it—the south wing—by September 1. On August 1 it was 92.3 per cent completed.

This building provides accommodations for 32 unmarried officers, each set consisting of a study, two bedrooms, and a bath room. The building is heated by steam and lighted by electricity, gas being provided for emergency use. The quarters on the third and fourth floors of the north wing will not be completed, the finishing of these being purposely omitted from the original contract in order to keep down the cost.

The building contains ample accommodations for all bachelor officers now on duty at the post, and should the additional quarters, amounting to eight, be required, it will not be a very difficult matter to complete them for use. The cost of this building will be approximately \$276,000.

In my last report reference was made to the opening of bids for the erection of a gymnasium, chapel, chaplain's quarters, battalion guardhouse, and four double sets of officers' quarters, but that the award had not been announced. This was made in the latter part of August, 1908, to Messrs. C. T. Wills (Incorporated), of New York City, and contracts for the several buildings with that firm were executed in September, and operations commenced. All excavation and foundation walls for the chapel, chaplain's quarters, and gymnasium having been done by this office, left only the superstructures of these buildings to be erected by the contractor. The excavation for the battalion guardhouse was also done by this office, and was completed in November, when the contractor began the erection of the foundation walls, which came within his contract. Work on these buildings has progressed very satisfactorily, but not rapidly enough to complete them within the time fixed.

On the chapel and chaplain's quarters rapid progress was prevented, owing to delay in reaching a decision upon the proposition to substitute limestone for concrete stone in the trim of these buildings. Its substitution was recommended when the papers were forwarded for action, but as the War Department desired the exact additional cost to be ascertained before accepting the proposed substitution, one month was lost in securing this information.

The contractor was delayed three or four months in starting the foundation walls of the battalion guardhouse, until the excavation in rock could be completed by this office, which occupied a longer time than was expected. The four double sets of officers' quarters were to have been finished by the middle of June, but difficulties in getting materials delivered when wanted, and certain classes of mechanics, caused a delay in these buildings, and they will not be entirely finished and ready for occupation before the end of September, although some of them will be ready about the middle of September.

This group of buildings is being built on the percentage plan, the commission of the contractors being 6.5 per cent on the estimated cost, as stated by them in their proposal. The estimated cost of these buildings, exclusive of work that was done by this office, is as follows:

Chapel.

Contractors' estimate.....	\$283, 150. 65
Commission.....	18, 404. 79
Total.....	301, 555. 44

Chaplain's quarters.

Contractors' estimate.....	\$30,040.15
Commission.....	1,952.61
Total.....	31,992.76

Gymnasium.

Contractors' estimate.....	\$286,728.95
Commission.....	18,637.38
Total.....	305,366.33

Battalion guardhouse.

Contractors' estimate.....	\$22,794.30
Commission.....	1,481.63
Total.....	24,275.93

Four double sets of officers' quarters.

Contractors' estimate.....	\$177,698.45
Commission.....	11,550.40
Total.....	189,248.85

The cost of the work done on the gymnasium, chapel, chaplain's quarters, and battalion guardhouse by this office for excavation and foundation is as follows:

Chapel.....	\$21,000.00
Chaplain's quarters.....	4,000.00
Gymnasium.....	63,000.00
Battalion guardhouse.....	1,582.56

If to these costs be added the amount to be paid the contractor for his work, the total estimated cost of these buildings will be as follows:

Chapel.....	\$322,555.44
Chaplain's quarters.....	35,992.76
Gymnasium.....	368,366.33
Battalion guardhouse.....	25,858.49

The percentage of completion of these buildings on August 1 was as follows:

	Per cent.
Chapel.....	58
Chaplain's quarters.....	74
Gymnasium.....	52
Battalion guardhouse.....	70
Four double sets of officers' quarters.....	86

The chaplain's quarters will be finished and ready for occupation by November 28, 1909; chapel and gymnasium in March, 1910; battalion guardhouse October 1, 1909.

Instructions having been received to start the erection of the north wing of the new barracks, for which plans had previously been prepared but not executed when the east wing was built, and a triple set of quarters on the site of the old Kinsley House, I recommended that contract for these buildings be awarded without competition to Messrs. C. T. Wills (Incorporated), for the reason that it was believed that they could do the work satisfactorily and with greater facilities and less expense to the Government, on account of their having other buildings under way, being familiar with local conditions, and an organization and plant on the grounds which

would be available for these two other structures. This recommendation was approved, and contract made accordingly with Messrs. Wills in January, 1909.

The excavation for the north wing of barracks was done by this office at a cost of \$2,550.40. Work was begun by the contractor on the footings on February 6, 1909. Work on the set of quarters on the Kinsley House site was started January 15, 1909. On this building excavation was included in the general contract. The estimated cost of the north barracks and triple set of officers' quarters just referred to is as follows:

North wing barracks.

Contractors' estimated net cost.....	\$176,252.00
Cost of excavation.....	2,550.40
Commission.....	11,456.38
Total.....	190,258.78

Triple set of officers' quarters.

Contractors' estimated net cost.....	\$72,667.00
Commission.....	4,723.35
Total.....	77,390.35

On August 1 the north wing was 26 per cent completed, and the triple set of quarters 46 per cent. It is expected that the former will be completed in March, 1910, and the latter in December, 1909.

On February 24, 1909, proposals were opened for erection of a riding hall in accordance with the revised plans prepared by the architects, Messrs. Cram, Goodhue & Ferguson. The original plans provided for a rink or arena 150 feet wide by 600 feet long. When the building was accurately staked and height of the roof line indicated, it was found that it would be too close to the officers' club and mess and the roof line too high. When the attention of the authorities was called to this, it was finally decided, after due consideration, to reduce the dimensions of the rink to 135 feet wide by 565 feet long and the height of the roof line to the same level approximately as the terrace floor of the officers' club. This reduction in size, it was expected, would also make quite a material reduction in the estimated cost, approximately \$100,000.

The most favorable bid received for this building was from Messrs. J. E. & A. L. Pennock, of Philadelphia, who estimated the net cost at \$541,562 and offered to do the work for a commission of 6.3 per cent on this estimated cost. The gross estimated cost will therefore be, on the above basis, \$575,680.41. Contract was therefore awarded to Messrs. J. E. & A. L. Pennock and executed under date of April 13, 1909. Removal of the old cavalry barracks and stables began March 10, 1909. The time for completion is fixed at two years from date of contract.

As the new riding hall extends over the ground now occupied by the old one, and in order to avoid suspending instruction in riding during two winters, the contract required that about 400 feet of the new hall, north of the old building, be completed and made ready for use before the old building is torn down. Considering the difficult character of the rock excavation for the east wall of the new building, good progress has been made. On August 1 the percentage of completion was estimated to be 2.7 per cent.

Plans are now being prepared for removal of the old cadet chapel to the recently approved new site in the southeast corner of the cemetery. No plans of this building could be found on file, either here or in Washington, and it was therefore necessary to have them made in order to insure the old building being faithfully and accurately reproduced. Advantage will be taken of the topographical character of the new site to provide a basement in which will be constructed a crypt or vault for temporary resting place of bodies that may be received during the winter season, when permanent interment in the ground may be impracticable or difficult. This will necessitate a slight change in the rear entrance to the building, which, however, affects only the steps, and converting a window at the rear into a door for admission to the sacristy. The noted painting over the altar is on canvas, stretched over a wooden frame, which admits, therefore, of its being readily removed and restored to its original position after the old building is changed to its new location. The cost of moving the old chapel is estimated at \$20,000, and it is believed the work can be done within that limit.

The quarrying of local stone required for new buildings has been continued at the same place as that mentioned in my last annual report, namely, the ledge in rear of quarters Nos. 23 and 25. This ledge has furnished not only sufficient stone to complete the post headquarters, but all the stone required for the north wing of barracks, chapel, and battalion guardhouse, and such as was needed for the foundation walls of the gymnasium and officers' quarters. Sufficient remains to provide all the stone required for the riding hall, and probably for the new academic building.

In order to facilitate the work on the chapel and to reduce the cost of hauling stone from the above-mentioned quarry to the site of the chapel, authority was obtained to purchase and erect an aerial cableway of about 1,000 feet span, extending from the quarry in rear of quarters Nos. 23 and 25 to the chapel. This was furnished after competition by the New York Cableway and Engineering Company at a cost of \$2,845. The cost of timber for two towers and erection amounted to \$2,016.57.

The main purpose of this cableway was to haul stone from the quarry to the chapel, but it has also been used to haul other material to the chapel, which was delivered at the gymnasium, 125 feet lower than the chapel, and bring surplus material from the chapel for use on gymnasium. Actual tests with teams demonstrated that the cable could do the same amount of work in the same time at a cost of about \$25 per day less.

Authority was also obtained to purchase a traction engine, three freight cars, and two stone-spreading cars for use in construction of roads, retaining walls, and also in hauling material to and from various points where work was in progress. Such hauling could be done and saving to the Government made where this work was being done on the cost and percentage principle. The cost of operating the engine and cars, which includes wages of engineer and fireman, oil, waste, and allowance for wear and tear, is about \$10 per day. The same amount of hauling by wagons would cost about \$50 per day, a saving of \$40 per day in favor of the traction engine. The investment has been highly satisfactory, as well as economical.

✓ The grading of the ground in front of the terrace wall south of new administration building, which had been postponed until the contractor on that building could remove a certain portion of his plant that he had been permitted to locate there, was taken up last month and completed. As soon as the necessary material can be secured it will be top-soiled and sown with grass.

The macadamizing of the new roads at the south end of the post, which was referred to in my last annual report as being done, was completed early in the fall as far as quarters No. 66. During the winter the widening of the main road from these quarters northward as far as quarters No. 14, and rebuilding the retaining wall, was carried on practically without interruption, the mild weather permitting this to be done.

The work of widening the road connecting the main road near quarters No. 14 with the road to the station at the old riding hall, and completing the retaining walls, was also prosecuted during the winter. This work was completed during the spring. As soon as weather conditions permitted, the construction of the breast-high or parapet wall and the sidewalk along these two roads was taken up and completed. The completion of this latter work was followed by macadamizing the surface, and finished in June.

As a result of experiment and investigation covering a period of four or five years it was decided to surface the new roads with tar macadam, for the purpose of giving not only a more durable finish, but to reduce the annoyance from dust and the consequent necessity of constant watering. The possession of a stone-crushing plant and road roller and the purchase of a traction engine and stone-spreading cars in the spring enabled this work to be done rapidly and economically. Thus far the results have been satisfactory, and it is believed that the use of tar as a binder in putting on the finishing surface will produce a smooth, durable, and almost dustless road. The cost per square yard, exclusive of fill to subgrade, has averaged 74 cents. It is noticed, also, that where the roads have been treated in this way they are much less noisy from traffic than the ordinary macadam road. They are more impervious to weather, dry quickly, and appear to improve with age and usage. Being made from local material, they can be made with means at hand—tar from the gas works, rock from the reservation, crushed by the plant belonging to the academy, rolled into shape by rollers belonging to the academy, and labor performed by permanent employees.

The completion of the walls and sidewalks along the roads mentioned above permitted the erection of additional electric street lights, which were necessarily omitted last summer when the main portion of lighting system was put in, and which had to be postponed until these improvements could be completed.

The paving of the courtyard and sallyport of the new administration building was purposely omitted from the general contract, because the architects desired this to be done with old bluestone paving on hand. As soon as the building was sufficiently near completion, in July, to permit this work to be done, it was taken up by this office and finished in about two weeks' time.

Extension of the steam-pipe tunnel to the new chapel, so as to admit of this building being connected with the central plant, has been commenced, and will be completed in time to provide heat for

the chapel this winter. At the same time, ducts for electric current, branches for supplying water and gas, sewer and surface water drains will be put in, advantage being taken of the excavation for the tunnel to lay these various pipes, etc.

The work of grading, top soiling, and seeding the new artillery and cavalry drill ground, at the south end of the post, was completed early in June, with the exception of a small portion in the vicinity of the south gate guardhouse, which had to be postponed until the stonecutting yard of one of the contractors could be removed. This was done early in July, and the grading of the new drill ground practically completed by August 1. A good growth of pasture grass has been obtained, which it is believed will withstand the wear and tear of mounted drill sufficiently to prevent the annoyance from dust that usually occurred when the old ground was used.

At the last session of Congress an appropriation of \$2,200 was obtained for installation of a garbage crematory in the basement of the cadet mess. The work was completed in July, but the plant has not yet been sufficiently tested to permit of final acceptance.

GAS PLANT.

As director of the gas plant, I am charged with providing illuminating gas for the needs of the post. The revenue derived from the sale of gas, coke, and tar is covered into the special contingent fund, and in accordance with law applied to payment of civilian employees at the gas works, and purchase of gas coal if the appropriation therefor is not sufficient, and for miscellaneous expenses not otherwise provided for. Gas is charged for at 75 cents per 1,000 cubic feet. Since November 1 last year coke has been sold at \$1.25 per 18 bushels. The price prior to this date was \$1.17 per 18 bushels. Tar was disposed of at 3½ cents per gallon, this being the highest price that could be obtained after public notice inviting proposals for the entire output for the year.

During the year 15,119,100 cubic feet of gas were manufactured; 3,471,700 pounds of gas coal and 1,353 gallons of oil were used.

The reduction in the amount of gas manufactured during the past fiscal year from that made during the preceding fiscal year, about 33 per cent, is due to the fact that electricity is now used for the street-lighting system and for nearly all of the public buildings and quarters. The old academic building, cadet guardhouse, old gymnasium, hotel, and a small number of officers' quarters which are scheduled for eventual removal, are lighted by gas. It will be necessary to retain the gas plant, as gas will be required for the cadet laundry, cadet mess, and cooking purposes in officers' quarters.

The amount of gas manufactured during the last two fiscal years is given by months in appendix, marked "No. 5."^a

SPECIAL CONTINGENT FUND.

This fund is derived from the rent of hotel, stable, restaurant, post-office, and from sale of gas, electricity, coke, tar, and miscellaneous receipts. Expenditures from this fund are made under the direction of the superintendent, by authority of chapter No. 212, act

^a See pages 71 and 72.

of Congress, May 1, 1889. Expenditures for repairs of buildings which are rented are paid from the rentals.

The necessary expenditures for the forest improvements now under way have been made from this fund, which is reimbursed therefor from the sale of timber in the shape of cord wood, sawed lumber, etc.

The sale of cord wood during the past year has not met expectations, owing to industrial conditions. Owing to the quality of the wood, there is no sale for it except to the brickyards in this locality. Business was very dull in this industry, and is still below normal conditions.

The monthly expenditures of the forestry work ranges from \$330 to \$400. During the year the sale of cord wood and sawed lumber amounted to \$1,590.17:

The receipts and disbursements are included in statement attached, marked "No. 6."^a

Capt. C. D. Herron, Eighteenth U. S. Infantry, reported for duty on August 22, 1908, as assistant to the quartermaster, in place of Capt. R. C. Foy, First Cavalry, relieved on September 2, 1908. Captain Herron has given me most valuable and efficient assistance.

On June 15, 1909, First Lieut. W. D. Smith, Fourteenth Cavalry, was relieved in order to enable him to comply with orders directing him to report for duty under the Panama Canal Commission. I desire to take this opportunity to express my appreciation of the manner in which Lieutenant Smith attended to his numerous duties, and to his valuable assistance in executing the business of this office.

On June 16 First Lieut. Guy Kent, First Cavalry, reported for duty as assistant to the quartermaster, vice Lieutenant Smith.

Very respectfully,

J. M. CARSON, Jr.,
Major and Quartermaster, U. S. Army.

The ADJUTANT, UNITED STATES MILITARY ACADEMY,
Present.

No. 1.—List of contracts entered into by the quartermaster's department during fiscal year 1909.

With—	Date.	Expired.	Supplies.
North River Coal Co.....	May 1, 1908	June 30, 1909	Anthracite coal.
George I. Pavak.....	do.....	do.....	Hard wood.
Clark & Wilkins.....	do.....	do.....	Soft wood.
Horace Ingersoll Co.....	do.....	Oct. 31, 1908	Bran and middlings.
The American Hay Co.....	do.....	do.....	Hay.
The Early & Daniel Co.....	do.....	do.....	Oats and straw.
Wm. Gleichmann.....	Sept. 1, 1908	June 30, 1909	Straw.
The Early & Daniel Co.....	do.....	do.....	Oats and straw.
Horace L. Ingersoll.....	do.....	do.....	Middlings.
The American Hay Co.....	do.....	do.....	Hay.

^a See page 72.

No. 2.—Statement of funds pertaining to the quartermaster's department at West Point, N. Y., received and disbursed during the fiscal year ending June 30, 1909.

Appropriation.	On hand July 1, 1909.	Received since.	Total to be accounted for.	Disbursed and deposited.	On hand June 30, 1909.	Total disbursed, deposited, and on hand.
Regular supplies	\$1,580.80	\$101,993.49	\$102,574.29	\$85,038.62	\$18,535.67	\$103,574.29
Incidental expenses	517.89	6,984.92	7,502.81	7,364.89	137.92	7,502.81
Army transportation	309.65	20,883.89	21,193.54	20,730.34	463.20	21,193.54
Clothing and equipage		1,339.12	1,339.12	1,339.12		1,339.12
Barracks and quarters		5,150.01	5,150.01	5,150.01		5,150.01
Shooting galleries and ranges	5.58	1,525.00	1,530.58	1,496.45	34.13	1,530.58
Construction and repair of hospitals		575.00	575.00	575.00		575.00
Quarters hospital steward		180.00	180.00	180.00		180.00
Horses for cavalry, artillery, and engineers		4,500.00	4,500.00	4,500.00		4,500.00
Military post exchanges		630.00	630.00	630.00		630.00
Water and sewers		155.20	155.20	155.20		155.20
Miscellaneous receipts		416.56	416.56	416.56		416.56
Total	2,413.92	144,333.19	146,747.11	127,576.19	19,170.92	146,747.11

No. 3.—Contracts in force during fiscal year 1909.

Name.	Date.	Purpose.
Cram, Goodhue & Ferguson	Aug. 12, 1903	Developing competitive design for improvements, United States Military Academy.
Henry C. Meyer, jr.	Oct. 2, 1903	For designing and supervising the construction and installing of heating and lighting plant.
Olmstead Bros.	May 26, 1904	Plans and designs, landscape improvements, United States Military Academy.
General Electric Co.	Dec. 6, 1904	Furnishing generators, motor, and switchboard for power house.
The Babcock & Wilcox Co.	Feb. 17, 1905	Furnishing boiler and mechanical draft plant for power house.
Providence Engineering Works... ..	Mar. 29, 1905	Furnishing Corliss engines for electrical lighting.
Robins Conveying Belt Co.	May 19, 1905	Coal-conveying apparatus.
C. H. Sanborn	Jan. 31, 1906	Steam-heating system for post headquarters building.
J. W. Bishop Co.	do	Construction of post headquarters building.
J. B. & J. M. Cornell Co.	Mar. 6, 1906	Structural steel for power house.
The United States Fidelity and Guaranty Co.	Sept. 20, 1906	For completing contract of Broderick and Wind Engineering and Construction Co. for constructing officers' quarters and cadet barracks.
Johnston Livingston, jr., & Co.	Feb. 14, 1907	Installing wiring, conduit, panel board, etc., in old cadet barracks.
The Metropolitan Surety Co.	Apr. 18, 1907	For completing contract of Church Construction Co. for constructing cavalry and artillery barracks and stables and one gun shed.
Empire State Surety Co.	Mar. 1, 1907	For completing contract of Church Construction Co. for construction of power house (except structural steel).
Do	do	For completing contract of Church Construction Co. for construction of bachelor officers' quarters.
The General Fireproofing Co.	do	For steel wall lockers.
F. N. Lewis	Aug. 2, 1907	Construction of two slow, covered sand filters
J. W. Bishop Co.	Aug. 23, 1907	Installing reinforcing girder, library tower.
E. A. Matthews	Sept. 12, 1907	Constructing two emplacements for 6-inch guns.
The Okonite Co.	Sept. 30, 1907	Electrical distributing and street-lighting system.
Horn & Brannen Manufacturing Co.	Nov. 13, 1907	Furnishing and installing combination gas and electric light fixtures in old and new cadet barracks.
Johnston Livingston, jr., & Co.	Dec. 26, 1907	Furnishing and installing wiring, panel boards, etc., to make the electrical equipment complete in 21 buildings.
Do	Jan. 2, 1908	Wiring conduits, etc., in underground tunnels.
Thompson-Starrett Co.	Jan. 28, 1908	Permanent piping connections in mess hall, new cadet barracks, etc.
Horn & Brannen Manufacturing Co.	Mar. 3, 1908	Furnishing and installing electric-light fixtures in gun shed and cavalry and artillery barracks and stables.
Johnston Livingston, jr., & Co.	Mar. 16, 1908	Furnishing and installing wiring, panel boards, etc., in mess hall, cadet store, engineer and band barracks, and quarters G and H.
Thompson-Starrett Co.	Mar. 30, 1908	Remodeling heating system in 5 divisions of old cadet barracks.
Johnston Livingston, jr., & Co.	Apr. 1, 1908	Completing electrical equipment in officers' mess, Catholic Chapel, and Memorial Hall.
A. F. Leonard Co.	May 4, 1908	Completion of tile and marble work in toilet rooms of south cadet barracks.

No. 3.—Contracts in force during fiscal year 1909—Continued.

Name.	Date.	Purpose.
J. H. Gautier Co.	May 4, 1908	Floor benches, gas house.
North River Coal Co.	May 15, 1908	Anthracite coal.
Penn Gas Coal Co.	do	Gas coal.
The Long Island Charcoal Co.	do	Hard-wood charcoal.
Mitchell-Vance Co.	May 18, 1908	Electric-lighting fixtures and combination gas and electric fixtures in officers' quarters.
Julian Scholl & Co.	May 26, 1908	Stone crusher and accessories.
Guerini Stone Co.	June 3, 1908	Concrete stone for railroad tunnel.
Northern Electrical Manufacturing Co.	June 6, 1908	Electric motors, Memorial Hall.
Robins Conveying Belt Co.	June 16, 1908	Coal-conveying apparatus, Memorial Hall.
J. Livingston, jr., & Co.	June 25, 1908	Furnishing and installing electrical fixtures in quarters of overseer of waterworks.
Do.	July 7, 1908	Electric conduits, wire, panel boards, switches, etc., in northwest angle of south cadet barracks.
The Newburgh News Printing and Publishing Co.	do	Printing specifications.
E. G. Soltmann.	July 10, 1908	Prints and negatives of plans of new buildings.
Thompson-Starrett Co.	July 20, 1908	Removal of present piping and installing new piping and apparatus in northwest angle of south cadet barracks.
General Fireproofing Co.	Aug. 5, 1908	Metal book stacks in library.
The Taft-Howell Co.	Aug. 7, 1908	Building galleries in library.
Charles T. Wills (Incorporated)..	Aug. 25, 1908	Construction of gymnasium.
Do.	do	Construction of chapel.
Do.	do	Construction of chaplain's quarters.
Do.	do	Construction of double officers' quarters.
Do.	do	Construction of battalion guardhouse.
J. Livingston, jr., & Co.	Aug. 26, 1908	Conduits, feeders, and transformers for lighting filter beds and quarters of overseer of waterworks.
Frank L. Davis.	Sept. 3, 1908	Tile floor and wainscot in cadet mess hall.
E. A. Matthews.	Oct. 2, 1908	Storm sewer and manhole near south end of tunnel.
Geo. C. Hudson.	Oct. 26, 1908	Excavating near cemetery.
J. Livingston, jr., & Co.	Nov. 2, 1908	Changing electric motors and installing conduits in post headquarters building, cadet hospital, and west academic building.
Do.	Nov. 5, 1908	22 electric-light outlets in cadet camp.
New York Cableway and Engineering Co.	Nov. 14, 1908	2-ton cableway and skip.
E. A. Matthews.	Nov. 17, 1908	Brick stable for soldiers' hospital.
E. McLean Long.	Nov. 25, 1908	Inspecting steel for gymnasium.
The Okonite Co. (Limited)	Dec. 4, 1908	Installing service connections, cut-outs, etc., in post headquarters building and riding hall.
Newburgh Dredging Co.	Dec. 19, 1908	Dredging near south dock.
The Okonite Co. (Limited)	Dec. 24, 1908	Changes in cable between manholes 107 and 109; also a street-lighting feeder and 2 leads to lamp-posts.
Siegel Cooper Co.	Jan. 16, 1909	100 washstands.
Charles T. Wills (Incorporated)..	Jan. 20, 1909	Construction of north wing to cadet barracks.
Do.	do	Construction of triple officers' quarters.
Siegel Cooper Co.	Jan. 23, 1909	184 tables.
The Okonite Co. (Limited)	Mar. 30, 1909	Installing electrical distributing and street-lighting system in cadet camp.
George C. Hudson.	Apr. 1, 1909	Excavation between lieutenants' quarters No. 5 and officers' quarters No. 40.
Buffalo Pitts Co.	Apr. 9, 1909	Traction engine, freight cars, and stone cars.
J. E. & A. L. Pennock.	Apr. 13, 1909	Construction of riding hall.
Universal Destructor Co.	Apr. 26, 1909	Morse destructor furnace.
Peter Keeler Building Co.	May 10, 1909	Tiling in cadet hospital.

No. 4.—Statement of funds received and disbursed from appropriations for the United States Military Academy at West Point, N. Y., during the fiscal year ending June 30, 1909.

	Current and ordinary expenses.	Miscellaneous items and incidental expenses.	Buildings and grounds.	Total.
Dr.				
July 1, 1908:				
Balances on hand, fiscal year—				
1907-8.....		\$181.50	87.39	\$188.89
1908.....	\$15,078.12	4,147.72	12,407.87	31,633.71
No year (enlarging the Military Academy).....			156,184.05	156,184.05
Received since, fiscal year—				
1908.....	1,169.86			1,169.86
1909.....	117,358.40	52,830.00	56,720.00	226,908.40
No year (enlarging the Military Academy).....			1,300,000.00	1,300,000.00
Total.....	133,606.38	57,159.22	1,525,319.31	1,716,084.91
Cr.				
June 30, 1909:				
Deposited, fiscal year—				
1907-8.....		181.50	7.39	188.89
1908.....	5,565.25	19.59	6,059.89	11,644.73
1909.....	190.87	25.00		215.87
Disbursed, fiscal year—				
1908.....	10,682.73	4,128.13	6,347.98	21,158.84
1909.....	109,214.10	45,517.24	40,598.03	195,329.37
No year (enlarging the Military Academy).....			1,253,580.80	1,253,580.80
Balances on hand fiscal year, 1909.....	7,953.43	7,287.76	16,121.97	31,363.16
No year (enlarging the Military Academy).....			202,603.25	202,603.25
Total.....	133,606.38	57,159.22	1,525,319.31	1,716,084.91

J. M. CARSON, Jr.,
Major and Quartermaster, U. S. Army,
Disbursing Officer, United States Military Academy.

WEST POINT, N. Y., July 1, 1909.

No. 5.

Statement of the amount of gas made and sent out for the fiscal year 1908, with the amount of coal and oil used in its manufacture.

Month.	Gas made.	Gas sent out.	Coal.	Oil.
	<i>Feet.</i>	<i>Feet.</i>	<i>Pounds.</i>	<i>Gallons.</i>
July.....	1,478,000	1,482,000	369,600	124
August.....	1,387,600	1,420,800	363,800	124
September.....	1,929,900	1,906,000	481,700	120
October.....	2,248,900	2,248,900	558,400	124
November.....	2,413,700	2,435,200	599,900	120
December.....	2,519,700	2,519,800	651,000	124
January.....	2,435,100	2,406,500	622,500	124
February.....	2,187,400	2,181,700	547,000	116
March.....	1,837,900	1,859,100	455,200	124
April.....	1,458,700	1,451,400	357,100	120
May.....	1,369,200	1,361,600	328,300	124
June.....	1,179,300	1,196,000	277,300	120
Twelve months.....	22,445,000	22,468,000	5,611,800	1,464
1909.....	15,119,100	15,155,200	3,471,700	1,353
Decrease.....	7,325,900	7,312,800	2,140,100	111

Statement of the amount of gas made and sent out for the fiscal year 1909, with the amount of coal and oil used in its manufacture.

Month.	Gas made.	Gas sent out.	Coal.	Oil.
	<i>Feet.</i>	<i>Feet.</i>	<i>Pounds.</i>	<i>Gallons.</i>
July	1,182,100	1,176,500	277,000	124
August	1,122,700	1,135,600	261,200	124
September	1,057,700	1,058,700	241,400	120
October	1,211,000	1,193,900	276,400	124
November	1,483,700	1,480,300	335,000	120
December	1,515,500	1,539,300	350,000	124
January	1,521,300	1,534,100	356,700	124
February	1,415,900	1,391,200	333,300	112
March	1,417,500	1,432,300	325,500	108
April	1,189,800	1,207,700	269,000	90
May	1,031,700	1,036,600	228,700	93
June	970,200	969,000	217,500	90
Twelve months	15,119,100	15,155,200	3,471,700	1,353

No. 6.—*Statement of receipts and expenditures pertaining to the special contingent fund, United States Military Academy, from July 1, 1908, to June 30, 1909.*

CR.

July 1, 1908.	Balance on hand		\$22. 84
June 30, 1909.	By amounts received:		
	Rents—		
	Hotel	\$1,500. 00	
	Post-office	150. 00	
	Stable	150. 00	
	Store and restaurant	250. 00	
	Electric plant	525. 00	
	Sales—		
	Wood, forestry	1,590. 17	
	Miscellaneous	1,599. 32	
	Gas	7,729. 51	
	Coke	514. 56	
	Tar	270. 80	
			14,279. 36
June 30, 1909.	Total to be accounted for		14,302. 20

DR.

June 30, 1909.	To amount disbursed	11,983. 67
June 30, 1909.	Balance on hand	2,318. 53

Respectfully submitted.

J. M. CARSON, JR.,
*Major and Quartermaster, U. S. Army,
 Treasurer Special Contingent Fund, United States Military Academy.*

APPENDIX I.

REPORT OF THE PROFESSOR OF ORDNANCE AND
SCIENCE OF GUNNERY.UNITED STATES MILITARY ACADEMY,
West Point, N. Y., July 19, 1909.

SIR: (1) I have the honor to submit the following report of the principal operations in the department of ordnance and science of gunnery and the office of post ordnance officer during the fiscal year ended June 30, 1909:

DEPARTMENT OF ORDNANCE AND SCIENCE OF GUNNERY.

(2) The instruction in this department during the past year has been the same as during the preceding year. For the coming academic year beginning September 1, 1909, it is proposed to increase the instruction given to the cadets in the construction and use of machine tools. An increase in instruction of this kind has been contemplated for a number of years as shown in the annual reports of the two preceding heads of this department, but until recently the equipment on hand has not been sufficient to permit it. Since the year 1906 the sum of \$500 has been appropriated annually for the purchase of materials and machines for instruction of cadets in the use of wood and metal working machinery, but as this amount will not permit the acquirement of sufficient equipment in a reasonable time the estimate submitted this year under this heading has been increased to \$2,000. The sum of \$500 is barely sufficient to purchase one machine in addition to the necessary material for cadet instruction, whereas about 28 machines, 18 in addition to the 10 now on hand, are required to permit of the most efficient instruction of classes of cadets ranging in size from 80 to 115 members. A number of machines on hand are arranged to be individually driven by motors, but the others are driven by belts connected to shafting. All machines to be purchased hereafter will be motor driven, and as opportunity offers the belt-driven machines now on hand will be altered to motor-driven machines. The advantage of motor-driven machines for instruction purposes is very great, due to the absence of overhead belts and shafting, which require much attention to keep them in proper condition, which shut out considerable light, and which are frequently a source of much annoyance through the spattering of oil over the operators at the machines.

(3) In connection with the increase in instruction to be given the cadets in the use of machines and tools, attention is invited to the necessity for providing adequate shop room for this purpose. The shop in the laboratory, besides being entirely inadequate in size, is so far removed from the cadet barracks and the academic building that much valuable time is lost in going to and from it. The plans of the new academic building show a machine shop in the basement, but the room provided for this purpose is deficient in size and in light. A much better arrangement would seem to be, when the new academic building is completed, to assign to this department for use as a machine shop the room in the present academic building now occupied by the department of chemistry as a chemical labora-

tory. This room is well lighted and of about the right size for the purpose. Two of the rooms in the basement underneath this one are sufficiently well lighted to permit of the installation in one of a small forge for making and tempering cutting tools and for miscellaneous blacksmith work, and in the other of the necessary tools and machines for a small carpenter shop. Unless a separate building near the academic building is provided, no other arrangement so good as this for practical instruction of cadets in the use of machines and tools is apparent. The machines for this instruction will be of small size, and it is not believed that the noise arising from their use will be sufficient to be objectionable. If this plan should be adopted it is recommended that the remaining rooms on this floor of the present academic building north to the sally port be assigned to this department and arranged as section rooms, model room, office, and instructor's room.

(4) The chapter on exterior ballistics in the present text-book has been rendered obsolete by the War Department in prescribing Hamilton's Ballistics as the text-book to be used in the examination of officers of the coast artillery for promotion. On this account there has been prepared, under my direction, by Maj. E. P. O'Hern, Ordnance Department, to succeed the chapter on exterior ballistics in the present text-book, a pamphlet on exterior ballistics based on Hamilton's work. This pamphlet has been submitted to the subcommittee on ordnance and science of gunnery and to the general committee on the revision of the curriculum, which have recommended that it be given a trial for a period of one year in the section room.

(5) The chapters on gun construction and carriage construction in the present text-book are not considered sufficiently complete for the instruction of the most advanced students among the cadets, and additional matter is now being prepared by the undersigned for the instruction of the cadets in the first, second, third, and fourth sections of the class. This additional matter will include the application of the principles of gun construction to wire-wrapped guns, the determination of the forces brought upon the parts of typical gun carriages by the firing of the gun, and the determination of the fiber stresses produced in the parts by the forces so put upon them. There will also be included a short treatise on the gearing used in our various gun carriages. The scope of this work has been submitted for approval to the subcommittee on ordnance and science of gunnery and to the general committee on the revision of the curriculum, which have recommended that it be given a trial for a period of one year. This matter will not be required for instruction until April, 1910, and it is expected that it will be ready well in advance of that time.

ORDNANCE MATERIAL.

(6) The armament of the post has been kept in good repair during the year, and the alterations ordered by the War Department in the armament throughout the service are being incorporated in that at this post.

In addition to the regular allowance for small-arms target practice for officers and of \$5,000 for such practice for cadets, the following

allowance of ammunition for artillery target practice of cadets during the year was made, viz:

- 3-inch field gun, model 1902.*—50 shrapnel, 5 shell.
- 2.95-inch Vickers-Maxim mountain gun.*—260 shrapnel, 20 shell, 2,000 subcaliber cartridges, 300 rounds blank ammunition.
- 5-inch siege gun.*—50 shrapnel, 25 shell.
- 7-inch siege howitzer.*—50 shrapnel, 25 shell.
- 15-pounder rapid-fire gun.*—13 solid shot, 1,000 subcaliber cartridges.
- 6-inch rapid-fire gun.*—13 solid shot, 100 subcaliber cartridges.
- 10-inch gun.*—9 solid shot, 200 subcaliber cartridges.

The allowance for small-arms target practice for the coming year is the same as for the year just ended. The allowance for artillery target practice is as follows, viz:

- 3-inch field gun, model 1902.*—290 shrapnel, 20 high explosive shells, 3,000 subcaliber cartridges, 300 blank cartridges.
- 2.95-inch Vickers-Maxim mountain gun.*—290 shrapnel; 20 shell, 12½ pounds; 3,000 subcaliber cartridges; 300 blank cartridges.
- 5-inch siege gun.*—75 shrapnel, with full service charges and primers; 25 shell, with full service charges and primers.
- 7-inch siege howitzer.*—75 shrapnel, with full service charges and primers; 25 shell, with full service charges and primers.
- 6-inch rapid-fire gun.*—13 full service rounds, 500 subcaliber cartridges, 400 drill primers.
- 10-inch gun.*—7 full service rounds.
- 12-inch mortar.*—11 full service rounds.

The generous allowance of ammunition for target practice of cadets is of inestimable value to them and to the service by permitting the graduation of young officers splendidly equipped for the continuance of target-practice work in the service.

(7) The siege artillery at the post has become obsolete through the design of more advanced siege material by the Ordnance Department, U. S. Army. While the manufacture of all such material has not yet progressed sufficiently for issue to the service, the Chief of Ordnance has stated, in reply to a letter of the superintendent of October 8, 1908, requesting the issue to this post of a battery of new 4.7-inch siege rifles, that it may be practical to comply with this request during the coming summer. It is earnestly hoped that this may be the case, for in view of the fact that there are no siege artillery organizations in the service at present, the knowledge of the use of this material which the cadets would take with them into the service after graduation would be of the greatest advantage to the service itself.

(8) The Ordnance Department has also designed a new 6-inch siege howitzer and carriage, a 4.7-inch and a 3.8-inch field howitzer and their carriages, and a 3-inch mountain howitzer and carriage to replace the 2.95-inch Vickers-Maxim mountain gun. It is considered very desirable that two siege howitzers, two field howitzers, and four mountain howitzers with their carriages, limbers, and caissons be issued to this post for cadet instruction as soon as their manufacture has progressed to an extent which will render this practicable.

(9) There is but one 12-inch mortar at this post for instruction of cadets and its carriage is of the oldest type in the service. While parts to make the manner of loading this mortar similar to that of loading mortars on the model of 1896 carriage are under manufacture by the Ordnance Department, it is considered that a second 12-inch mortar, mounted on the model of 1896 carriage, should be issued to

the post and that the present mortar with model of 1891 carriage should be exchanged for one mounted on the model of 1896 carriage.

(10) Among the many ordnance supplies received at the post during the year for the instruction of cadets and for the various detachments, the Maxim silencer was probably the most novel. One U. S. magazine rifle, model of 1903, chambered for model of 1906 ammunition, fitted with a Maxim silencer and one sectioned silencer, was issued to the post by the Chief of Ordnance in order that the officers and cadets might have an opportunity to examine the silencer and observe its action, and also that it might be subjected to such tests as appeared desirable. The silencer has been tested here as to its effect on the accuracy of fire of a rifle fitted with it, as to the reduction of noise at the firing point, reduction of recoil, and as to its effect on the ability of a party fired at to determine the location of the firing party. The firing was done by three experienced shots, Lieuts. W. B. Wallace, G. M. Russell, and W. D. Smith. Most of the firing was done by the officers first mentioned, as Lieutenant Smith was relieved from duty at the Military Academy before he could finish his part of the programme. The results of these tests indicate that the silencer greatly reduces the noise at the firing point and the shock of recoil, but that the effect of heat on it causes inaccuracy by rapid variation of the elevation necessary to attain a given range and by producing heat waves which obscure the target. The location of the firing party by the party fired at is practically no more certain when the silencer is not used than when it is. This latter point was tested by Maj. E. P. O'Hern, Capt. W. P. Wooten, Lieut. Mark Brooke, Lieut. W. B. Wallace, and Lieut. N. B. Rehkopf, assisted by a number of experienced men of the detachment of engineers. In this connection I desire to invite attention to the professional zeal exhibited by Lieutenants Wallace and Russell in voluntarily performing a large amount of arduous, careful, and valuable work in the tests referred to above. The sectioned silencer has been placed in the ordnance museum and the rifle with silencer fitted thereto has been loaned for the instruction of cadets to the officers in charge of cadet small-arms practice.

ORDNANCE LABORATORY.

(11) The present barracks for the enlisted men of the ordnance detachment is an old structure possessing none of the conveniences as regards electric lights, steam or hot water heat, toilet, wash, and reading rooms now found in barracks of modern construction. By direction of the superintendent, estimates have been submitted this year to the Quartermaster-General for the installation of electric lights and steam heating apparatus in this building. These alterations, if approved, will vastly increase the comfort of the enlisted men, but the present building should ultimately be enlarged and modernized to permit of its accommodating about 25 men, and to provide suitable toilet, wash, and reading rooms for them.

(12) The north storehouse at the laboratory is in such a dilapidated condition that it must be largely rebuilt. An estimate of \$7,150 for this purpose and for necessary repairs to roads and walks of the laboratory was submitted to the last Congress, but only \$3,150 for this purpose was appropriated. An estimate for the balance of the funds required has been submitted again this year.

(13) The storage facilities at the laboratory are now overtaxed and rapidly becoming inadequate. If provision for wash rooms is made in the barracks and the shops are removed to the academic building or to one near the latter, the present building in the center of the laboratory yard now used as a machine shop, carpenter shop, and blacksmith shop can with small expense be fitted up as a very satisfactory storehouse, thus adding materially to the storage facilities at the laboratory.

MUSEUM.

(14) It is expected that the museum will be removed to its quarters in the new headquarters building during the summer or early fall. The additional space thus gained will be of great advantage, as many interesting exhibits are not displayed at the present time for lack of space.

(15) The following exhibits have been loaned or presented to the museum during the year:

One case containing specimens of cables used in trans-Atlantic cable from Brest, France, to Cape Cod, Massachusetts, United States of America, inaugurated on August 17, 1898. Originally presented to President McKinley by the French Cable and Telegraph Company. Loaned by Capt. G. V. Heidt, U. S. Army, retired.

A section of the Robert E. Lee tree believed to have been planted by General Lee at West Point, N. Y., 1852-1855. Presented by Col. H. L. Scott, Superintendent, United States Military Academy.

One Panama pack saddle, consisting of enjalmas, esterilla, cincha, and sogas. Presented by Capt. O. J. Charles, Seventeenth Infantry, U. S. Army.

One Filipino house, made by one of the natives at island of Cebu, P. I.; one wooden gun, used by the Filipino insurrectos, island of Samar, P. I., against American troops; specimen of coral trees, from Philippine Islands. Presented by Col. C. A. H. McCauley, Assistant Quartermaster-General, U. S. Army.

One buckskin suit, consisting of trousers, waistcoat, and coat, made for Lieut. Edward G. Stevens, United States Military Academy, class of 1870, by Indians on the plains in 1871. Presented by Miss Ellen K. Stevens.

Twenty-one cannon and two machine guns, captured from the Filipinos by Philippine Scouts. From Rock Island Arsenal, Rock Island, Ill.

One hand grenade. Presented by Col. R. Birnie, Ordnance Department, U. S. Army.

A service saddle used by Col. James Duncan in the Mexican war. Presented by Miss Josephine Turner.

(16) The accredited representatives at the capitols of 13 of the most important states have been directed by the Department of State to request that the latest small arm rifle with its ammunition of each of these countries be exchanged for the latest U. S. magazine rifle and ammunition, the foreign arms and ammunition thus received to be sent to the Military Academy for exhibit in the ordnance museum. The receipt of these arms and their ammunition will afford an opportunity to the officers and cadets of the Military Academy to familiarize themselves with the latest small arm rifles in use by the most important powers of the world.

ORDNANCE DETACHMENT.

(17) The ordnance detachment is in a high state of efficiency and has performed its duties throughout the year in a highly satisfactory manner. As a result, however, of the gradual increase of the armament at the post the work required of the detachment has become greater than it can properly perform with its present strength, and

during the last four months of this year it was found necessary to detail two privates of the detachment of field artillery to assist the ordnance detachment in the care of the armament. These men have performed this duty in a thoroughly satisfactory manner.

Very respectfully,

C. L'H. RUGGLES,
Lieutenant-Colonel, U. S. Army,
Professor of Ordnance and Science of Gunnery.

The ADJUTANT, UNITED STATES MILITARY ACADEMY,
West Point, N. Y.

APPENDIX J.

REPORT OF THE FORESTER.

OFFICE OF THE FORESTER,
UNITED STATES MILITARY ACADEMY,
West Point, N. Y.

SIR: I have the honor to submit the following report of the forestry work upon the reservation of the United States Military Academy army post for the year ending July 31, 1909:

The precautionary measures undertaken during the unusually hazardous season of last year and continued this year have proved entirely adequate to cope with the forest-fire situation on the reservation. I feel that with the maintenance of our present fire trails and patrols the safety of the forest will be assured. The extensive improvements by means of careful and expensive thinnings and more or less elaborate planting plans make it absolutely necessary that the present efficient system of protection be maintained.

Since my last report the chestnut have been slightly affected by the so-called "chestnut bark disease" caused by the fungus *Diaporthe parasitica* which has been gradually working northward up the Hudson. The spores of this fungus enter the bark through wounds in the tree. The leaves and green twigs are not directly affected. From the point of infection the fungus grows in all directions through the inner bark until the growth meets on the opposite side of the trunk or limb, which is in this way girdled. The wood is but little affected. Limbs with smooth bark attacked by the fungus, I find, soon show dead, discolored, and sunken patches of bark covered more or less thickly with the yellow, orange, or reddish-brown pustules of the fruiting fungus. If the infection is on the trunk or a large limb with very thick bark, there is no obvious change in the appearance of the bark itself, but the pustules of the fungus show in the cracks of the bark and, on account of the destruction of the layers underneath, the bark often sounds hollow when tapped. The damage may not be immediately apparent, since the water supply from the roots continues to pass up through uninjured wood to the leaves, but when in the following spring the new leaves are put out they are usually stunted and soon wither. If the first attack is on the bole or trunk of the tree, of course the entire tree dies. If, on the other hand, the small branches are first involved, the tree may live for years. As there is no cure for the disease, it becomes necessary to use very

drastic measures to prevent its spread. We have, therefore, cut down all affected trees as soon as discovered in order to prevent a spread of the trouble.

Some of the maple shade trees on the academy grounds have been attacked by the maple leaf-spot fungus, *Phyllosticta acericola*, during the past season. But this fungus is never fatal and seldom does serious injury to the trees. There need be no concern therefore in regard to it.

An invasion of the destructive elm leaf-beetle, *Galerucella luteola*, however, caused considerable alarm. This beetle has completely destroyed a majority of the finest elms in Cambridge, Mass., and until drastic measures were adopted had nearly encompassed the ruin of the famous elms of New Haven, Conn. The beetle, a small yellowish-brown insect, appears first and fills the leaves with small irregular holes, while the following broods of slug-like yellow and black larvæ skeletonize the leaves in irregular spots between the veins, causing the leaves to assume a dry, brown appearance, to curl, and ultimately to fall. The English elms were the only ones on the post which were affected. Immediately on discovering the pest, the woods foreman requested the use of the sprayer and a vigorous attack was made upon the insects in arsenical solutions. Every tree was thoroughly sprayed, and it is believed that a serious damage to the West Point elms was thus averted.

About one mile of bridle path has been added to the series started seven years ago. It should be said that they were made more for handling the wood than for horseback riding.

The forest nursery and planting work has been pushed with as much vigor as the funds would permit. Over 75,000 seedlings were transplanted from the nursery beds into nursery rows, where they will be allowed to grow for one or two years before again transplanting them to their permanent sites. These seedlings were as follows: Thirty thousand Austrian pine, 5,000 white pine, 35,000 Norway spruce, 3,000 European and American larch or tamarack, 1,500 American elm, 250 canoe or white birch, and several small parcels of miscellaneous species. These will all be ready for putting into their permanent situations next season. Many of them, however, it will be advisable to allow to remain until they have made unusual growth for landscape purposes. The elms and birches are now in the neighborhood of 10 feet in height, which is assurance that they will be of suitable size for planting on the academy grounds proper whenever the progress of construction would seem to warrant.

Fifteen thousand four-year-old white pines were planted in compartments Nos. 7, 16, and 17 above the Washington Valley road. These were planted in those situations where the bad condition of the forest demanded very heavy cutting of diseased trees.

There are at present in the nursery beds the following seedlings: Forty thousand one-year-old, 55,000 two-year-old, and 30,000 three-year-old white pines; 12,000 two-year-old Norway spruce; 3,000 two-year-old balsam fir; 3,000 two-year-old hemlock; 1,500 four-year-old white birch; 2,000 four-year-old red oak; 1,000 five-year-old American elm; and 30,000 three-year-old Austrian pine. All of these two years old and over will be transplanted into nursery rows next season. There are from 150,000 to 200,000 young trees, already in nursery rows, which will be available for permanent planting next

season. I feel that the post has a remarkable good foundation for the extensive forest planting which is a part of the general forest improvement plan.

In the course of the regular improvement thinning the past season, there were cut 625 cords of fuel wood of average quality and 40,000 board feet of good lumber. Owing to the fact that the boiler at the sawmill was needed in the general construction work of the new buildings and that it was not replaced, only about 30,000 feet of the logs were manufactured. About \$350 worth of woods products were sold to private parties and about \$2,100 worth of lumber and miscellaneous materials were furnished the various departments of the post.

The brick industry along the Hudson has been in a very bad way during the past eighteen months, and consequently the market for fuel wood has been seriously affected. The prices offered by contractors for the West Point wood is so ridiculously small that I would recommend that only such wood be cut on the reservation this winter as the immediate local demand requires and that the woods foreman be allowed to devote his time to the more intensive details of the forest improvement. There are a great many things which have had to be postponed because of the more immediate urgency of cutting cord wood, which will command all the time that the woods foreman can devote. I would respectfully commend the woods foreman for the interested and efficient service that he has rendered. He has given his work, particularly the more or less technical problems, the most careful and painstaking consideration, and I consider the post most fortunate in having such a man in its employ.

Very respectfully,

ROY L. MARSTON, *Forester.*

Col. HUGH L. SCOTT,
Superintendent, United States Military Academy.