

ANNUAL REPORT

OF THE

SUPERINTENDENT OF THE UNITED STATES MILITARY ACADEMY.

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GOVERNMENT PRINTING OFFICE.

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HEADQUARTERS UNITED STATES MILITARY ACADEMY,
West Point, N. Y., September 14, 1905.

SIR: I have the honor to submit the following report of the Military Academy for the year ending August 31, 1905:

I have performed the duties of Superintendent throughout the year, except when on leave from July 7 to July 14, and from August 12 to August 27, and except for other short periods of time when absent in connection with the affairs of the academy, or on other duties.

PERSONNEL.

The number of officers and instructors assigned to duty here September 1, 1905, was 7 professors, 2 associate professors, 80 commissioned officers, 1 librarian, 1 chaplain, 1 contract dental surgeon, 1 teacher of music, and 4 civilian instructors in languages, a total of 97. Of this total 1 professor is on detached service and 1 officer is at the general hospital, Fort Bayard, N. Mex., undergoing treatment and is not expected to return to duty this year. In addition, there were present 2 officers on temporary duty and 2 civilians employed as instructors in fencing, broadsword exercise, and other military gymnastics.

The total for duty September 1, 1904, was 94, the difference in the totals between this year and last being accounted for by an increase of 1 associate professor, 1 officer as assistant to the officer in charge of construction, and 1 civilian instructor in French.

Lieut. Col. Charles P. Echols, professor of mathematics, was detailed under the provisions of paragraph 3 of the Regulations for the Military Academy, to perform for a period of one year, beginning July 1, 1905, duties of observation, study, and investigation of scientific and educational work in other institutions. Professor Echols sailed for Europe in July and intends to visit important schools abroad for the greater part of the coming year.

The tour of duty of Lieut. Col. Charles G. Treat, commandant of cadets, expired June 15, on which date he was relieved and his duties were assumed by his successor, Lieut. Col. Robert L. Howze, captain, Sixth Cavalry. The existing very satisfactory financial condition of cadets, their military efficiency, their ideas of duty and manliness, and their excellent attitude toward their obligations are in a large measure the result of the very zealous efforts and personal example of Colonel Treat.

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

The maximum number of cadets is 522, not including 1 cadet reinstated by special act of Congress and 5 foreign cadets receiving instruction under the provisions of joint resolutions of Congress—1 from Costa Rica, 1 from Nicaragua, 1 from Ecuador, and 2 from China. The academic year opened with 469 cadets on the rolls of the academy, divided among the four classes as follows:

First class	79
Second class	114
Third class	119
Fourth class	157

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

Discharged for deficiency in studies	24
Discharged for deficiency in conduct	1
Discharged for physical disability	3
Resigned	19
Graduated	114
Total	161

The usual examination of candidates for admission was held at various army posts beginning May 1. For this examination there were appointed 368 candidates, including principals and alternates, and including also 3 former cadets. Of this number 79 failed to report, 18 failed to complete the examination, 28 were rejected by the medical boards, being qualified mentally; 51 were rejected upon the mental examination, being qualified physically; 1 declined on account of sickness, and 14 were rejected both mentally and physically. There were no vacancies for 41 qualified alternates.

Admissions were as follows: In June, 145; in July, 1, and in August, 3—a total of 149. The following table gives the number of those admitted on examination, on certificate, etc.:

Admitted on certificate (90 principals and 12 alternates)	102
Admitted on examination (30 principals and 9 alternates)	39
Former cadets taking physical examination only	4
Foreign cadets	4
Total	149

HEALTH.

The report of the surgeon is herewith appended, marked "Appendix B." It shows that the health of the command generally has continued excellent throughout the year. Serious fevers and contagious diseases have been absent, except for the measles and mumps, both of which existed for a time in the corps of cadets and in the families of enlisted men. Experienced medical officers of the command have given watchful attention to all parts of the post in order to prevent the existence of any unsanitary conditions. This has been especially necessary on account of the building work in progress, which has brought a large number of laborers to the vicinity.

Favorable action was taken last year upon the estimate submitted for the erection of a temporary infectious-disease building, and it is now nearly completed. Eventually, it is the intention to convert the present bachelor-officers' quarters, located near the hospital, into a contagious ward.

CADET ALLOWANCES AND SUPPLIES.

The attached report of the treasurer and quartermaster and commissary of cadets (Appendix C) gives in detail the operation of the departments relating to the pay and accounts of cadets, and charged with their messing and the procurement and furnishing of the supplies of all kinds which they require.

The supplies furnished during the past year have been kept up to the usual high standard, and the food provided has been abundant in quantity, excellent in quality and variety, and well prepared and served. It is especially gratifying to call attention to the financial condition of cadets. On the settlement of April 30, 1905, a proper one from which to judge, 392 were shown to be out of debt, to an amount averaging \$41.88 per cadet, while but 57 were in debt, to an average amount of but \$13.49. This is a most excellent showing, and a condition brought about by the measures taken by the commandant of cadets to enforce cadets to be economical in their requisitions and by the able manner in which the supply department has been managed by the quartermaster and commissary of cadets, who has effected great economy in the conduct of every line of his business. This showing has been reached also, notwithstanding greater liberality during the year than heretofore, in permitting purchases by cadets of athletic goods, confectionery, photographs, newspapers, and magazines; in their contributions to the various athletic, dialectic, and Young Men's Christian Association funds, and in the amount of cash advanced to them while on leave of absence. During the past year also the large amount of \$9.50 per month has been credited to the equipment fund of each cadet.

Altogether, I believe the financial condition of cadets at the present time is the best in the history of the academy.

DISCIPLINE.

In the battalion of cadets, conditions as to discipline, military bearing, and soldierly conduct are excellent and very satisfactory. Hazing in any form has shown no symptom of reappearing. The treatment of new cadets by cadets of the upper classes has been on the lines which regulations and orders seek to attain. This is true not only as to the relations between the classes when off duty, but also when on duty. The instruction of the fourth class by the cadets of the first and third classes during the summer months was marked by an absence of harshness, which was very gratifying to witness. The efforts in this direction of Capt. R. C. Davis, Seventeenth Infantry, who, under the supervision of the commandant of cadets, had direct charge of the new class, are worthy of special commendation.

With the object of furthering the policy of the Military Academy to intrust to its undergraduates in great measure the maintenance of honor and truthfulness, cadets have been informed that they will be considered on honor when in the section room to receive no information concerning their recitations or lessons from any unauthorized source whatever, and that the preparation of a subject or recitation at the blackboard, or the submission of a written recitation, whether signed or not, will be accepted without question as the individual work of the cadet preparing or submitting it. Although this policy may be said to have existed to a greater or less extent heretofore, it was deemed wise to enunciate it in unequivocal terms.

PRACTICAL MILITARY INSTRUCTION.

The appended reports of the commandant of cadets (Appendix D) and of the instructor of practical military engineering (Appendix E) give in detail the work done in their respective departments during the past year. The usual visits by the first class to Gettysburg, Watervliet, Sandy Hook, and Fort Totten were again made. Lieut. Col. Arthur Murray, Artillery Corps, by his hearty cooperation and assistance made the three days at Fort Totten a valuable part of the education and instruction of cadets. I believe the time spent by the first class at this fort, if it will interfere in no way with the work of the school of submarine defense or the garrison, might with advantage be extended. The second class visited the Metropolitan Museum of Art in New York City at their own expense, as usual.

As a culmination of the practical work of the summer the classes present, accompanied by the detachment of artillery and a part of the detachment of cavalry, under the command of the commandant of

cadets, made a practice march on the east side of the Hudson River from August 19 to 23, inclusive. The command was fully equipped for the field, and, except for slight additions to the ration, the march was made under service conditions. Each day a problem was worked out, the force being divided for this purpose into two units, one for attack and the other for defense. The actual work of pitching tents, preparing food, etc., was performed by the cadets, assisted by one enlisted man detailed for each company as cook. The completion of the practical work of the summer by this real test adds much to the value of the training given cadets. Intelligent interest in the work was shown by all concerned, and its inception and successful accomplishment are due to the energy of the commandant of cadets.

A cadet rifle team, composed of 12 principals and 3 alternates, represented the Military Academy at the competition for the national trophy for excellence in marksmanship at Sea Girt, N. J., from August 18 to 31. The question as to the practicability of cadets engaging in this contest had previously been referred to me by the Secretary of War and had received my cordial approval. The team sent acquitted itself with credit and took a good standing among the other teams engaged, considering the character of the latter and the opportunities and time the members of the cadet team had for preparation. I regret to report, however, after experiencing the difficulties encountered in sending the team, that a future representation of cadets in this contest will not be advisable. To fairly prepare a cadet team, time and opportunity for much practice are required, and this necessarily interferes with the other work of cadets, which the gain in marksmanship to the individual cadets participating does not offset. The preparation also seriously interfered with the general instruction of other cadets in target practice, and the team missed the valuable experience of the practice march which the remainder of the battalion participated in. The time of cadets is so limited and so fully occupied that the very best that can be done is to give general instruction in target practice to all, making them conversant with its procedure, methods, and principles, and not expecting to produce expert shots, which takes great time and is really post-graduate work.

I regret to take a step which may in the slightest detract from or fail to stimulate the increasing interest throughout the country in the important subject of marksmanship.

The corps of cadets participated in the parade on the occasion of the inauguration of the President of the United States on March 4 last, appearing in the procession organized as a battalion of infantry, a troop of cavalry, a battery of field artillery, and a platoon of mountain artillery carried on pack mules. The bearing of the cadets on this occasion, both when in and out of ranks, evoked favorable comment from many observers.

At the request of the National Guard authorities of the State of New York the Military Academy detachment of engineers, under command of Maj. Mason M. Patrick and Lieut. Michael J. McDonough, Corps of Engineers, went to Peekskill, N. Y., during the week ending June 24, to assist in the instruction of the Twenty-second Regiment, National Guard, State of New York.

ACADEMIC INSTRUCTION.

The proficiency of cadets in various classes and the character of instruction they have received throughout the year have been satisfactory, with a single exception. In the third class in the department of mathematics the results of the course in descriptive and solid geometry were not satisfactory, in that an unusual number of cadets came to the examination deficient in these important studies. Careful inquiry was made into the matter and it is believed, with changes already made and proposed, the conditions above referred to will be corrected.

The good results attained in academic work are due in no small part to the fact that the War Department has unhesitatingly acquiesced in the wishes of the heads of the various departments as to the officers to be detailed as instructors. I would renew the recommendation made in my report of last year that all instructors at the academy be made members of the detailed staff, appointments thereto causing vacancies in the branches of the service at large to be filled by the regular order of promotion, the same as in the details to the staff departments at the present time. I am firmly convinced of the expediency and desirability of the detail system as it applies to the academy. It even appears to me that one position on the academic board, now permanent, may with advantage at some time in the future be filled by detail. It may be advisable to retain as permanent positions the heads of the departments of natural and experimental philosophy; chemistry, mineralogy, and geology; modern languages; mathematics, and drawing; but in the department of civil and military engineering the character of instruction which it is desirable cadets should receive is changing from year to year; and the practical needs of the academy and its students would, I believe, in the end be better subserved by making the head of this department an officer of the Engineer Corps of the Army, detailed as is the head of the department of ordnance and gunnery.

The objections to the system where the details do not result in vacancies in the line are manifest. An officer having served a tour of duty at the academy frequently feels that he is looked upon in his regiment or corps as having had his full share of benefits resulting from a good station, pleasant work, and a leave of absence during the summer months of each year. He dislikes to receive the criticism which he feels he may incur by the acceptance of a second tour of duty at the academy. If he leaves his regiment his work must be per-

formed by some one else who is, perhaps, already overburdened with duties. On the other hand, from the standpoint of the welfare of the academy, it is important that a number of officers should have two or more tours of duty here as instructors. A large part of the value of an officer to a department of instruction depends upon the previous experience which the officer has had in performing the duties of an instructor. It should, therefore, instead of being a matter of criticism, be a matter of course and a matter of pride for an officer to return to the academy after having completed one tour of duty, and especially so as the duty, when conscientiously performed, is most exacting, confining, and responsible, and by no means easy, as unfortunately some persons, without sufficient consideration of its character and requirements, seem prone to regard it and to refer to it. Again, application for the relief of an officer while he is serving at the academy and objections to his being detailed for duty here are matters of not infrequent occurrence, coming from the commanding officers of regiments and posts. These objections are natural and reasonable from the standpoint of the officers making them whose first and natural care is and should be the efficiency of the organizations which they command. Should the detail make a vacancy to be filled by an officer qualified to perform the duties of the one absent from his regiment, these objections would disappear.

The Military Academy is certainly a factor in the Army of equal importance to the staff departments, and it may be justly said that it is discriminated against in the method of detail of instructors when details to the staff departments create vacancies while details to the academy do not. I earnestly recommend that the attention of Congress be asked to this question and that a measure providing for relief from these conditions be urged.

The academic board has expressed its unanimous opinion to the effect that an examination of the present course of studies is advisable with a view to its revision. This examination is now in progress, and it is hoped that it will result in the adaptation of each course to the present needs of the service and in a better coordination of the courses themselves. It is thought that in some cases unnecessary requirements are now made of the graduate. If the investigation shows that no omission in any course is practicable, other measures of relief must be instituted, such as the raising of the entrance requirements; for it is recognized by close observers that the present curriculum is overloaded for the length of the course. There are those qualified to judge who are of the opinion that the course should be extended from four years to five years. Personally, I can not agree with this opinion, believing that relief can be obtained in a different way; but the result of the careful and earnest scrutiny to which the curriculum is now being subjected should throw much light upon this whole question.

Minor changes in the matter of hours of recitation were put into effect on the 1st of September, in order to determine whether or not the changes would be satisfactory to accomplish certain ends recognized by all to be desirable. The objects were in the main to reduce the time between dinner and breakfast, to provide for extending the course in physical training throughout the four years, and to provide proper time for practice and athletics. It has also been decided during the current academic year not to publish the daily marks which cadets receive for their recitations. A cadet who is deficient in his studies will be notified of the fact. The object of this action is to ascertain if it will have any effect in convincing the student that his lesson should be studied not with the sole view of making a good recitation and receiving a good mark, but with the idea of a complete and thorough understanding of the subject. Other minor changes in methods heretofore followed, one of which is not marking fourth classmen in mathematics except on the reviews, will also be tried during the year and carefully observed with a view to their permanent adoption if they are found to be advisable.

I am disappointed that it has not seemed practicable to extend the course in French and Spanish to the first and second classes during the present year. I am convinced, however, that this change will come in the near future, and that it will be of distinct advantage to every cadet who graduates from the academy. Under the authority contained in the last Military Academy appropriation bill, an additional civilian instructor in French has been employed, so that the institution now has two civilian instructors in French and two in Spanish. The services of these instructors have proved of exceptional value in the department of modern languages, not only in the direct instruction of cadets, but also in the assistance and instruction which the civilians give to the officers who are instructors in that department.

The report of the instructor of ordnance and gunnery is inclosed (Appendix F). In the estimates an item has been submitted recommending that the head of this department be given the title of professor and the rank, pay, and allowances of a lieutenant-colonel. The reasons for this are set forth in a letter which was addressed to the Board of Visitors, a copy of which is inclosed (Appendix G).

THE LIBRARY.

The accompanying report of the librarian (Appendix H) gives briefly the work which has been accomplished during the past year in the library. The liberal support of Congress to this department is still continued, and its importance and value to the institution as an educational aid are being rapidly increased under the able management of the librarian, Doctor Holden.

THE WATER SUPPLY.

Attention is invited to the report of the officer in charge of the water supply of the academy (Appendix I). Practically all of the necessary land, rights of way, and water rights for the new source of supply have been secured, and the execution of the project is well under way. An ample quantity of water for all of the uses of the Military Academy is now insured for an indefinite period. The cost of this improvement will be well within the limit of the appropriation.

BUILDINGS AND GROUNDS.

The report of the quartermaster (Appendix J), to which attention is invited, gives in detail the work accomplished and improvements made during the year.

The execution of the project for increasing the efficiency of the academy, for the enlargement of buildings, and for other necessary works of improvement, provided for in the act approved June 28, 1902, may be said to be well started. For over two years the firm of architects, Messrs. Cram, Goodhue & Ferguson, of Boston, Mass., who won the competition, have been continuously at work preparing detailed plans and specifications for the new buildings. The plans for the following have been completed and approved by the Secretary of War: Cavalry and artillery barracks and stables, artillery gun shed, riding hall, cadet headquarters and cadet store, cadet barracks, post headquarters, quartermaster and commissary storehouse and shops, guard and fire-engine house, academic building, 5 triple sets of lieutenants' quarters, and 2 double sets of captains' quarters.

Plans for the following buildings are under way and will soon be submitted by the architects: Chapel, hotel, post exchange, gymnasium, bachelor officers' quarters, additional officers' quarters, and elevator.

When these are received the academy will be in possession of detailed plans and specifications for all of the important new buildings comprised in the present scheme of improvement, as shown on the general plan, which was approved by the Secretary of War January 27, 1904.

It may be of interest at the present time to trace briefly the progress which has been made upon this work since the date of the passage of the act.

On July 12, 1902, a board of officers, consisting of the professor of drawing, professor of chemistry, professor of civil and military engineering, professor of mathematics, and the instructor of ordnance and gunnery, was convened to assist the Superintendent, whenever required, in carrying out the provisions of the act for the improvements at the Military Academy. To this board the professor of modern languages was added on July 24, 1902. The board, since its inauguration, has

been termed the advisory board, and its duties, specified in the order convening it, were briefly as follows:

1. To make a thorough and complete investigation of the existing plant of the academy and, considering present requirements and possible future expansion, to report to the Superintendent what new buildings, what additions to the existing buildings, and what other necessary improvements (exclusive of the increased water supply) were needed for the complete plan of enlargement.

2. After the approval of the general plan the function of the board was to act in a capacity advisory to the Superintendent during the preparation of the complete plan, including the detailed plans of the separate buildings.

The report of the board under the first head was submitted October 1, 1902. In forwarding the report it was recommended:

That the architects who may be invited by the Secretary of War to submit competitive plans for the new improvements, while keeping in mind the present somewhat crowded condition of the area of the cadet barracks and of the vicinity of the academic building, be given the freest scope in making their studies without regard to the plans, or to the particular location recommended by the members of the board for the new barracks, the new academic building, and the chapel, and with only the limitations that the plain as it now exists must be kept intact for infantry instruction and ceremonies, and that the buildings which cadets habitually occupy should be located, generally speaking, as close together as all the conditions will permit.

This report of the advisory board proved to be of valuable assistance to the competing architects in the preparation of their studies.

In making the award among the competitors a jury, consisting of Lieut. Gen. John M. Schofield, U. S. Army (retired), who is a former Superintendent of the academy; Col. A. L. Mills, Superintendent; Walter Cook, George B. Post, and Cass Gilbert, who are eminent architects, was appointed by the Secretary of War to advise him in the matter. After an examination of all the plans and consideration of the report of the jury, Hon. Elihu Root, then Secretary of War, made the award to the firm of architects above mentioned—Messrs. Cram, Goodhue & Ferguson, of Boston.

Steps were immediately taken to proceed with the development of the preliminary study. The architects were in the first place furnished with the general requirements of each of the buildings to be erected, further details being given than were contained in the preliminary report of the advisory board. One or more of the members of the firm of architects made extended visits to the academy and studied existing conditions. Based upon the information obtained, the architects drew up and submitted sketch plans for each floor of each of the buildings. The sketch plans were then referred to the advisory board, the members of which were thoroughly conversant with the functions to which each building was to be put and with its relations to the

other buildings on the post. Other officers having special interest or knowledge concerning a particular building were directed to confer from time to time with the advisory board, as well as with the Superintendent in his consideration of the sketch plans. The Superintendent had also the advice of an able officer of the Quartermaster's Department to aid in this work. In each case the criticisms and recommendations of the advisory board were embodied in a written report made to the Superintendent. This procedure, while involving a great amount of work, proved itself to be of value in more than one instance, as it would have been otherwise impossible to give proper weight to the various views expressed by the board, the architects, and others upon many perplexing and some vexatious questions. In many cases the study of the sketch plans occupied a period of months, during which they were several times returned to the architects for alterations or replanning. As a rule the architects, the advisory board, the constructing quartermaster, and the Superintendent all agreed upon the final form of the sketch plans. In instances where one or more of these parties dissented from the adopted plan, a full discussion of the questions at issue was had and the final decision was based upon what seemed to be satisfactory arguments. Upon the approval of satisfactory sketch plans the architects have proceeded with their development into the final plans. During this stage of the work it has been subjected to the most careful scrutiny by the constructing quartermaster. In the matter of the elevations of the buildings the architects have been unhampered except in a few instances where questions of utility or economy of construction have dictated certain deviations from their ideas. The final plans and specifications have been forwarded to the War Department for the action of the Secretary of War.

To complete the general plan, as it stands approved by the Secretary of War, will, it is estimated, cost \$7,500,000. The appropriations provide a total of \$5,800,000 for this purpose. In the year of the passage of the first act (1902) the Military Committee of the House of Representatives, after an exhaustive hearing into the details of the estimates, and following a visit of inquiry to West Point by a joint committee of its members and members of the Military Affairs Committee of the Senate, unanimously reported a bill carrying the full amount of the original estimate, \$6,500,000. The House in the closing day of its session, with little or no debate on the merits of the bill, reduced the amount to that which was finally appropriated. The Senate restored the original amount, but in conference it was again reduced. Since that time \$546,000 of the total appropriation has been diverted, by direction of Congress, for projects not included in the original estimate. Adding this \$546,000 to the amount of the original estimate, \$6,500,000, gives a total of \$7,046,000, showing that the

original amount asked for is but \$454,000 short of \$7,500,000, the amount actually necessary to complete all of the improvements indicated on the general plan. In a work of this magnitude a more nearly correct original estimate could not be expected.

As under the present appropriation all of the improvements can not be completed, they were divided into the following three categories, arranged in order of importance:

First category:

Cadet barracks	\$275,000.00	
Sixteen sets officers' quarters	180,000.00	
Power house and distributing system	600,000.00	
Roads, sewer, water, and gas, south end	75,000.00	
South dock	25,000.00	
Cavalry and artillery barracks, stables, and gun shed	404,880.00	
One triple set lieutenants' quarters	30,000.00	
Post headquarters	500,000.00	
Chapel	300,000.00	
Hotel	300,000.00	
Removing and rebuilding present cadet chapel	20,000.00	
Bachelor officers' quarters	100,000.00	
Riding hall	695,000.00	
Academic building	600,000.00	
Gymnasium	300,000.00	
Cadet headquarters and cadet store	275,000.00	
Guardhouse and fire-engine house	63,000.00	
Post exchange	50,000.00	
Remodeling plumbing and heating system, present cadet barracks	35,000.00	
Grading, roads, walls, sewer, water, and gas	75,000.00	
Increase of water supply	400,000.00	
Allotments, fixed charges, fees and salary for archi- tects and consulting architect	487,904.60	
		5,790,784.60
Appropriation	5,800,000.00	\$5,790,784.60
Balance	9,215.40	

Second category:

Quartermaster and commissary storehouse	300,000.00
Quartermaster stables and wagon shed	135,000.00
Cadet laundry	50,000.00
Two double sets captains' quarters	50,000.00
Three majors' quarters	45,000.00
Completion officers' mess	25,000.00
Enlargement band barracks and remodeling pres- ent artillery barracks and post exchange	30,000.00
Post school for children	25,000.00
Public stable	10,000.00
South gate guardhouse	20,000.00
Elevator and gateway	100,000.00
Remodeling officers' quarters Nos. 27 and 29 for one professor	10,000.00

Second category—Continued.

Railroad freight shed, dock, and cableway	\$115,000.00	
Superintendent and staff officers' quarters.....	100,000.00	
Remodeling engineer barracks	10,000.00	
Special fittings for new academic building.....	50,000.00	
Furniture for post headquarters	10,000.00	
Furniture for cadet headquarters	5,000.00	
Roads, retaining walls, water, sewer, and gas.....	50,000.00	
		\$1,140,000.00

Third category:

Alterations to present academic building.....	30,000.00	
Army service barracks.....	125,000.00	
Memorial bridge	50,000.00	
Two cadet battalion headquarters	40,000.00	
Twenty sets quarters for enlisted men	50,000.00	
Noncommissioned staff officers' quarters	20,000.00	
Roads, retaining walls, walks, sewer, water, and gas.	75,000.00	
		390,000.00
Total		7,320,784.60

Contingencies, such as salaries of inspectors of work, administrative or office force, advertising, wiring of retained existing buildings for electric light and fixtures, demolition of old buildings, etc		179,215.40
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Grand total		7,500,000.00
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The Secretary of War has approved of the construction as soon as feasible of the buildings and improvements mentioned in the first category, Congress having, by the act approved March 3, 1905, amended the original act as follows:

In carrying out the provisions of the act of June 28, 1902, after general plans have been prepared and approved by the Secretary of War, he may, within the limit of cost fixed, proceed with their execution in such order as the detailed plans may be approved by him, and in such manner, by contract or otherwise, as he may see fit.

With the completion of the buildings and improvements named in the three categories, the Military Academy plant will be in a position to meet all demands which will be put upon it by the natural growth of the academy for fifty years. Although a certain part of the improvements can not be completed within the present appropriation, the additional work can be accomplished as funds are made available for the purpose, and the present construction scheme, indicated in the first category, will put the plant in best possible shape for the amount expended, keeping in view the future growth of the school. In designing the buildings rigid economy has been practiced, while at the same time the object has been to secure buildings which would meet the present and immediate future needs of the academy, so that as far as the work is carried out the result will be permanent and satisfactory. In some cases the original allotment has been necessarily increased rather than have a building designed which, if constructed, would eventually have to be torn down and another substituted therefor. Furthermore, the original act for the improvement of the

academy specifically required complete plans to be prepared covering all necessary buildings and improvements at West Point, and for each and every purpose connected therewith, and it was also specifically provided that after the preparation and approval of the plan the Secretary of War might enter into a contract or contracts for any part or all of the improvements therein authorized, within the limit of the appropriation. The work on the buildings probably can not be completed before 1912, and it is to be hoped that within this period the additional necessary money may be made available for carrying out the entire approved plan.

As to the actual amount of building work under way, reference should be had to the report of the quartermaster and disbursing officer. Maj. John M. Carson, jr., quartermaster, U. S. Army, who fills these offices and has charge of all the construction work, has performed the many exacting and responsible duties required of him in a highly satisfactory manner. It is gratifying to announce that the bids for the erection of the cavalry and artillery barracks and stables and the artillery gun shed were well within the estimates. The contract price for the cadet barracks and for 16 sets of officers' quarters was not far above the estimates. Ground was broken on the site of the central heating and lighting plant on January 20, 1905, which date marks the beginning of the actual work of construction. The preparation of this site is about completed, and contracts have been let for the purchase and installation of the machinery. The plans for the building are also nearly ready for submission to the War Department. The services of Mr. Henry C. Meyer, jr., of New York City, the consulting engineer, have been of the utmost value in prosecuting this part of the work.

The quarrying of stone for the new buildings has been done by the Government, so that the contractors would not have to figure on this uncertain element of the cost of their work. So far the results have been satisfactory and it is believed materially economical. This matter is fully covered in the report of the quartermaster. The material of all of the important buildings is to be of native granite with trimmings of Indiana limestone. Stone-colored brick will be used in places and for some of the less important structures.

Progress has been made in the preparation of the project of landscape treatment under the provisions of the contract with Messrs. Olmsted Bros., of Brookline, Mass. This plan will supplement the general plan, and together with the plan of forest treatment will form a complete plan providing a definite end to which future improvements may be directed. The forestry plan has been approved by the War Department and put into operation, and Prof. Roy L. Marston, of the Yale Forestry School, has been appointed forester of the Military Academy and spends a portion of each year at West

Point supervising the work. His report is hereto appended, marked "Appendix K."

ESTIMATES.

The estimates for the next fiscal year are forwarded with this report. The necessity for the few new items embodied is fully explained in the remarks. It is hoped that all will meet with approval.

In conclusion, I have the honor to express grateful appreciation of the able support and assistance I have received from the officers on duty at West Point, and of the cordial help which the War Department and the heads of its bureaus having relations with the academy have given in all matters tending to improve the institution.

Very respectfully,

A. L. MILLS,

Brigadier-General, U. S. Army, Superintendent.

The MILITARY SECRETARY,

War Department, Washington, D. C.

List of appendixes.

- Appendix A.—Roster of officers and troops.
- Appendix B.—Report of the surgeon.
- Appendix C.—Report of the treasurer, quartermaster and commissary of cadets.
- Appendix D.—Report of the commandant of cadets.
- Appendix E.—Report of the instructor of practical military engineering.
- Appendix F.—Report of the instructor of ordnance and gunnery.
- Appendix G.—Copy of Superintendent's letter of June 2, 1905, to Board of Visitors.
- Appendix H.—Report of the librarian.
- Appendix I.—Report of the officer in charge of water supply.
- Appendix J.—Report of the quartermaster and disbursing officer.
- Appendix K.—Report of the forester.

APPENDIX A.

ROSTER OF OFFICERS AND TROOPS.

SUPERINTENDENT.

Albert L. Mills, brigadier-general, U. S. Army.

MILITARY STAFF.

Capt. Frank W. Coe, Artillery Corps, adjutant of the Military Academy and of the post; recruiting officer.

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

Capt. Louis M. Nuttman, Ninth Infantry, commissary, and in charge of post exchange.

Capt. Thomas Franklin, commissary, treasurer of the Military Academy, and quartermaster and commissary of the battalion of cadets.

Capt. Horton W. Stickle, Corps of Engineers, assistant to the officer in charge of construction.

First Lieut. Robert C. Foy, First Cavalry, assistant to quartermaster.

Lieut. Col. Harry O. Perley, deputy surgeon-general, U. S. Army, surgeon.

First Lieut. Thomas L. Rhoads, assistant surgeon, U. S. Army.

First Lieut. George M. Ekwurzel, assistant surgeon, U. S. Army.

First Lieut. James W. Van Dusen, assistant surgeon, U. S. Army.

Second Lieuts. Robert E. Boyers, Fifteenth Infantry, and Ernest Graves, Corps of Engineers, on temporary duty.

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.

DEPARTMENT OF TACTICS.

Lieut. Col. Robert L. Howze, captain, Sixth Cavalry, commandant of cadets and instructor of tactics. (June 15, 1905.)

Capt. Godfrey H. Macdonald, First Cavalry, senior instructor of cavalry tactics.

Capt. Francis C. Marshall, Fifteenth Cavalry, assistant instructor of tactics; commanding company of cadets.

Capt. Lincoln C. Andrews, Fifteenth Cavalry, assistant instructor of tactics.

Capt. Merch B. Stewart, Eighth Infantry, senior instructor of infantry tactics; commanding company of cadets.

Capt. Charles P. Summerall, Artillery Corps, senior instructor of artillery tactics.

Capt. Henry L. Newbold, Artillery Corps, assistant instructor of tactics; commanding company of cadets.

Capt. Ira C. Welborn, Ninth Infantry, assistant instructor of tactics; commanding company of cadets.

Capt. Charles W. Exton, Twentieth Infantry, assistant instructor of tactics; commanding company of cadets.

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

First Lieut. George S. Simonds, Twenty-second Infantry, assistant instructor of tactics; commanding company of cadets.

First Lieut. Herman Glade, Sixth Infantry, assistant instructor of tactics and gymnastics.

Civilian instructors: Francis Dohs and Louis Vauthier in fencing and military gymnastics.

DEPARTMENT OF CIVIL AND MILITARY ENGINEERING.

Gustav J. Fiebeger, lieutenant-colonel, U. S. Army, professor. (May 4, 1896.)
 Capt. Frederick W. Altstaetter, Corps of Engineers, assistant professor.
 Capt. Lytle Brown, Corps of Engineers, instructor.
 Capt. Lewis H. Rand, Corps of Engineers, instructor.
 First Lieut. Laurence V. Frazier, Corps of Engineers, instructor.

DEPARTMENT OF NATURAL AND EXPERIMENTAL PHILOSOPHY.

William B. Gordon, lieutenant-colonel, U. S. Army, professor. (March 27, 1901.)
 Capt. Palmer E. Pierce, Thirteenth Infantry, assistant professor.
 Capt. John B. Christian, Ninth Cavalry, instructor.
 First Lieut. Charles M. Wesson, Eighth Cavalry, instructor.
 First Lieut. William I. Westervelt, Artillery Corps, instructor.
 First Lieut. William S. Browning, Artillery Corps, instructor.
 Second Lieut. Adam F. Casad, Artillery Corps, instructor.

DEPARTMENT OF MATHEMATICS.

Charles P. Echols, lieutenant-colonel, U. S. Army, professor. (June 29, 1904.)
 Absent on detached service.
 Capt. George Blakely, Artillery Corps, associate professor. (March 18, 1905.)
 Capt. William R. Smith, Artillery Corps, assistant professor.
 Capt. Claude H. Miller, Twenty-fourth Infantry, instructor.
 First Lieut. Joseph A. Baer, Sixth Cavalry, instructor.
 First Lieut. Frank O. Whitlock, Fourteenth Cavalry, instructor.
 First Lieut. Willis V. Morris, Sixth Cavalry, instructor.
 First Lieut. Archibald H. Sunderland, Artillery Corps, instructor.
 First Lieut. James F. Bell, Corps of Engineers, instructor.
 First Lieut. Francis W. Clark, Artillery Corps, instructor.
 First Lieut. Walter D. Smith, Fourteenth Cavalry, instructor.
 Second Lieut. Guy E. Carleton, Artillery Corps, instructor.
 Second Lieut. Wade H. Carpenter, Artillery Corps, instructor.
 Second Lieut. Charles M. Allen, Artillery Corps, instructor.

DEPARTMENT OF CHEMISTRY, MINERALOGY, AND GEOLOGY.

Samuel E. Tillman, colonel, U. S. Army, professor. (December 21, 1880.)
 Capt. John McA. Palmer, Fifteenth Infantry, assistant professor.
 Capt. Milton L. McGrew, Eleventh Infantry, instructor.
 First Lieut. Julian A. Benjamin, Third Cavalry, instructor.
 First Lieut. William P. Stokey, Corps of Engineers, instructor.
 Second Lieut. William R. Bettison, Artillery Corps, instructor.

DEPARTMENT OF DRAWING.

Charles W. Larned, colonel, U. S. Army, professor. (July 25, 1876.)
 Capt. Charles B. Hagadorn, Twenty-third Infantry, assistant professor.
 Capt. Charles H. Paine, Twenty-ninth Infantry, instructor.
 Capt. Frederick W. Lewis, Twenty-ninth Infantry, instructor.
 Capt. Harold Hammond, Twenty-third Infantry, instructor.
 First Lieut. George B. Comly, Third Cavalry, instructor.

DEPARTMENT OF MODERN LANGUAGES.

Edward E. Wood, colonel, U. S. Army, professor. (October 1, 1892.)
 Capt. William Kelly, jr., Ninth Cavalry, associate professor. (July 1, 1903.)
 Capt. William O. Johnson, Sixteenth Infantry, assistant professor of the Spanish language.
 Capt. Arthur Thayer, Third Cavalry, assistant professor of the French language.
 Capt. William Newman, First Infantry, instructor.
 Capt. Americus Mitchell, Fifth Infantry, instructor.
 Capt. Joseph Wheeler, jr., Artillery Corps, instructor.
 Capt. Harvey W. Miller, Thirteenth Infantry, instructor.
 First Lieut. Charles F. Martin, Fifth Cavalry, instructor.
 First Lieut. Charles R. Lawson, Artillery Corps, instructor.
 First Lieut. Frank P. Lahm, Sixth Cavalry, instructor.

Second Lieut. Stephen Abbot, Artillery Corps, instructor.
 Second Lieut. Marion W. Howze, Artillery Corps, instructor.
 Second Lieut. George A. Lynch, Seventeenth Infantry, instructor.
 Civilian instructors: A. Marin La Meslée and George Castegnier, in French; José M. Asensio and N. T. Quevedo, in Spanish.

DEPARTMENT OF LAW AND HISTORY.

Edgar S. Dudley, colonel and judge advocate, U. S. Army, professor. (July 31, 1901.) (By assignment under act June 6, 1874.)
 Capt. John K. Moore, Fifteenth Infantry, assistant professor.
 First Lieut. Irvin L. Hunt, Nineteenth Infantry, instructor.
 First Lieut. Halsey E. Yates, Fifth Infantry, instructor.
 First Lieut. Edwin G. Davis, Artillery Corps, instructor.
 First Lieut. Pressley K. Brice, Artillery Corps (absent sick), instructor.
 First Lieut. Edward Canfield, jr., Artillery Corps, instructor.

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

Capt. Henry Jervey, Corps of Engineers, instructor. (July 12, 1904.)
 First Lieut. Michael J. McDonough, Corps of Engineers, senior assistant instructor.

DEPARTMENT OF ORDNANCE AND GUNNERY.

Maj. Ormond M. Lissak, Ordnance Department, instructor. (July 1, 1904.)
 Capt. Edward P. O'Hern, Ordnance Department, senior assistant instructor.
 Second Lieut. William P. Ennis, Artillery Corps, assistant instructor.
 Second Lieut. Arthur H. Bryant, Artillery Corps, assistant instructor.

IN CHARGE OF WATER SUPPLY.

Maj. Mason M. Patrick, Corps of Engineers.

LIBRARIAN.

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

CHAPLAIN.

Rev. Herbert Shipman. (April 22, 1896; reappointed April 22, 1904.)

CONTRACT DENTAL SURGEON

Dr. Robert T. Oliver.

TEACHER OF MUSIC.

George Essigke. (October 15, 1895.)

FORESTER

Prof. Roy L. Marston.

TROOPS.

BATTALION OF CADETS.

Lieut. Col. Robert L. Howze, captain Sixth Cavalry, commanding.

DETACHMENT OF HOSPITAL CORPS.

Lieut. Col. Harry O. Perley, deputy surgeon-general, commanding.
 First Lieut. Thomas L. Rhoads, assistant surgeon.
 First Lieut. George M. Ekwurzel, assistant surgeon.
 First Lieut. James W. Van Dusen, assistant surgeon.

UNITED STATES MILITARY ACADEMY DETACHMENT OF ARMY SERVICE MEN.

Maj. John M. Carson, jr., quartermaster, commanding.
 First Lieut. Robert C. Foy, First Cavalry.

UNITED STATES MILITARY ACADEMY DETACHMENT OF ENGINEERS.

Maj. Mason M. Patrick, Corps of Engineers, commanding.
 First Lieut. Michael J. McDonough, Corps of Engineers.

UNITED STATES MILITARY ACADEMY.

UNITED STATES MILITARY ACADEMY DETACHMENT OF ORDNANCE.

Maj. Ormond M. Lissak, Ordnance Department, commanding.

UNITED STATES MILITARY ACADEMY DETACHMENT OF CAVALRY.

Capt. Godfrey H. Macdonald, First Cavalry, commanding.
Capt. Lincoln C. Andrews, Fifteenth Cavalry.

UNITED STATES MILITARY ACADEMY DETACHMENT OF ARTILLERY.

Capt. Charles P. Summerall, Artillery Corps, commanding.

UNITED STATES MILITARY ACADEMY BAND AND DETACHMENT OF FIELD MUSIC.

Capt. Frank W. Coe, Artillery Corps, commanding.

List of officers at the United States Military Academy.

Name.	Corps or regiment.	On duty at academy since—
SUPERINTENDENT.		
Mills, Albert L.....	Brigadier-general, U. S. Army.....	Sept. 20, 1898
PROFESSORS.		
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
Fieberger, Gustav J.....	Professor (May 4, 1896).....	May 30, 1896
Gordon, William B.....	Professor (Mar. 27, 1901).....	May 2, 1901
Echols, Charles P. a.....	Professor (June 29, 1904).....	Dec. 27, 1898
COLONEL.		
Dudley, Edgar S.....	Colonel and judge-advocate, professor (July 31, 1901)	July 31, 1901
LIEUTENANT-COLONELS.		
Perley, Harry O.....	Lieutenant-colonel and deputy surgeon-general ...	Aug. 25, 1904
Howze, Robert L.....	Captain, Sixth Cavalry, commandant of cadets (June 15, 1905).	June 15, 1905
MAJORS.		
Carson, John M., jr.....	Quartermaster.....	July 8, 1903
Patrick, Mason M.....	Corps of Engineers.....	Aug. 31, 1903
Lissak, Ormond M.....	Ordnance Department.....	July 1, 1904
CHAPLAIN.		
Shipman, Rev. Herbert.....	Chaplain.....	Apr. 25, 1896
ASSOCIATE PROFESSORS.		
Blakely, George.....	Captain, Artillery Corps.....	Jan. 24, 1903
Kelly, William, jr.....	Captain, Ninth Cavalry.....	Oct. 19, 1898
CAPTAINS.		
Jervey, Henry.....	Corps of Engineers.....	Dec. 15, 1903
Macdonald, Godfrey H.....	First Cavalry.....	Aug. 20, 1902
Hagadorn, Charles B.....	Twenty-third Infantry.....	Do.
Johnson, William O.....	Sixteenth Infantry.....	Aug. 22, 1904
Pierce, Palmer E.....	Thirteenth Infantry.....	Nov. 8, 1901
Thayer, Arthur.....	Third Cavalry.....	Aug. 22, 1904
Marshall, Francis C.....	Fifteenth Cavalry.....	July 5, 1904
Palmer, John McA.....	Fifteenth Infantry.....	Aug. 27, 1901
Newman, William.....	First Infantry.....	Aug. 20, 1903
Paine, Charles H.....	Twenty-ninth Infantry.....	Aug. 22, 1904
Mitchell, Americus.....	Fifth Infantry.....	Aug. 20, 1903
McGrew, Milton L.....	Eleventh Infantry.....	Aug. 22, 1905
Andrews, Lincoln C.....	Fifteenth Cavalry.....	June 30, 1903
Franklin, Thomas.....	Subsistence Department.....	Jan. 8, 1902
Nuttman, Louis M.....	Ninth Infantry.....	Jan. 31, 1903
Coe, Frank W.....	Artillery Corps.....	July 2, 1903
Smith, William R.....	do.....	Feb. 14, 1903
Stewart, Merch B.....	Eighth Infantry.....	Aug. 22, 1904
Lewis, Frederick W.....	Twenty-ninth Infantry.....	Aug. 22, 1905
Summerall, Charles P.....	Artillery Corps.....	Do.

a Absent on detached service.

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

Name.	Corps or regiment.	On duty at academy since—
CAPTAINS—continued.		
Wheeler, Joseph, jr	Artillery Corps.....	Aug. 20, 1902
Newbold, Henry L.....	do.....	Aug. 20, 1903
Christian, John B.....	Ninth Cavalry.....	Aug. 22, 1905
Moore, John K.....	Fifteenth Infantry.....	Aug. 27, 1902
Miller, Claude H.....	Twenty-fourth Infantry.....	Aug. 28, 1902
Miller, Harvey W.....	Thirteenth Infantry.....	Aug. 25, 1902
Hammond, Harold.....	Twenty-third Infantry.....	Aug. 20, 1902
Welborn, Ira C.....	Ninth Infantry.....	Aug. 22, 1904
Exton, Charles W.....	Twentieth Infantry.....	Sept. 15, 1903
O'Hern, Edward P.....	Ordnance Department.....	Aug. 22, 1905
Altstaetter, Frederick W.....	Corps of Engineers.....	Aug. 20, 1902
Brown, Lytle.....	do.....	Jan. 12, 1903
Stickle, Horton W.....	do.....	Aug. 22, 1904
Koehler, Herman J.....	Instructor of military gymnastics and physical culture.....	Feb. 1, 1905
Rand, Lewis H.....	Corps of Engineers.....	Aug. 1, 1904
FIRST LIEUTENANTS.		
Hunt, Irvin L.....	Nineteenth Infantry.....	Aug. 1, 1903
Simonds, George S.....	Twenty-second Infantry.....	Aug. 22, 1904
Yates, Halsey E.....	Fifth Infantry.....	Aug. 20, 1902
Rhoads, Thomas L.....	Assistant surgeon.....	Aug. 19, 1904
Roy, Robert C.....	First Cavalry.....	Sept. 1, 1904
Baer, Joseph A.....	Sixth Cavalry.....	Aug. 20, 1903
Whitlock, Frank O.....	Fourteenth Cavalry.....	Aug. 28, 1905
Martin, Charles P.....	Fifth Cavalry.....	Oct. 24, 1903
Morris, Willis V.....	Sixth Cavalry.....	Aug. 22, 1904
Wesson, Charles M.....	Eighth Cavalry.....	Aug. 20, 1903
Benjamin, Julian A.....	Third Cavalry.....	Aug. 22, 1905
Comly, George B.....	do.....	Aug. 20, 1903
McDonough, Michael J.....	Corps of Engineers.....	Apr. 17, 1903
Ekwurzel, George M.....	Assistant surgeon.....	July 22, 1904
Van Dusen, James W.....	do.....	Jan. 20, 1904
Lawson, Charles R.....	Artillery Corps.....	Aug. 22, 1904
Westervelt, William I.....	do.....	Do.
Davis, Edwin G.....	do.....	Aug. 20, 1903
Sunderland, Archibald H.....	do.....	Aug. 22, 1904
Brice, Pressley K. ^a	do.....	Do.
Stokey, William P.....	Corps of Engineers.....	Aug. 22, 1905
Glade, Herman.....	Sixth Infantry.....	Mar. 14, 1902
Frazier, Laurence V.....	Corps of Engineers.....	Aug. 22, 1905
Bell, James F.....	do.....	Do.
Browning, William S.....	Artillery Corps.....	Aug. 20, 1904
Clark, Francis W.....	do.....	Aug. 27, 1904
Canfield, Edward, jr.....	do.....	Aug. 20, 1903
Smith, Walter D.....	Fourteenth Cavalry.....	Aug. 22, 1905
Lahm, Frank P.....	Sixth Cavalry.....	Aug. 20, 1903
SECOND LIEUTENANTS.		
Ennis, William P.....	Artillery Corps.....	Aug. 19, 1904
Bryant, Arthur H.....	do.....	Aug. 22, 1904
Carleton, Guy E.....	do.....	Aug. 28, 1904
Bettison, William R.....	do.....	Aug. 20, 1903
Carpenter, Wade H.....	do.....	Aug. 22, 1904
Casad, Adam F.....	do.....	Aug. 22, 1905
Allen, Charles M.....	do.....	Do.
Abbot, Stephen.....	do.....	Aug. 22, 1904
Howze, Marion W.....	do.....	Aug. 22, 1905
Lynch, George A.....	Seventeenth Infantry.....	Do.
Boyers, Robert E.....	Fifteenth Infantry.....	Sept. 1, 1905
Graves, Ernest.....	Corps of Engineers.....	Aug. 28, 1905

^a Absent sick.

HEADQUARTERS UNITED STATES MILITARY ACADEMY,
West Point, N. Y., September 1, 1905.

Official:

F. W. COE,
Captain, Artillery Corps, Adjutant.

APPENDIX B.
REPORT OF THE SURGEON.

CADET HOSPITAL,
West Point, N. Y., July 6, 1905.

SIR: I have the honor to submit the following report for the medical department from this post for the year ending June 30, 1905:

Admissions to cadet hospital, including officers.....	865
Admissions to cadet hospital, including officers for 1904.....	1, 091
Enlisted men admitted to soldiers' hospital.....	340
Prescriptions filled at cadet hospital.....	3, 702
Prescriptions filled at soldiers' hospital.....	821
Prescriptions filled at subdispensary.....	3, 240

The general health of the post for the year has been excellent.

There has been but 1 death—that of a very young child, in an enlisted man's family, from pneumonia.

Although there has been a number of serious cases of illness and operations among the cadets, all have recovered.

Table A, attached hereto, shows the number of operations performed.

The largest number of admissions for disease from any one source has been from intestinal diseases and indigestion, probably due to indiscriminate eating.

A large number of admissions has been from contusions, wounds, and injuries, all of which have been slight and responded readily to treatment.

Of the infectious diseases, there has been 1 case of scarlet fever (in a child, in the officers' row). This infection was brought to the post by a visitor, and by strict quarantine the disease was limited to this 1 case.

There have been 3 cases of chicken pox among the families of enlisted men.

There have been 3 cases of pneumonia among cadets, all of which have recovered.

There has been 1 case of typhoid fever in a cadet, and although carefully investigated the source was not discovered. It was of a mild type.

There have been 44 cases of malarial fever, compared with 47 cases last year. Most of these cases occur in summer and early fall.

SANITATION.

During the past year, whenever the weather would permit, the mosquito squad, consisting of a corporal and 6 men, under charge of First Lieut. James W. Van Dusen, assistant surgeon, U. S. Army, has been continuously at work exterminating this pest by means of draining and cleaning out swampy places, pools, and all sources of stagnant water. Petroleum has been freely used, and I believe that in the future the number of cases of malaria will be markedly decreased.

A "house to house" sanitary inspection of all quarters and barracks was made during the year and a record kept, and whenever a sanitary defect, of whatever nature, was found it was at once attended to.

Whenever a house was vacated on the post the quartermaster notified the medical department, and the house was thoroughly disinfected with formaldehyde gas. By this means, at a trifling cost to the Government, the spread of any possible contagion is stopped and the house rendered free from vermin.

More than 1,000 vaccinations, including the members of the class of 1905, were performed.

The food furnished by the cadet mess has been daily inspected and found to be excellent in quality and furnished in abundance.

The cadet latrines and baths have been inspected four times a week, and frequently disinfected under the direction of the surgeon.

There have been 170 men examined and 157 men enlisted during the past year.

One hundred and thirty persons, including officers, cadets, and enlisted men and their families, have been treated for affections of the eye and 112 pairs of glasses have been prescribed. These cases have been under the charge of First Lieut. George M. Ekwurzel, assistant surgeon, U. S. Army.

First Lieut. James W. Van Dusen, assistant surgeon, U. S. Army, has been present in his official capacity at every athletic event, and all cadets have been carefully examined before being allowed to undertake these exercises. He has also been detailed to take up his quarters in the cadet camp in order that a medical officer may be present at all times should his services be needed.

The following course of lectures was given to the second class during the months of April and May, 1905, by Lieut. Col. H. O. Perley, deputy surgeon-general, U. S. Army:

1. Recruiting, with practical examination of a man.
2. Exercise and marching.
3. Water.
4. Food.
5. Military ration and camp cooking.
6. Air.
7. Ventilation.
8. Heating and lighting.
9. The first-aid packet and emergencies, by First Lieut. T. L. Rhoads, assistant surgeon, U. S. Army.
10. Clothing and equipment.
11. Disposal of excreta and examination of post crematory.
12. Sewage and garbage.
13. Camps.
14. Care of eyes and ears in military life, by First Lieut. George M. Ekwurzel, assistant surgeon, U. S. Army.
15. Post barracks and quarters.
16. The prevalent diseases of the soldier and malingering.
17. Alcoholism and venereal diseases, by First Lieut. T. L. Rhoads, assistant surgeon, U. S. Army.
18. Malaria and yellow fever.
19. Personal hygiene in hot and cold climates, by First Lieut. James W. Van Dusen, assistant surgeon, U. S. Army.
20. Infection and disinfection.

Table B, attached hereto, shows the causes, number, and ratio of admissions of officers, cadets, and enlisted men treated during the year.

Very respectfully,

H. O. PERLEY,

Lieutenant-Colonel, Deputy Surgeon-General, U. S. Army, Surgeon.

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

TABLE A.—*Surgical operations performed during the year ending June 30, 1905.*

The following operations have been performed:	Cases.
Amputation of finger (1 soldier by Lieutenant Rhoads)	1
Appendectomy (3 cadets and 2 civilians by Captain Webb; 3 officers, 1 cadet, and 1 soldier by Lieutenant Rhoads; 1 cadet by Lieutenant Ekwurzel)	11
Cataract extraction (1 civilian by Lieutenant Ekwurzel)	1
Circumcision (2 cadets by Captain Webb; 3 civilians by Lieutenant Rhoads; 3 cadets by Lieutenant Ekwurzel)	8
Curettage, bubo (1 soldier by Lieutenant Rhoads)	1
Curettage, ischioanal abscess (1 soldier by Lieutenant Rhoads)	1
Curettage, necrosed bone of tibia (1 civilian by Lieutenant Rhoads)	1
Epididymectomy (1 soldier by Lieutenant Rhoads)	1
Excision of hemorrhoids (1 soldier by Captain Webb; 3 cadets by Lieutenant Ekwurzel)	4
Excision of toe nail (1 officer and 2 cadets by Lieutenant Rhoads; 3 cadets by Lieutenant Ekwurzel)	6
Dislocations reduced (4 soldiers and 1 civilian by Lieutenant Rhoads)	5
Herniotomy (2 soldiers by Captain Webb; 1 soldier by Lieutenant Rhoads)	3
Fractures set (3 soldiers by Lieutenant Rhoads)	3

	Cases.
Removal of floating rib (1 soldier by Lieutenant Rhoads)	1
Removal of nasal spur (1 cadet by Lieutenant Ekwurzel)	1
Removal of pterygium (1 cadet by Lieutenant Ekwurzel)	1
Skin grafting (1 officer and 1 cadet by Lieutenant Rhoads)	2
Tonsillectomy (4 cadets by Captain Webb; 4 cadets by Lieutenant Ekwurzel)	8
Varicocelelectomy (1 soldier and 4 cadets by Captain Webb)	5
Total	64

TABLE B.—Causes, number, and ratio of admissions for officers, cadets, and enlisted men for the year ending June 30, 1905.

Causes of admission to sick report.	Officers and cadets.		Enlisted men.	
	Admissions.	Ratio per 1,000 of mean strength.	Admissions.	Ratio per 1,000 of mean strength.
Abscess	5	0.45	6	0.60
Asthma	6	.54	1	.10
Adenitis	3	.27	6	.60
Alcoholism			7	.70
Appendicitis	16	1.14	45	4.50
Bronchitis	93	8.37	1	.10
Bubo			1	.10
Burns			4	.40
Carbuncles and furuncles	29	2.16		
Cranial hemorrhage	1	.09	8	.80
Cellulitis			2	.20
Cystitis	6	.54		
Cerebral concussion			17	1.53
Constipation	17	1.53	9	.81
Conjunctivitis	9	.81	19	1.71
Coryza	19	1.71	15	1.35
Corns	15	1.35		
Dental caries			1	.10
Dislocations			6	.60
Diarrhea	4	.36		
Enteritis	1	.09		
Epididymitis			3	.30
Epilepsy	1	.09	1	.10
Exhaustion	28	2.52		
Fistula in ano			1	.10
Heart disease	1	.09		
Heat exhaustion			1	.10
Hemorrhoids	6	.54	5	.50
Hematuria	1	.09		
Hepatic cirrhosis			1	.10
Hernia	2	.18	2	.20
Herpes zoster	2	.18		
Herdeolum			1	.10
Isolation	2	.18		
Imbecility			1	.10
Indigestion	70	6.30	23	2.30
Ingrown toe nail	9	.81		
Influenza	72	6.48	9	.90
Intestinal diseases	11	.99		
Jaundice			1	.10
Keratitis			4	.40
Lumbago	3	.27	5	.50
Malarial fever	38	3.42	7	.70
Myalgia	2	.18		
Mydriasis	1	.09		
Mastitis			1	.10
Nasal catarrh	1	.09		
Nephritis			3	.30
Neuralgia	10	.90	2	.20
Neurasthenia	3	.27		
Neuritis			4	.40
Nasal spur	1	.09		
Neurosis			1	.10
Orchitis	1	.09	2	.20
Osteoma	1	.09		
Osteomyelitis			1	.10
Otitis media	7	.63	5	.50
Paranoia			1	.10
Paralysis	1	.09		

TABLE B.—Causes, number, and ratio of admissions for officers, cadets, and enlisted men for the year ending June 30, 1905—Continued.

Causes of admission to sick report.	Officers and cadets.		Enlisted men.	
	Admissions.	Ratio per 1,000 of mean strength.	Admissions.	Ratio per 1,000 of mean strength.
Parotiditis			1	0.10
Pediculi pubis	13	1.17		
Pericementitis			2	.20
Pleurisy	1	.09	3	.30
Pneumonia	3	.27		
Poliomyelitis			1	.10
Pterygium	1	.09		
Ptomaine poisoning			1	.10
Pulpitis	4	.36	2	.20
Rheumatism	15	1.35	1	.10
Rhinitis			1	.10
Ringworm	4	.36		
Rhus poisoning	6	.54	6	.60
Redundant foreskin	3	.27		
Scabies			1	.10
Skin diseases	47	4.23		
Spermatocystitis			1	.10
Simple fever	11	.99		
Sprains	1	.09	16	1.60
Syncope				
Syphilis	6	.54	1	.10
Synovitis	6	.54	4	.40
Tonsilitis, pharyngitis, and laryngitis	78	7.02	31	3.10
Typhoid fever	1	.09		
Tuberculosis (pulmonary)	2	.18	3	.30
Ulcers	2	.18	3	.30
Urethritis	3	.27		
Vaccinia			9	.90
Varicella			1	.10
Vertigo	1	.09		
Varicocele	4	.36	3	.30
Wounds and injuries	163	14.67	53	5.30

APPENDIX C.

REPORT OF THE TREASURER, QUARTERMASTER, AND
COMMISSARY OF CADETS.

OFFICE OF THE TREASURER, U. S. MILITARY ACADEMY,
West Point, N. Y., September 2, 1905.

SIR: In compliance with instructions contained in circular 9, current series, Headquarters United States Military Academy, I have the honor to make the following report of the operations of the departments under my charge for the fiscal year ending June 30, 1905:

TREASURER UNITED STATES MILITARY ACADEMY.

The treasurer of the academy being "charged with all matters relating to the pay and accounts of the cadets," it is necessary to open an individual account with each cadet, also to keep 29 different accounts, under the heads given in the following statement, which also shows the disbursements and receipts under each account during the fiscal year:

	Dr.	Cr.
Assistant treasurer.....	\$232,115.23	\$272,803.92
Athletic association.....	1,924.00	1,924.00
Balances paid.....	42,312.83	42,040.86
Barber.....	1,081.30	1,081.30
Cadet cash.....	26,256.51	26,122.32
Cadet hospital.....	3,329.34	3,329.34
Cadet laundry.....	16,875.06	17,393.89
Cadet store.....	121,113.91	112,534.23
Cadet mess.....	110,520.11	113,377.56
Confectioner.....	130.50	130.50
Corps of cadets.....	356,238.68	351,472.24
Damages, ordnance.....	69.05	69.05
Dancing.....	785.00	785.00
Dentist.....	1,151.00	1,151.00
Deposits.....	20,479.55	20,329.09
Dialectic society.....	125.22	401.56
Equipment fund.....	51,952.70	44,288.50
Expressage.....	28.60	28.60
Gas fund.....	647.10	647.10
Hops and german.....	2,677.67	2,659.53
Miscellaneous fund.....	40.50	.....
Miscellaneous items.....	1,694.53	1,628.58
Oaths (notary public).....	40.00	40.00
Paymaster.....	231,412.83	231,412.83
Periodicals.....	.....	.....
Photographer.....	62.30	62.30
Young Men's Christian Association.....	589.02	639.94
Travel pay.....	5,402.04	5,402.04
Rations.....	50,702.40	50,702.40

The accounts of the treasurer are inspected every two months by an officer of the academy detailed by the Superintendent, to whom the result of the inspection is reported, together with a statement of all debits and credits on different accounts. The last inspection was made July 27, 1905, and reported as follows:

Assets.		Liabilities.	
Assistant treasurer.....	\$17,073.81	Balances paid.....	\$493.63
Cadet cash.....	417.41	Corps of cadets.....	7,787.88
Cadet laundry.....	877.01	Dialectic society.....	153.42
Cadet mess.....	10,419.41	Equipment fund.....	64,320.20
Cadet store.....	24,040.45	Young Men's Christian Association.....	115.33
Reserve fund.....	10,000.00	Miscellaneous fund.....	171.89
Washstand, etc., fund.....	254.41	Deposits.....	303.87
Cash on hand.....	10,281.86	Hops and german.....	18.14
Total.....	73,364.36	Total.....	73,364.36

I append herewith a statement which shows the volume of business transacted by this office for the fiscal years ending June 30, 1904 and 1905, respectively:

Total Dr., fiscal year—		
1904.....		\$1,370,803.93
1905.....		1,329,706.98
Balance in favor, 1904.....		41,096.95
Total Cr., fiscal year—		
1904.....		1,347,421.99
1905.....		1,286,489.14
Balance in favor, 1904.....		60,932.85

QUARTERMASTER OF CADETS.

The business of the cadet store has been about normal. The excellent financial condition of the cadets has enabled them to purchase still greater quantities of supplies, which contribute to their pleasure and welfare. This is especially noticeable in the increase in the amount of the sales of athletic goods to them. The price of all material entering into the manufacture of uniforms and other clothing has been maintained at the high level which has prevailed for some time past. The old building and plant is entirely inadequate in size and arrangement for the present needs of this department, and the relief from the present crowded and cramped quarters and the attendant economy of operation which will follow the erection of the new store building is anticipated with pleasure.

The following table will show the amount of clothing manufactured and repaired during the past year:

	Manu- factured.	Repaired.
Dress coats.....	355	1,189
Overcoats.....	158	963
Blouses.....	511	1,562
Trousers:		
Gray.....	681	1,785
White.....	1,119	2,055
Riding.....	130	.....
Line officers'.....	82	241
Staff officers'.....	13	.....
Officers', service.....	131	.....
Riding breeches, officers'.....	105	21
Dress coats, officers'.....	10	19
Overcoats, officers'.....	2	35
Blouses, officers'.....	236	153
Capes, officers'.....		9
Miscellaneous, including "cits," etc.....		1,968
Chevrons sewed on.....		481
Service stripes sewed on.....		1,309
Socks tagged, pairs.....		4,601
Shoes.....		1,188
Total.....	3,533	17,529

CADET LAUNDRY.

The amount of work done at the cadet laundry during the last year has slightly decreased, as is shown by the following comparative statement. The laundry plant is in excellent condition, and the building is in as good condition as it is possible to put the present badly arranged building with a moderate expenditure of money. A new roof of a temporary character has been put on the laundry, and the ironing floors covered with heavy linoleum, both of which repairs were greatly needed. Considerable labor-saving machinery has been added, and some of the older machines replaced by more modern equipment.

A great need in the laundry at the present time is an adequate artificial lighting system. Owing to the location of the laundry under a hill, which surrounds it on two sides, and the absence of sufficient window and skylight openings, the laundry is none too well lighted on the brightest days, and on cloudy and rainy days and on winter afternoons recourse must be had to artificial light. The supply of gas is inadequate, as the post gas plant is unable to meet the demands made upon it for gas for illumination. An estimate for an electric-lighting plant will be prepared and submitted for this purpose. It will not be very costly to install, as the principal item, engine power, is already available.

The following comparative statement will show the amount of work done during the year:

For cadets.

Belts, shoulder.....	46,536	Shirts, white and negligee.....	28,007
Belts, sword.....	3,923	Shirts, night.....	9,899
Belts, waist.....	23,768	Shirts, gray.....	580
Blankets, single.....	73	Shirts, under.....	52,983
Coats, fatigue.....	7	Socks.....pairs..	55,783
Clothes bags.....	8,239	Towels.....	82,458
Collars.....	117,276	Trousers, gray.....	173
Cuffs.....pairs..	86,806	Trousers, white.....	38,722
Drawers.....	49,188		
Gloves.....pairs..	43,753	Total.....	799,303
Handkerchiefs.....	92,015	Total, 1903-4.....	854,476
Pajamas.....suits..	8,322		
Pillowcases.....	18,623	Decrease during year....	55,173
Sheets.....	32,169		

For cadet hospital.

Aprons.....	140	Sheets.....	4,161
Bedspreads.....	398	Shirts, hospital.....	255
Blankets, single.....	116	Tablecloths.....	154
Caps.....	8	Towels.....	13,449
Gowns, operating.....	80		
Mattress covers.....	27	Total.....	24,773
Mosquito bars.....	57	Total, 1903-4.....	25,800
Napkins.....	982		
Pajamas.....suits..	1,340	Decrease during year....	1,027
Pillowcases.....	3,606		

For cadet mess.

Aprons.....	9,308	Tablecloths.....	20,148
Caps.....	309	Table felts.....	1,496
Jackets.....	8,529	Towels.....	32,815
Meat cloths.....	376		
Napkins.....	164,982	Total.....	242,137
Overalls.....	694	Total, 1903-4.....	251,224
Pillowcases.....	1,084		
Sheets.....	2,396	Decrease during year....	9,087

For soldier hospital.

Aprons	1	Pajamas, trousers.....	578
Bedspreads	410	Pillowcases	1,236
Blankets, single	81	Sheets	2,690
Caps	1	Shirts, hospital.....	10
Gcwms, operating.....	15	Tablecloths	111
Jackets	5	Towels	3,869
Mattress covers.....	35		
Mosquito bars.....	12	Total	9,703
Pajamas, blouses	649		
Grand total of pieces laundered.....			1,075,916
Grand total of pieces laundered, 1903-4.....			1,131,500
Decrease during year			55,584

COMMISSARY OF CADETS.

Every effort has been made not only to keep the cadet mess at the high level of efficiency it has reached, but to carry it still higher. The entire building has been repainted and decorated throughout, and much additional labor-saving machinery has been added, as its acquirement has been considered advisable and the necessary funds could be obtained, among which may be mentioned an ice-cream freezer, which makes ice cream by means of cold brine and does away with the use of ice and its attendant slop and labor; a knife cleaner and a silver polisher. Funds have also been appropriated for putting a new roof on the old part of the mess, Grant Hall, and equipping same with copper down spouts, to replace the defective roof and tin spouts now used, and both wings of the mess are to be fitted with stand pipes and hose so that an ample supply of water can quickly be obtained on every floor of both wings in case of fire. Work has already begun on both of these improvements.

In a building of this nature wooden floors should be banished, and cement floors for the working rooms are not much better. If the necessary funds can be obtained, it is intended to replace the present wood and cement floors in the north wing with handsome and sanitary tile floors and to wainscot the walls with the same material, which will make these rooms not only much more sanitary, but will add greatly to their attractiveness.

The cost of food supplies has been maintained at the high level of the preceding year, and the cadets eat more than ever.

The cost of subsistence of the mess during the last year has been 63 cents per day as against 64.3 cents per day for the preceding year, which amounts to a decrease in the cost of board per cadet per annum of \$4.75.

I again renew my recommendation that Congress be urged to make a small appropriation to cover the purchase of the necessary silver, china, glass ware, and table linen required in the mess. This would make a material reduction in the cost of their board bill.

Respectfully submitted.

THOS. FRANKLIN,

Captain and Treasurer United States Military Academy.

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

APPENDIX D.

REPORT OF THE COMMANDANT OF CADETS.

HEADQUARTERS UNITED STATES CORPS OF CADETS,
West Point, N. Y., July 31, 1905.

SIR: In compliance with Circular No. 9, Headquarters United States Military Academy, July 26, 1905, I have the honor to submit the following report:

I entered upon the duties of commandant of cadets on June 15, 1905, in compliance with Special Orders, No. 304, dated War Department, Washington, D. C., December 28, 1904.

Up to June 15 and to the present time the regular drills and instructions as set forth in the appended programme have been carried out. This programme covers the period of the year from September 1, 1904, to August 31, 1905. Supplementing this, it is proposed to send the first class to Fort Totten from August 13 to 17, inclusive, for practical instruction in the service of the seacoast guns, range finders, and submarine defense. Colonel Murray, Artillery Corps, commandant of the School of Submarine Defense, through his co-operation and courtesy, makes it possible for the first class to receive this valuable instruction.

Arrangements are being made to take the whole corps of cadets on a practice march of five days under service conditions and using the shelter tents, from August 19 to 23, inclusive. We will have several problems in minor tactics, and it is believed that great practical benefit will result.

In this connection it is earnestly recommended that ten consecutive days of each summer be devoted to a practice march and practical instructions in field work and in the handling and maneuvering of troops.

On August 12 the corps of cadets will go on a practice march to Long Pond, and in the afternoon while returning to the post there will be a problem in minor tactics in which the available enlisted men on the post will take part.

In compliance with instructions from the War Department, a team of cadets will take part in the national match and the cadet match at Sea Girt between August 18 and 31. This will complete the programme of instruction from September 1, 1904, to August 31, 1905.

The corps of cadets attended and took part in the ceremonies incident to the inauguration of President Roosevelt, March 4, 1905.

The usual lectures upon the preparation of records and returns, customs of the service, uniform and equipments, military etiquette, horse equipments, infantry, cavalry, and artillery were delivered by officers of the tactical department.

On the whole the instruction given and the progress made has been satisfactory.

I believe that certain instruction which has become more or less obsolete can be eliminated and more time can be devoted to practical field work of all arms during the period of encampment. If the time can be found, every Saturday, in addition to the ten consecutive days above referred to, with the whole corps, should be devoted to practical field exercises.

The battalion of cadets is proficient in infantry drills. The methods of handling the new cadets this year, adopted by the officer placed over them, was most satisfactory, and due to the fact that in handling them he systematized every detail, I believe the class entered the battalion better set up and better drilled than any previous class. He required the cadets detailed as instructors to comply with the drill regulations and with his own instructions. The new cadet was required to swing the arms as prescribed, and extreme bracing was forbidden. He soon acquired an easy, erect carriage, without stiffness, or swayed back. The continuance of this method is desired.

The amount of individual instruction in riding is too small, because of the size of the riding hall. This deficiency is overcome to some extent by giving instruction to the third class during the summer, and by encouraging voluntary riding, instruction in polo, etc.

The course followed is progressive, and tends to develop confidence in the rider, a knowledge of the treatment and handling of the horse, and to insure a firm and proper seat.

Orders have been issued by the War Department sending eight newly graduated officers to the School of Application, Fort Riley, Kans., for instruction in equitation and horsemanship. This is a step in the right direction, and it is earnestly hoped that every graduate who goes into the cavalry will get the advantage of this course.

The programme for the instruction in artillery, mounted and foot, has been carried out. Cadets of the first class have been instructed in harnessing and unharnessing in the field, going into bivouac, and the duties of drivers, and of officers and non-commissioned officers on the march, and in target practice, at ranges from 1,400 to 2,600 yards.

In mountain artillery the first-class men have been instructed in the service of the piece and in packing it for the march; there will be two day's target practice with this piece this summer.

To receive proper instruction in seacoast artillery at this post it would be necessary to put in more modern equipment. The carriages upon which the 8-inch rifle and the 12-inch mortar are mounted are inferior and more or less obsolete. A completely equipped range tower would be necessary, and the guns would have to be mounted upon a different site.

Whenever the barrack and stable accommodations are available the artillery detachment and horses should be increased and this field battery made a model one, with full complement of officers.

TARGET PRACTICE.

After giving the subject a great deal of thought I am of the firm belief that there is not time enough to prepare a team of cadets for competitions or contests. In order for the cadet to have any chance of success he must have an opportunity for considerable practice. This is impossible because his time is taken up in work which counts in his standing at graduation, and therefore can not be omitted. Further, the range is occupied constantly throughout the summer in giving general instruction, and can only for limited hours be turned over for special practice. With the opportunity for so little practice it would not seem fair to enter a team of cadets against men who have had probably years of practice and are thoroughly familiar with contests and competitions.

To become a good shot necessarily requires much target practice, and this practice can be had only after graduation. The individual work necessary to become an excellent shot is certainly post-graduate work. If the cadet can receive instruction in the essential parts of it we will have to be satisfied.

I recommend that cadets after this year be no longer required to take part in competitions or contests.

I further recommend that the fourth-class instruction in target practice be limited to the preliminary drills, including gallery practice; that the third class take during the summer special course "A," and that the first class take the regular course. This will make the instruction progressive and at the same time afford instructors time to give proper attention to the individual.

The pins and badges prescribed for those making the required scores in these courses should be issued to the cadets.

The revolver is the officer's arm, and the officer should be proficient in its use. Pistol practice should be more fully developed, and medals should be issued for excellence in the use of that arm.

ATHLETICS.

Under the revised schedule for physical training for the next academic year, which for the first time includes all cadets, the following has been prepared by the instructor of gymnastics and physical culture:

FOURTH CLASS COURSE.

This course will in all respects be preliminary and preparatory to the courses of the upper classes.

Its object will be, as at present, to counteract any ill defects due to unaccustomed environment and condition, to develop vigor, to eradicate physical defects, and to lay a thorough foundation in the various methods of physical training to be pursued. The following is an outline of the work it is expected to accomplish during this year:

I. *Preliminary period.*

SETTING UP DRILL.

1. Position of attention. How it may be assumed correctly with least effort and expense.
2. Breathing exercises. Respiration and its relation to physical effort.
3. Simple movements. Development of those muscles upon which the proper position of attention is dependent.
4. Simple movements. Exercises of all parts with a view to general development; and the development of precision and smartness.
5. Combined movements. Exercises in which a larger muscular area is employed with a view to development of physical vigor and power.
6. Dissimilar movements. Simple and complicated with object to develop co-ordination or "muscle sense" and gracefulness.
7. Walking and exercise in walking. With special attention to proper poise and grace of carriage.
8. Running and exercises in running. Explanation of difference between military "double timing" and running when taken as a means to develop lung and leg power, and endurance.

II. *Preparatory period.*

IN THE GYMNASIUM.

1. Prescription or special development work. Special exercises for those requiring them as determined by measurements, strength tests, and examination.
2. Explanation of the use of special development appliances.
3. Chest weights; used as a measure to develop groups of smaller muscles.
4. Setting-up exercises, dumb-bells and wands—employment of groups of large muscles of back, chest, abdomen and legs. Object, development of power, vigor, and endurance.
5. Clubs and medicine balls. Development of skill and smaller muscles of arms and shoulders, etc.
6. Jumping. Development of lower extremities and skill.
7. Climbing. All around development.
8. Apparatus work. The employment of simple movements, fundamentals, the execution of which is dependent upon activity and agility rather than upon severe muscular efforts, and from which the liability to bodily injury or overexertion has been practically eliminated.

SWIMMING.

1. Instructions to those unable to meet the required test—i. e., to swim at least ten minutes without change of stroke.
2. Jumping and diving.
3. Explanation of methods used to resuscitate those apparently dead from drowning.

FENCING.

1. Preliminary instruction in the single rank without weapon.
2. Preliminary instruction in the single rank with foils.
3. Preliminary instruction in the double rank with foils.

SABER.

1. Preliminary instruction with saber in the single rank.
2. Preliminary instruction with saber in the double rank.

BAYONET.

1. Preliminary instruction in the single rank without rifle.
 2. Preliminary instruction in the single rank with rifle.
 3. Preliminary instruction in the double rank with rifle.
- Fencing during the fourth class year will be conducted in classes, the object being to take up only the preliminary and fundamental principles with the various weapons.

BOXING.

1. Preliminary instruction in single rank.
2. Preliminary instruction in double rank.

In this, too, the instruction will be conducted in classes and the work will embrace the guard, foot work, parries, and simple direct leads and counters.

WRESTLING.

1. Preliminary period: Explanations of simple holds.
2. Preliminary period: Simple holds and resultant falls, and the breaks for the simple holds.

THIRD AND SECOND CLASS COURSE.

The work during the first year is entirely preliminary, and instruction is given to large squads at one time, the object being to ground cadets well in the fundamentals of the different branches which constitute the fourth class course. In the second and third years the work in gymnastics, fencing, sparring, and wrestling is advanced progressively, and in order to develop as high a standard of proficiency as time and conditions will admit instruction will be given to small squads, each under the personal supervision of an instructor. This will insure individual instruction and its incident personal development of each cadet in the branches named above.

FIRST CLASS COURSE.

The work during the preceding three years having been entirely practical, that of the last year will deal with the theories of physical training, with a view to their practical application to the needs of our service. In other words, the last year will be spent in fitting cadets to take charge of the physical training of the enlisted men of the Army.

A surgeon lives in camp and holds all sick calls there. This arrangement is very satisfactory and saves much time and bother to cadets needing medical attention and to the sick marchers. The cadet mess is entirely satisfactory and is about as nearly perfect as could be desired.

The shoe furnished the cadets is not satisfactory.

The discipline of the corps of cadets is satisfactory and the highest standard of individual honor governs.

An investigation under the provisions of paragraph 128, United States Military Academy Regulations, relative to hazing, has been held, with results satisfactory to the authorities. No fourth class man has been made to suffer any abuse.

Cadets who show marked inefficiency in personal, moral, and physical qualifications for service as an officer should not be graduated and commissioned into the service. I recommend that whenever a cadet is reported inefficient, as above, by the tactical department, that his case be presented to the academic board, with view of discharging him from the academy.

An officer to perform the duties of battalion adjutant, with the pay and allowance incident to that position, is very much needed here. This is the largest battalion in the service of the United States—in fact, it is about twice the size of the average infantry battalion. The office of the commandant of cadets is one of record, and the amount of paper work performed is enormous and exacting. With a battalion adjutant the commandant would have the proper time to give his attention where it is most needed and where it will do the most good, i. e. to the outdoor practical work and to the discipline of the United States Corps of Cadets.

Some days it requires four or five hours to attend to the paper work. An adjutant could relieve the commandant of a great deal of this work, leaving the questions of uniformity of recommendations as to punishment and disciplinary measures always for the personal action of the commandant.

This officer should be in addition to the number at present on duty in this department.

I earnestly recommend that the authority for the detail of such an officer be granted and provisions made for giving him the extra pay and allowances received by battalion adjutants throughout the Army.

Very respectfully,

ROBT. L. HOWZE,
Lieutenant Colonel, U. S. Army, Commandant of Cadets.

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

Programme of practical military instruction in department of tactics, September 1, 1904, to August 31, 1905.

Instruction.	Detail.		Months.	Hours.	
	Men.	Class.		A. M.	P. M.
INFANTRY.					
Close and extended order; manual of arms and firing, etc.	Whole....	1, 2, 3, 4	Sept. 1-Sept. 9	.....	4.10-5.20
Advance guard, outpost, problems, intrenching.	Detail....	1, 2, 3, 4	Sept. 12-Oct. 20	.....	4.10-5.20
Extended order, company and platoon movements, instruction of guides and officers; tent-pitching and bayonet exercise; manual of arms, sword, facing steps, firing, school of the squad, two days' 6-company battalion close order.	Whole....	1, 2, 3, 4	Oct. 12-Nov. 4	.....	4.10-5.20
Setting up drill, manual of arms, bayonet exercise, etc.; close order and extended order.	.....do....	1, 2, 3, 4	Mar. 16-Mar. 31	.....	4.10-5.20
Tent pitching, outpost, advance and rear guards, intrenching, and infantry, etc.	Detail....	1, 2, 3, 4	Apr. 1-Apr. 30	.....	4.10-5.30
Battalion close order, extended order, castramentation, etc.; 6-company battalion drill; two days' preparation for attack and defense; two days' preparation for exhibition drills.	Whole....	1, 2, 3, 4	May 1-May 31	.....	4.10-5.30
Recruit instruction, physical exercise, infantry school of the soldier, extended order, the squad, intrenching.	.....do....	4	June 16-July 8	7.30- 8.15 8.45- 9.45	4.30-5.30
Infantry instruction with fourth class.	Detail....	1	June 26-July 8	7.10- 8.15	.....
Infantry drill.....	.....do....	$\frac{1}{2}$ of 3	.....do....	9.00-10.00	.....
Infantry drill.....	.....do....	1, 3, 4	July 10-Aug. 14	7.15- 8.00	.....
Infantry drill Saturdays.....	.....do....	1	.....do....	7.15-12.00	.....
Do.....	Whole....	3, 4	.....do....	7.15-12.00	.....
CAVALRY.					
Riding in hall every other week day (Saturday excepted).	Detail....	3	Nov. 1-Mar. 15	.....	2.00-4.00
Equitation, pad and McClellan saddle.	.....do....	1, 2, 3	Sept. 12-Oct. 20	.....	4.10-5.20
Riding in hall every other week day (Wednesday and Saturday excepted).	.....do....	2	Nov. 1-Mar. 31	.....	4.00-6.00
Riding on the plain and in the riding hall (except Saturdays and during February) every other day.	.....do....	1	Sept. 1-June 1	11.00- 1.00	.....
Saturdays same (except during February).	Whole....	1	(Sept. 1-Dec. 1 Mar. 15-June 1)	11.00- 1.00 11.00- 1.00	.....
Equitation, riding pad saddle.....	Detail....	1	Apr. 1-Apr. 30	.....	4.10-5.20
Cavalry instruction.....	Whole....	1	June 26-June 30	11.00-12.30	.....
Do.....	Detail....	3	July 26-July 8	7.15- 8.30	.....
Equitation and riding.....	.....do....	1	July 10-Aug. 14	8.30-10.00	.....
Cavalry instruction.....	.....do....	3	.....do....	7.15- 8.00	.....
Riding in hall (practical military engineering detail on rainy days).	.....do....	3	.....do....	7.15- 8.00	.....
Riding in hall (except practical military engineering detail on rainy days).	.....do....	3	.....do....	8.00- 9.45	.....
FIELD ARTILLERY.					
Instruction in field artillery.....	Detail....	1, 3	Sept. 12-Oct. 20	.....	4.10-5.20
Do.....	.....do....	1, 3	Apr. 1-Apr. 30	.....	4.10-5.30
Instruction in field artillery drivers.....	.....do....	1, 2	.....do....	.....	4.10-5.30
Instruction in artillery (divided between field and mountain).	.....do....	1	July 1-July 8	11.00-12.30	.....
Field artillery.....	.....do....	1, 3	July 10-Aug. 14	8.30-10.00	.....
Field artillery (Saturdays).....	.....do....	1	.....do....	7.15-12.00	.....
The drills in field artillery included instruction in the school of the driver, fitting of harness, use of the coupling rein of offhorses, instruction to post team with their carriages, to hitch and unhitch, employment of field artillery in the field.					

Programme of practical military instruction in department of tactics, September 1, 1904, to August 31, 1905—Continued.

Instruction.	Detail.		Months.	Hours.	
	Men.	Class.		A. M.	P. M.
SIEGE ARTILLERY.					
Drill.....	Detail	1, 2, 4	Apr. 1-Apr. 30		4.10-5.30
Do.....	do.....	4	July 10-Aug. 14	8.30-9.30	
This instruction comprised the service of the piece, nomenclature and general features of the pieces (rifling breech mechanism, etc.), ammunition (weights, velocities), penetration, etc., effects of fire.					
COAST ARTILLERY.					
Drill.....	Detail	3	Sept. 12-Oct. 20		4.10-5.20
Do.....	do.....	3	Apr. 1-Apr. 30		4.10-5.30
Do.....	2 men	1	July 10-Aug. 14	8.30-10.00	
Do.....	Detail	3	do.....	8.30-10.00	
The instruction in coast artillery consists of the care, cleaning, etc., of the rifle and mortar and manual of the same; use of horizontal-position finder; use of plotting board to determine position, speed, and direction of moving vessels.					
MOUNTAIN ARTILLERY.					
Drill.....	Detail	1, 2	Sept. 12-Oct. 20		4.10-5.20
Do.....	do.....	1, 2	Apr. 1-Apr. 30		4.10-5.30
Drill (divided between field and mountain).....	do.....	1	July 1-July 8	11.00-12.30	
The drills included the instruction in the material, the gun, its ammunition, sights, etc., fitting pack saddles to mules, in transportation of the battery by pack mules.					
3.2-INCH GUN FOOT DRILL.					
Drill.....	Detail	3, 4	Sept. 12-Oct. 20		4.10-5.20
Do.....	do.....	2, 4	Apr. 1-Apr. 30		4.10-5.30
Do.....	do.....	1, 4	July 10-Aug. 14	8.30-9.30	
This instruction consists of the service of the piece, instruction in aiming, setting the sights for indicated ranges, and for indicated deflection, fuse setting, finding the range, and finding the length of fuse.					
MACHINE GUNS.					
Drill.....	Detail	3	Apr. 1-Apr. 30		4.10-5.30
Do.....	do.....	3, 4	July 10-Aug. 14	8.30-9.30	
This instruction consisted of nomenclature and service of the piece, maneuver of the horsed-gun detachment, firing piece with blank ammunition and ball ammunition at target range.					
PACK TRAIN.					
Drill.....	Detail	1, 2	Sept. 12-Oct. 20		4.10-5.20
Do.....	do.....	1, 2	Apr. 1-Apr. 30		4.10-5.30
Do.....	do.....	1	June 26-July 8	7.15-10.00	
The drills included instruction in the setting up of the aparejo, fitting the same to mules, and methods of adjusting the loads of different kinds.					
TARGET PRACTICE, RIFLE.					
Rifle practice.....	Detail	4	Sept. 12-Oct. 20		4.10-5.20
Do.....	do.....	4	Apr. 1-Apr. 30		4.10-5.30
Do.....	do.....	1	June 26-July 8	7.15-10.30	
Do.....	do.....	3	do.....	7.15-12.30	
Rifle practice, gallery.....	do.....	4	do.....		2.00-4.00
Rifle practice.....	do.....	1	July 10-Aug. 14	7.15-10.30	
Do.....	do.....	3	do.....	10.10-12.30	
Do.....	do.....	3	do.....	8.30-10.00	
Do.....	do.....	3	do.....	10.10-12.15	

Programme of practical military instruction in department of tactics, September 1, 1904, to August 31, 1905—Continued.

Instruction.	Detail.		Months.	Hours.	
	Men.	Class.		A. M.	P. M.
PISTOL TARGET PRACTICE.					
Pistol practice.....	Detail	1, 2	Apr. 1-Apr. 30		4.10-5.30
Do.....	do.....	1	June 26-July 8	7.15-10.00	
Do.....	do.....	11	July 10-Aug. 14	10.30-12.30	
DANCING.					
Instruction (optional).....	.....	1	July 10-Aug. 14		3.00-4.00
Instruction.....	Detail	3	do.....	11.50-12.45	
Do.....	Half.....	4	do.....	10.00-10.55	
Do.....	do.....	4	do.....	10.55-11.50	
SWIMMING.					
Instruction.....	Detail	3	June 26-July 8	11.45-12.45	
Do.....	Half.....	4	do.....	10.00-11.00	
Do.....	do.....	4	do.....	10.59-11.50	
Instruction (optional).....	.....	4	do.....		3.30-4.30
Instruction (those not qualified).....	.....	1	July 10-Aug. 14		3.00-4.00
Do.....	.....	3	do.....		3.00-4.00
Instruction (half of detail not qualified).....	.....	4	do.....	11.00-11.50	
				11.50-12.45	
PRACTICAL MILITARY ENGINEERING.					
Instruction.....	Half.....	1, 2	Sept. 12-Oct. 20		4.10-5.20
Do.....	do.....	1	Apr. 1-Apr. 30		4.10-5.30
Do.....	Detail	3	June 26-July 8	8.00-12.00	
Do.....	Half.....	1	July 10-Aug. 14	10.30-12.30	
Do.....	Detail	3	do.....	8.30-12.30	
Mounted reconnaissance.....	Half.....	1	Aug. 7-Aug. 10		
Each half of class will occupy 2 entire days in this work.					

Lectures to the fourth class on blue book, Regulations United States Military Academy, care of arm and equipment, security and information, from 12 m. to 12.45 p. m., June 16 to July 6.

Lectures by surgeon on sanitation and application first aid, etc., to first class Saturdays, 12.10 to 12.55 p. m.

Lectures were delivered to the first, third, and fourth classes on days unfit for practical work outdoors, June 26 to July 8, from 9 to 10 a. m., and from July 10 to August 14 for the first and third classes, from 10 to 11 a. m., and the fourth class 9 to 10 a. m., on the following subjects: Frame work of the horse mechanically considered; Simple diseases, and treatment; Stable management and horse-shoeing; Bits and biting, seats and saddles; Field artillery in the field; Care of horses, harness, and equipments; Security and information; Infantry drill regulations; Coast artillery; Miscellaneous.

APPENDIX E.

REPORT OF THE INSTRUCTOR OF PRACTICAL MILITARY ENGINEERING.

UNITED STATES MILITARY ACADEMY,
West Point, N. Y., August 1, 1905.

SIR: In accordance with instructions contained in Circular No. 9, current series, United States Military Academy, I have the honor to submit the following report of operations in the department of practical military engineering covering the period from September 1, 1904, to July 31, 1905.

The annual appropriation of \$2,000 for the use of this department was expended in the purchase of tools, materials, and instruments for cadet instruction and for the extra-duty pay of skilled mechanics from the engineer detachment, as authorized by law.

CADET INSTRUCTION.

Third class.—Beginning June 26, 1905, until July 10, 1905, one-third of the third class attended practical military engineering each day, Sundays excepted, from 8 a. m. to 12 m., and from July 10, 1905, to date one-third of this class attended each day, Saturdays and Sundays excepted, from 8.30 a. m. to 12.30 p. m. Instruction was given in the practical use of surveying instruments and in surveying methods. This class begins the course without previous theoretical instruction, and a certain amount of time is therefore taken up in explaining the essential principles of the instruments and methods before the cadets can begin the actual use of the same.

It has been the endeavor to make the instruction as practical as possible; verbal explanations have been reduced to a minimum and have been supplemented by a printed memorandum placed in the hands of each cadet. This memorandum contains a brief description of the adjustments of the instruments, diagrams illustrating same, and forms of survey notes to which the cadet can refer constantly during the field work and gradually familiarize himself with them.

The instruments were placed in the hands of the cadets as soon as possible, and under their instructors they were required to make all adjustments, to familiarize themselves with all the uses of the instruments, and at this date each section has commenced a topographical survey of a small area on the reservation and will be instructed in the methods of plotting this survey.

The class is divided for purposes of instruction into sections of eight men each, and an instructor is assigned to each section. To provide enough instructors, four additional officers have been detailed on temporary duty to assist the head of the department and the assistant instructor in practical military engineering during the summer course. It seems probable that at least this number of additional instructors will be required in the future during the summer season.

It is believed that the benefits derived by the members of the third class from the summer course in field surveying would be largely increased if they came to the work with at least an elementary knowledge of the principles involved and of the general purposes of plane surveying.

It is therefore earnestly recommended that such a course be provided, if practicable, in the department of mathematics during the fourth class year, just prior to the end of that year. It is believed that at least two weeks could with advantage be devoted to this subject, and in case this work is undertaken by the department of mathematics the necessary additional time should be assigned to that department.

Second class.—During October, 1904, one-half of this class attended drill each day, Wednesdays, Saturdays, and Sundays excepted, from 4.15 p. m. to 5.30 p. m., and the class was given instruction in signaling with the flag and the heliograph. For this instruction an additional officer was detailed on temporary duty during the month of October.

First class.—One-half of this class attended drill each day, Wednesdays, Saturdays, and Sundays excepted, during October, 1904, and April, 1905, from 4.15 p. m. to 5.30 p. m.

During October instruction was given in making (1) rafts of casks; (2) assembling and launching canvas ponton boats; (3) loading ponton wagons; (4) anchoring and maneuvering a flying bridge; (5) the construction and use of a pile driver; (6) mixing and placing concrete; (7) the erection of a trestle bridge on land; (8) construction of improvised bridges.

In this instruction the department was assisted by one officer, who volunteered his services.

During April instruction was given in measuring the flow of small streams, in road location, in the construction of obstacles, in profiling and defilading, in demolitions and blasting, in the erection of trestle bridges on land, in camping expedients, and construction of filters, ovens, etc. In this instruction the department was assisted by an additional officer detailed on temporary duty.

Beginning July 10, 1905, one-half of the class attended drill each week day except Saturdays from 10.30 a. m. to 12.30 p. m. Instruction was given in the fabrication of siege material; in knots and lashings; rigging blocks and falls; erecting shears, gins, and derricks; in the erection of a tall mast; in the use of hydraulic jacks; in throwing up gun pits, gun epaulments; in making sand-bag revetments; in the construction of military mines; in camping expedients; latrines, etc. In this instruction the department was assisted by one officer, who volunteered his services.

In conducting the instruction of the first class the general object kept in view has been the same as in the preceding year, namely, to broaden the course and vary the drills so as to give the cadets a general acquaintance with a number of practical problems of field engineering rather than to make them experts in any particular line of work.

Very respectfully,

HENRY JERVEY,

Captain, Corps of Engineers,

Instructor Practical Military Engineering, U. S. Military Academy.

The ADJUTANT UNITED STATES MILITARY ACADEMY,

West Point, N. Y.

APPENDIX F.

REPORT OF THE INSTRUCTOR OF ORDNANCE AND GUNNERY.

UNITED STATES MILITARY ACADEMY,
OFFICE OF INSTRUCTOR OF ORDNANCE AND GUNNERY,
West Point, N. Y., June 29, 1905.

SIR: I have the honor to submit the following report concerning the department of ordnance and gunnery and the office of post ordnance officer during the fiscal year ending June 30, 1905:

The instruction in the department has proceeded along the usual lines. For the purpose of acquainting the cadets with the various mechanical devices used as aids in performing calculations they have received instruction in the use of the slide rule and of several calculating machines. The required use of the slide rule in the solution of the problems in connection with the daily lessons has given to a large part of the class a satisfactory facility in the use of this instrument. An arithmometer, one of the best of the calculating machines, has been purchased for the use of the department. This machine, together with other machines of like nature in the possession of the other academic departments, has been a subject of instruction.

Models of the latest designs of several classes of war material have been procured during the year. By means of these models, supplementing the text-book descriptions of earlier forms, the instruction is brought as nearly as practicable to date. In addition to the models that appear in the list below as having been received during the year, models of field and siege gun breech mechanisms and a model of a machine used in the manufacture of cartridges are now in process of manufacture. As the department now possesses models of the principal machine tools and of the larger lathes used in gun manufacture, it appears advisable to discontinue the manufacture of further models of machines of this nature and of advantage to substitute models of machines of the manufacturing class designed to perform a certain operation in a process of manufacture. These machines compactly embody a greater variety of mechanical movements and afford better illustrations of the uses of cams, eccentrics, cranks, levers, etc.

The contemplated introduction of an elementary course in mechanical engineering has not been possible this year, due to the change of Instructors and the necessity of the new Instructor gaining experience in the present course of the department. As a revision of the course of this department, together with the other academic courses, is now under consideration by the academic board, the extension of the course in this direction will properly be included in their consideration.

The appropriation bill for the next fiscal year contains an item of \$500 for the purchase of machines, tools, and material for practical instruction of cadets in wood and metal working. This is the first appropriation to be applied toward the establishment of the machine shop that is to be installed for the instruction of cadets in the new academic building. This sum is sufficient for the purchase of a suitable universal milling machine, and will be expended in that way. Further appropriation to be similarly applied will be requested in my annual estimate.

The following models have been received or manufactured during the year:

- Carriage, one-tenth size, 12-inch dis. L. F., model 1901.
- Gun, one-tenth size, 12-inch B. L. rifle, model 1900.
- Barbette carriage, one-tenth size, 6-inch, model 1900.
- Gun, one-tenth size, 6-inch R. F., model 1900.
- Barbette carriage, one-tenth size, 15-pounder, model 1902.
- Gun, one-tenth size, 15-pounder, R. F.
- 3 shrapnel for 3-inch field gun, sectionalized.
- 1 Frankford Arsenal combination fuse, 15 seconds, sectionalized.
- 1 Krupp combination fuse, sectionalized.
- 1 Erhardt combination fuse, sectionalized.
- 1 machine for inserting cartridges in clips, one-half size.

MUSEUM.

The following articles have been donated to the museum during the year:

A collection of Chinese bows, arrows, and other weapons, and lacquered and enamelled saddles. Presented by Major John C. F. Tillson, 4th U. S. Infy.

Bronze copy of medal presented to Maj. Gen. Zachary Taylor by resolution of Congress, March 2, 1847, for gallant services in the battle of Monterey, September, 1846. Presented by Doctor Holden, librarian.

Flag raised by Colonel Ellsworth, of the First New York Fire Zouaves, over the Mansion House at Alexandria, Va. Presented by Mr. William Clausen, New York City.

Two flags carried by General Humphreys during the civil war.

Skeleton used as model by Thomas Nast in making civil war cartoons. Presented by Mrs. Thomas Nast.

Dr. W. R. Whitehead's collection of old arms and armor. Presented by Mrs. W. R. Whitehead.

The crowded state of the museum prevents the exhibition of a number of these gifts. In the new museum, to be provided, much more space will be available, and will permit the exhibition of all objects of interest now on hand and provide room also for future acquisitions.

The Whitehead collection of old arms and armor is particularly interesting and valuable. Room will be made in the present museum for the exhibition of this collection by the temporary removal of some of the older exhibits.

It is found impossible with the present heating arrangements to keep the museum at a comfortable temperature during the winter season, and it has been necessary at times to close it at an early hour during the winter on account of the ill effects on the attendants of the continued low temperature. I would recommend that this defect be corrected by the installation of steam heaters in the room, which will provide a supply of heat additional to that furnished by the present hot-air system.

LABORATORY.

The buildings and grounds of the laboratory have been kept in good condition. The equipment of the shops has been improved by the addition of needed tools.

A considerable amount of work has been done in the machine shop for the other departments of the academy. Electric power is now being installed in the machine shop, and will materially increase the efficiency of the shop and reduce the cost of the work produced in it. The removal of the steam engine will make room for another machine tool, and it is purposed to erect in the shop for the present the universal milling machine to be purchased under the appropriation for the next fiscal year.

Very respectfully,

ORMOND M. LISSAK,
Major, Ordnance Department, U. S. Army,
Instructor Ordnance and Gunnery.

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

APPENDIX G.

COPY OF SUPERINTENDENT'S LETTER OF JUNE 2, 1905,
TO BOARD OF VISITORS.

HEADQUARTERS UNITED STATES MILITARY ACADEMY,
West Point, N. Y., June 2, 1905.

SIR: I have the honor to submit for the consideration of the Board of Visitors the following:

The department of ordnance and gunnery at the Military Academy has as its head a detailed officer with the title of "instructor of ordnance and gunnery" whose term of service in this capacity usually extends over four years. In the course of ordnance and gunnery instruction is given in the principles involved in the construction and use of all war material. This instruction includes the practical application of a great number of principles taught in the other departments and has a value to the future officer quite equal to that given in any course taught at the academy. It is, therefore, proper that the head of this department of instruction should receive the same consideration as to his title and emoluments that is given to the heads of other academic departments. The head of every other academic department has the title of professor and the pay of a lieutenant-colonel at least. The head of the department of law and history is a detailed officer like the head of the department of ordnance and gunnery. The former, however, has the title of professor and the pay of a lieutenant-colonel, while the latter has the title of instructor with the pay of a major. The associate professors in the departments of mathematics and modern languages and the instructor of practical military engineering have the same pay as the instructor of ordnance and gunnery, although the duties of the associate professors are those of assistants and the course of practical military engineering is, as indicated by its title, hardly academic in its nature. There is thus a discrimination against the department of ordnance and gunnery in the nonrecognition of the head of the department who is entitled to consideration with the heads of the other academic departments.

To remedy this condition of affairs requires the action of Congress. The desired result may be obtained by the insertion of a clause in the Military Academy appropriation bill providing that the head of the department of ordnance and gunnery shall be an officer detailed for that purpose from the Army, who, while so serving, shall have the title of professor and the rank and pay of a lieutenant-colonel.

Should the Board of Visitors, after investigation, deem advisable the action suggested above, it is requested that favorable mention of the subject be made in the report of the board.

Very respectfully,

A. L. MILLS,
Brigadier-General, U. S. Army, Superintendent.

HON. FRANKLIN MURPHY,
President Board of Visitors, present.

APPENDIX H.

REPORT OF THE LIBRARIAN.

LIBRARY, UNITED STATES MILITARY ACADEMY,
West Point, N. Y., July 28, 1905.

SIR: I have the honor to submit herewith a brief report of the operations of the library from July 1, 1904, to July 28, 1905.

Users of the library.—The library is used by 96 officers attached to the academy, by their families, by 462 cadets, by 19 enlisted men, and by 95 civilians to whom its privileges have been extended by order of the Superintendent.

Accessions.—Four thousand and twenty-two books, pamphlets, maps, etc., have been added since July 1, 1904. The library now contains about 62,000 volumes. No count has been made, nor will it be desirable to make a count until the reclassification is complete. It will probably be considered good policy at that time to dispose of a considerable number of volumes of absolutely no use in our collections. Every book received has been catalogued and is now on our shelves.

Periodicals.—We now subscribe to 150 periodicals, a large proportion of these being military works.

Recent fiction.—One hundred and twenty-five books per month are supplied by the Bodley Club Library, of Philadelphia. The best novels of the year are purchased.

Opening of the library at night.—During the first hundred years of the library's existence it was closed at sunset or earlier. The Superintendent, in September, 1904, authorized the extension of the hours to 9.30 p. m. on week days, and the plan, which has been carried out since that time, may already be pronounced a success.

Question box.—In December, 1904, a locked box was installed in the main room with the following notice:

"Any question that may be deposited in this box by a cadet, if plainly expressed and written, duly signed, and dated, will be answered by the librarian, either directly, or by reference to books containing the required information, so far as practicable. All proper questions will be treated as confidential."

This box is often used by cadets, though not as fully as desired.

Statistics of circulation.—On October 14, 1904, there were 966 books out of the library, as follows: In the hands of officers, 663; of cadets, 182; enlisted men, 28; of others, 93.

Lectures to cadets.—By direction of the Superintendent, a lecture was given to the fourth class on the use of the library, and one to the third class on the use of reference books, in September, 1904. It is desirable that the second class should attend a lecture on the uses of the card-catalogue system to military men if time can be found for it.

On June 30, 1905, a count of our catalogue cards was made as below. It is approximate only. A single card may correspond to two or more volumes.

Author catalogue:	Cards.
Officers' study (this is a duplicate catalogue now forming)	2,880
Main room (including all authors)	^a 31,178
Shelf catalogue (officers' study; military books only)	4,880
(Of these, 2,325 cards correspond to military history.)	
Shelf catalogue (main room; exclusive of military books)	16,780
Subject catalogue (main room; including military subjects)	^a 61,650
Bibliography of military periodicals, 1895 to date (from the Artillery Journal)	3,300
At the same time a count of books that have no shelf cards was made.	

^a The count includes books owned by the various department libraries stored in the academic building.

	Volumes.
Collected biography	470
Biography in all languages except French	2, 009
Fiction in English	2, 579
Periodicals:	
Scientific	4, 661
Literary	3, 665
Military	1, 824
Congressional documents and bound volumes of newspapers, about.....	5, 000
Total	20, 208

The 16,780 shelf cards in the main room refer to books classed as follows:

	Cards.
Cyclopedias, bibliographies, manuscripts, rarities, etc.....	840
Philosophy, ethics, logic.....	400
Religion and religious history.....	680
Sociology, statistics, political science, law, administration, education	2, 700
Philology and language.....	480
Science.....	3, 760
Useful arts.....	2, 200
Fine arts, sports.....	940
Literature in all languages, including standard fiction	820
Geography, travels, maps, history	3, 960

Exhibitions.—In August, 1904, a number of the reconnaissance maps made by cadets of the first class, under the direction of Major Patrick, Corps of Engineers, were exhibited in the hallways of the library.

By the kindness of the Appalachian Club of Boston, an exhibition of fine photographs of Alpine scenery was made in September of the same year.

The west hallway of the library has been wainscoted with a series of large placards, 44 by 68 inches, that were prepared by Colonel Larned for the Louisiana Purchase Exposition, which describe the organization and administration of the United States Military Academy and of its several departments, and give statistics relating to its history, etc. These are of great interest to our many visitors, as they answer in an authoritative way the questions usually asked.

By direction of the Superintendent a motto chosen from John Milton's Correspondence (1644) has been carved on the south gallery of the library main room, as follows:

"I call a complete and generous education that which fits a man to perform justly, skillfully and magnanimously all the offices, public or private, of peace or war."

This may well serve as a succinct statement of the ideals of the academy.

Books transferred to the post library.—During the year 62 volumes have been transferred to the post library for enlisted men. A number of our illustrated and other periodicals are so transferred at the end of every calendar year.

Shelf room.—In order to reach its highest usefulness the library must exhibit a considerable number of its books in cases that are conveniently accessible to cadets; that is, in cases on the main floor or in the lower galleries, arranged so that the tops of the highest books are not more than 7 feet from the floor. It is only in this way that books can be displayed so as to attract the attention they deserve. Books can be stored in wall cases higher than this, in the attic, and in the basement, to be had on call. Bound volumes of periodicals, Congressional documents, and the like are now so stored.

The temporary wooden cases in which many of our Congressional documents were stored were built before November, 1901. During the winter of 1904-5 they collapsed, and the books are now without proper accommodation. It is essential that substantial but inexpensive fireproof shelves should be built to store our very extensive and valuable series of the publications of Congress (nearly 5,000 volumes).

New bookshelves.—It is hoped to carry all the bookshelves in the building to the ceiling eventually. During the fiscal year 1905-6 this will be done in the northwest room of the second floor (where the books on law, etc., will be stored) and also in the periodical room (which contains all our books on biography and literature). New stacks will be placed in the basement and the present wooden shelves removed.

*Standard books of the literatures of all languages have shelf cards only when the books have been received since November 1, 1901. The same remark is substantially true respecting our maps.

So soon as the appropriation for the new post becomes available, it is hoped to shelve the attic and to make it fireproof, and to shelve the basement and towers throughout, as well as the hallways. A new map room is very much needed on the west side of the library building for the display of books, maps, and pictures.

Reclassification of military books in the library.—The military books of the library were originally catalogued on a purely arbitrary system, which was employed till October, 1904. The system, devised many years ago, had in time broken down, so as to be always inconvenient, and often misleading. Target practice by infantry troops was to be found under "Artillery" for example. Accordingly in September, 1904, a scheme of military classification on the Dewey system was printed from cards prepared by me in February, 1902, which had been in the hands of the New York State Library for criticism since 1903. During July and August, 1904, Mr. Solis-Cohen, of the State Library School, catalogued (with assistance from Sergeant Maher) all our books on military history (some 2,500 titles) on the Dewey system.

During the period, September 15, 1904, to February 9, 1905, Mr. Joseph Martini assisted me in cataloguing a large number of miscellaneous military books, especially those relating to the civil war, 1861-1865. This work was interrupted by my illness, but it is again under way and nearing completion.

For the first time in our history, our extensive military collections are arranged and catalogued in a rational and convenient order, with full cross references. The system employed is convenient and simple, and will not require to be changed for many years.

It may not be superfluous to say that the work of the cataloging clerk is here confined (usually) to writing one author card, complete except for the shelf number. With the book before him, the librarian assigns the shelf number and writes the headings (only) of all subject, cross reference, and shelf cards. The cards are then filled out by the typewriter, and all the cards referring to a given book come once more to the librarian, who revises them before they are finally placed in the catalogues.

Publications.—The manuscript of the volumes memorial of the jubilee of the academy was sent to the Public Printer on July 25, 1904. The first printed copy of the book was received April 10, 1905. It comprises two volumes with the titles: "The Centennial of the United States Military Academy at West Point, N. Y., 1802-1902." Volume I, Addresses and Histories (pp. 924); Vol. II, Statistics and Bibliographies (pp. 433).

The edition comprised 6,000 copies, of which 3,000 were reserved for distribution by the Superintendent of the United States Military Academy. These copies were distributed, during the months of April and May, 1905, to the invited guests at the centennial celebration; to each graduate of the academy living June 30, 1902; to the principal libraries and educational institutions of the United States and foreign countries; to the libraries of the adjutant-generals of the different States; to the Navy Department to be placed in ships' libraries; and to a selected list of persons.

A pamphlet of 46 pages, entitled, "A Plan for the Classification of Military Books on the Decimal System," was printed on the academy press in September, 1904. It will be desirable to issue a revised edition during the next year.

A lecture given annually by the librarian to the cadets of the third class upon the use of reference books is to be printed during the summer of 1905.

As soon as the services of a copyist can be commanded the library will be ready to print a number of finding lists of books on military subjects, which will be very useful to officers and cadets and to the profession generally. The most important will treat of military history, the armies of the nations, artillery, infantry, cavalry, military engineering, etc.

Translations made under direction of the Military Information Division of the General Staff.—By the kindness of Maj. W. D. Beach, chief of the military information division, General Staff, the library regularly receives a typewritten copy of each important translation made for the military information division from foreign books or journals. These translations are at once bound and catalogued, and made available to the officers and cadets of the academy, who are thus provided with the very latest and most important military intelligence in print in an English form.

West Point Army Mess.—At the suggestion of Captain Blakely, Artillery Corps, an excellent arrangement has been made by which the current numbers of 26 of our military periodicals are placed on the tables of the West Point army mess, where they are even more available to officers than at the library. They remain at the mess for periods of a week or more, until they are replaced by later issues.

Selection of books for purchase.—The librarian gratefully acknowledges the aid of the professors and officers of the academy in selecting books for purchase. The general library is now fairly representative of all subjects; the military library will demand great attention for a number of years to come. We should own substantially every

book on the military art published in America, and all important works of the sort printed elsewhere. Manuscripts and maps that give original data should be added as occasion serves.

Paintings.—The fine collection of Sully's portraits in the library was increased in August, 1904, by the transfer of his portrait of Colonel Abert (U. S. M. A., 1811), Chief of Topographical Engineers, 1838-1861. A portrait of Maj. Jonathan Williams, the first Superintendent of the academy, was presented by the heirs of the Edmund Morton estate in June, 1905.

Col. Arthur Herbert of Alexandria has given the library a painting of West Point about 1829, which is a valuable document in our early history. It was formerly owned by Capt. Henry Fairfax (cadet United States Military Academy, 1823-1826).

A portrait of Maj. Gen. Henry Knox is now being copied for the library by Mr. Kenneth Frazier, from the original by Stuart, owned by the city of Boston.

The library force.—The work of the library has increased in so many directions that the number of enlisted men detailed as attendants has never been sufficient to do the clerical work required by a collection of books so extensive and so important as our own. It has therefore always been necessary to give our energies to the most important matters and to slight others scarcely less important. It is hoped that the right choice has been made, and that results will continue to justify it. The most pressing need is for the services of a clerk and messenger boy, competent to quickly get from the shelves any desired book; to return books to their proper places on the shelves; to arrange cards in order before they are placed in the catalogue; and to rearrange books on the shelves, thus saving the time of more highly paid officials; to perform routine and accurate copying of cards for the catalogues, for orders of new books, for binding list, and the like. The time of every employee of the library is now fully occupied, and the above-named work is performed by the present force at odd times and at a disadvantage. The enlisted-men attendants are not skillful at work of this sort. The services of a special clerk at a small salary are very necessary.

It is mere justice to record here the zealous and faithful performance of duty by each and every member of the library force. Especial mention should be made of the intelligent services of Mr. Ostrander, librarian's assistant, and of Sergt. James Maher.

Transfers of duplicates to the Army War College.—It is proposed to transfer to the library of the Army War College duplicates that are desired, which can be spared. In return the war college offers to give us the use of a clerk for a limited time, who will extract from our catalogues information of value to the Army. A beginning has been made in carrying out this plan which ought to be useful to both the libraries concerned. The chief want of the war college library is books, and the chief want of the library of the United States Military Academy is clerical assistance.

Binding.—A plan proposed in 1902 has been carried out during the year, by which Mr. Henry Charnowitz, binder, rents rooms from the academy for his work. It has proved to be very convenient to have a bindery so close at hand.

Gifts.—A list of the presents to the library is annexed. The most important gifts and loans not previously mentioned are:

The Chinese flag used by the besiegers of the Peking legations (lent by Mrs. Harold Hammond).

Chinese block-book—the form for printing two pages (Mrs. Hammond).

Manuscripts of Gen. W. T. Sherman (Miss Sherman).

Manuscript of Benjamin Franklin (Mr. Gratz).

British pay account, 1764 (the Paymaster-General).

Filipino pay account, 1899 (the Paymaster-General).

Respectfully submitted.

EDWARD S. HOLDEN,
Librarian.

The ADJUTANT UNITED STATES MILITARY ACADEMY.

List of gifts to the library to July 1, 1905.

Name of donor.	Books.	Pam- phlets.	Charts.
Adams, Miss B. G.	1		
Adjutant-general State of Connecticut	1		
Adjutant-general State of Kansas	2		
Adjutant-general State of Louisiana	1		
Adjutant-general State of Massachusetts	1	1	
Adjutant-general State of Michigan	46		
Adjutant-general State of New Jersey	3	6	
Adjutant-general State of Virginia	4		
Adjutant-general State of West Virginia	3		
Adjutant-general State of Washington	1		
Adjutant-general Territory of Oklahoma	4		
Adjutant Second U. S. Infantry		3	
Adjutant U. S. Military Academy	2		
Adjutant Philippine constabulary	2		
Alaska Packers' Association	1		
American Irish Historical Society	1		
American Manufacturing Co., New York City		1	
American Hoist and Derrick Co.		2	
American Numismatic and Archaeological Society		3	
American Scenic and Historic Preservation Society		1	
American Society of Civil Engineers		1	
Appalachian Mountain Club		1	
Artillery School		7	
Army War College		2	
Astor, Col. J. J.	1		
Baer, Lieutenant		2	
Bailey, Banks & Biddle (1 photo)		1	
Baldwin Locomotive Works		1	
Barber, Gen. T. H.	1		
Baylor University		5	
Beach, Maj. W. D. (10 translations)	1		
Bigelow, Hon. John	12		
Boston 5-Cent Saving Bank	1		
Bowley, Capt. A. J.		6	
Boynton, H. V.	1		
Braun, Clement & Co.	1		
Brown University		3	
Bush, Mrs. E. G.	2		
Buchanan, R.		1	
Buffalo-Pitts Co.	1		
Bureau of Education, Washington	3		
Bureau of the Census, Washington		2	
Bureau of Insular Affairs, Washington		2	
Butterfield, Mrs. Daniel	1		
Canfield, Dr. J. H.	1		
Carnahan, Jas. R.	1		
Carnegie Institute, Washington, D. C.	1	7	
Chase, W. E.	1		
Clarkson Memorial School of Technology		1	
Chief of Ordnance	4		
Chief of military information division, General Staff (1 manuscript; 1 map)	47	3	
Chief Signal Officer, U. S. Army	1		
Chief Bureau of Statistics		1	
Chief of Engineers		2	
Chief of Mining Bureau		2	
Corps of Engineers (Professional Papers)		2	
Coe, Capt. F. W.	1		
Class of 1905, U. S. Military Academy	1		
College of William and Mary		1	
Commandant of Engineer School, Washington	1		
Commandery of the State of Pennsylvania		1	
Commissary-General, U. S. Army	1		
Commissioner of Education	1		
Commissioner of Navigation	1		
Connecticut State library		2	
Council of the Corporation of Foreign Bondholders, London		6	
Crane, Mrs. A. H. (1 medal)	2		
Cuellar, Maj. S. G.	1		
Dawson, S. E.	1		
Department of Agriculture, Bureau of Forestry	4		
Department of Commerce and Labor	1	2	
Derrick Publishing Co.	1		
Director U. S. Geological Survey	11		
Dodge, Gen. G. M.		7	
Drennan, John G.	1		
Dudley, Colonel, U. S. Army (1 print)			
Duval, G. S.	1		
Ecole des Ponts et Chaussées (France)		1	
Edgerton, Mrs. W. P. (2 maps; 1 atlas; 1 set of plans)			
Edwards, Capt. A. L. (1 poem framed)			
Engineer School of Application		14	
Engineer School and Engineer Depot		2	

List of gifts to the library to July 1, 1905—Continued.

Name of donor.	Books.	Pamphlets.	Charts.
Evans, Henry R.	1		
Everett, Dr. Wm. (1 map of West Point, 1827)	1		
Fairchild, Mary	1		
Farr, L. G. S.	1		
Folsom, Hon. A. A.	1		
General Service and Staff College, U. S. Army		1	
Geographical Survey		1	
Glade, Lieut. Herman, U. S. Army	1		
Gore, Prof. James Howard	1		
Gordon, Mrs. J. W. (pieces of Confederate money)			
Governors Island (Headquarters Department of the East)		1	
Gratz, ———, (1 document signed by Benj. Franklin)			
Greble, Maj. E. St. J., U. S. Army (case of drawers of casts of medals) [lent.]	137		
Guliford Battle Ground Co.		2	
Gurley, W. & L. E.	5		
Hamburg American Steamship Co.		30	
Hamilton, Lieut. R. L., U. S. Army	1		
Hammond, Mrs. Harold (1 plate from Chinese book)	1		
Hart, Reginald L. (collection of military buttons)	1		
Harris, Dr. W. T.	1		
Harvard College	4		
Harvard College, U. S. Army		2	
Headquarters Adjutant-General's office	3		
Headquarters Philippines division, military information division	1		
Headquarters U. S. Military Academy	1	4	
Henkels, S. V.	2		
Herbert, Col. Arthur (painting of West Point)			
Hirth, Doctor, New York City		10	
Holden, Dr. E. S.	4	5	
Howard Clock Co.		1	
Howitzer Board	3		
Howze, Lieutenant-Colonel	1	5	
Huse, Col. Caleb		1	
Imperial Japanese commission, World's Fair	1		
Institution Civil Engineers	1		
Iowa State College of the Agricultural and the Mechanic Arts		1	
Jervay, Capt. Henry, U. S. Army	1		
Johns Hopkins University		2	
Jones, Mr., Savannah, Ga.		1	
Judge-Advocate-General (Report)	6		
Ketchum, J. H.	1		
Lafayette College	1		
Lake Mohonk Arbitration Conference		1	
Landis, Captain (1 old Spanish MS.; 3 views of West Point; 1 Daily Graphic, June 1, 1875; hop cards, etc.)			
Larned, Col. Chas. W., U. S. Army (12 photos; 3 maps)	12	33	
Lewis, Nathan B.	1		
Library of Congress	11	4	
Lissak, Major, U. S. Army	1	2	
Loubat, Duc de	1		
Malone, Capt. Paul B., U. S. Army	2		
Marconi's Wireless Telegraph Co. (Limited)		1	
Marshall Sons & Co., England	1	1	
Martini, Joseph	1		
Massachusetts Agricultural College		1	
Military information division, General Staff, U. S. Army	16		
Military Secretary, U. S. Army	2		
Military Order of Foreign Wars		1	
Mills, Gen. A. L. (1 view of Resaca, Ga., 1864)	2		
Militia and Defense (minister of) (Canada)	3		
Mills, Mrs. A. L. (albums of Spanish-American war)	2		
Miller, Mrs.	1		
Morton, Edmund, estate of (1 oil painting, Col. J. Williams)			
Nast, Mrs. Thomas	1		
Naval War College	1		
Navy Department	2		
New York State Historian	1		
North Carolina Agricultural Experiment Station		1	
Northwestern University		1	
North German Lloyd Cable Code	2		
Nuttman, Captain (1 facsimile of commission of Paul Jones)			
Oberlin College	1		
Otto Wire Rope Co.	1		
Parker, H. W.	2		
Patterson, Mrs. W. H.		1	
Partridge, H. V., Windsor, Vt. (3 military buttons)			
Peabody Institute Library	1		
Peabody Museum of Archeology and Ethnology		1	
Pelton Water Wheel Co.		1	
Pennsylvania Society Sons of the Revolution	1		
Plans and specifications for the new cadet barracks			
Plate, Dr. Otto (1 photo)			

List of gifts to the Library to July 1, 1905—Continued.

Name of donor.	Books.	Pam- phlets.	Charts.
Pope, F. H. (3 photos).....	4		
Post, Geo. B.....		1	
Princeton University.....	1		
Putnam, Prof. F. W.....	1		
Quartermaster-General.....	1		
Rawle, W. B.....	1		
Reeve, Capt. Horace M., U. S. Army, General Staff.....	4		
Rockwell, John.....		14	
Robins Belt Co.....		2	
Robinson, Capt. Wirt.....		1	
Rochester Society of Science.....		1	
Rosengarten, J. G.....	1		
Schaft, Morris.....	1		
Schuyler, Col. Philip.....	1		
Second U. S. Infantry.....		1	
Sellers, Wm., & Co.....	8		
Secretary Association of Graduates U. S. M. A.....	2		
Secretary Commonwealth, Boston, Mass.....	1		
Secretary Royal Engineers' Institute.....	2		
Secretary Virginia Military Institute.....		1	
Sharpe, Lieut. Col. A. C.....	1		
Sherman, Miss (invitation and letter of General Sherman).....		1	
Smithsonian Institution.....	1		
Society Colonial Wars, District of Columbia.....	1		
Spon and Chamberlain, New York City.....	1		
State library, Trenton, N. J.....	1		
Stephenson, Chas. S. (1 map of West Point).....			
Stevens, Col. Daniel (collection of military buttons).....			
Stuebner Iron Works.....	1		
Superintendent of public documents.....	156		
Swarthmore College Bulletin.....			
Swift, Maj. Eben.....	1		
Towne, Mr.....	1		
Tricoche, George Westler, Paris, France.....		1	
Tripp, Mr.....	2		
Union Club, New York.....	1		
University of California.....		6	
University of Chicago Press.....	1		
University Club, New York.....	1		
University of Colorado.....	1	2	
University of Kansas.....		1	
University of Missouri.....		2	
University of Nebraska.....	1		
University of North Carolina.....		1	
University of New York.....	1		
University of Rochester.....	1		
University of Texas, mineral survey.....		1	
University of Wisconsin (1 medal).....	3	4	
United States Navy Department.....	1		
United States Military Academy.....	1		
United States Geological Survey.....	81		
United States Revenue-Cutter Service.....	1		
Walsh, Rev. Dr. Wm.....	46		
Ward, Mr. (1 map).....			
War Department.....	7		
Washington University, St. Louis, Mo.....		2	
Washington University Association.....		1	
Washington and Jefferson College.....		1	
Webb, W. Seward.....	4		
Welles, Dr. Chas., London.....	1		
Westinghouse Manufacturing Co.....		2	
Westervelt, Lieutenant.....		1	
Wesleyan University.....		1	
Willcox, Captain (14 steel engravings).....			
Williams, Maj. R. E.....	2		
Williams College.....	1		
Wilson, Gen. J. H.....	1		
West Point army mess.....	2		
Wood, Mr. C. E. S.....	1		
Yerkes Observatory.....	1		

APPENDIX I.

REPORT OF THE OFFICER IN CHARGE OF WATER SUPPLY.

UNITED STATES MILITARY ACADEMY,
West Point, N. Y., September 1, 1905.

SIR: I have the honor to submit the following report covering the year ending August 31, 1905:

ENGINEER TROOPS.

By General Orders, No. 62, War Department, April 17, 1905, the strength of this detachment was increased to 96 men; by letter of the Military Secretary, dated May 15, 1905, an additional sergeant was added to the detachment, so that its total maximum strength at present is 97 men.

The detachment furnished a daily detail of 11 men for the post guard, needful details for cadet instruction in target practice and drills in practical military engineering, and kept the batteries of the post thoroughly policed.

During the summer months the detachment received instruction in target practice, infantry and engineer drills, and in signaling; during the winter months a morning school was conducted for instruction in common school studies, and in the afternoons instruction was given in gallery practice, indoor engineer drills, and in the carpenter and blacksmith shops. The discipline of the detachment has been very good.

WATERWORKS.

The annual appropriation of \$1,200 for the care of the waterworks has been expended in washing and replacing filter sand in the main filter beds, in the general policing of the reservoir area, for tools, and for other necessary work of maintenance and repair.

At present this reservation is dependent for its water supply upon the water collected and stored in Round Pond and in Lusk reservoir. Owing to the deficiency of the rainfall during the summer months just passed, there has been but little inflow into these reservoirs since about May 1, 1905. Already Round Pond has been drawn down about 5½ feet, and Lusk reservoir is at a lower level than it has been for some years. Unless heavy rains give speedy relief it will undoubtedly be necessary to take measures to restrict the use of water temporarily to absolutely necessary purposes.

This state of affairs emphasizes strongly the necessity for the increased water supply, which steps have been taken to secure.

INCREASE OF THE WATER SUPPLY.

During the past year the work of providing an increased water supply for this post has been prosecuted with the greatest possible vigor. There have been many delays due to the legal difficulties of acquiring the necessary land and water rights and the right of way for the pipe line, but these are being gradually overcome and it is hoped that at an early date all such questions will be finally settled.

A contract was made with the United States Cast Iron Pipe and Foundry Company for furnishing the necessary cast-iron pipe and special castings for the pipe line. Under this contract to date nearly one-half the total amount of pipe has been delivered or is en route to its destination.

A contract was made with Lloyd Collis (Incorporated) for laying the pipe line and constructing a small intake dam on Popolopen Creek. The contractor started work in June, 1905. There have been many difficulties encountered and considerable trouble experienced in procuring the necessary labor, but at this date the work is progressing in a fairly satisfactory manner, and the contractor is using every effort to

push it as rapidly as possible. The small dam has been completed and about 1 mile of trench has been opened, most of which has been finished, and the work of laying the pipe is about to start. Unless unforeseen difficulties arise, it is expected that a considerable length of the pipe line will be completed before the winter makes it necessary to suspend work for the season.

Numerous measurements have been made of the flow of water in Popolopen Creek, and the results indicate that when the pipe line has been completed to Lusk reservoir the natural flow of the stream will be adequate to furnish all the water that can be needed at this post for many years.

REPAIRS TO FORT PUTNAM.

At the last session of Congress the sum of \$5,000 was appropriated for beginning the repairs to Fort Putnam. A preliminary study was made of this old fortification, all available maps, written and printed records were consulted, and the old lines were run on the ground. This study enabled the trace of the parapet to be determined with a very fair degree of accuracy.

The active work of rebuilding the parapet wall was commenced on August 1 and has been prosecuted as vigorously as possible up to date. The facing of the old wall for a considerable distance has been torn down and is being replaced by stone laid in strong Portland cement mortar. To date about 100 cubic yards of wall have been thus laid up. It was found that much of the old facing stone, which had been in place for about one hundred and eleven years, had so greatly deteriorated that it was impracticable to use it again for facing stone; it has, therefore, been necessary to procure a considerable amount of new stone, and it is probable that this must be done for the greater part of the new masonry wall. This may make the work of rebuilding this wall somewhat more costly than was at first anticipated, but it is believed that it can yet be done within the estimate.

Very respectfully,

MASON M. PATRICK,
Major, Corps of Engineers.

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

APPENDIX J.

REPORT OF THE QUARTERMASTER AND DISBURSING OFFICER.

OFFICE QUARTERMASTER AND DISBURSING OFFICER,
West Point, N. Y., August 1, 1905.

SIR: In compliance with instructions from your office, per Circular No. 9, dated July 26, current year, I have the honor to submit herewith the following report, in triplicate, of the operations of the Quartermaster's Department, United States Military Academy, Quartermaster's Department, U. S. Army, and of the Gas Works, United States Military Academy, for the year ending June 30, 1905.

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 as follows:

No.	Contractor.	Date.	Purpose.
1	Cram, Goodhue & Ferguson.....	Aug. 12, 1903	Developing accepted competitive design for improvements of West Point, N. Y.
2	Henry C. Meyer, jr.....	Oct. 7, 1903	Design and supervise construction and install heating and lighting plant.
3	Olmsted Brothers.....	May 26, 1904	Making and preparing preliminary and general plans for landscape improvement.
4	Cassidy & Sons, Manufacturing Co.	June 10, 1904	Furnishing and installing gas and electric fixtures in the cadet hospital.
5	Charles Laubenheimer & Co.....	June 14, 1904	Furnishing and installing electric conduit and wiring for the cadet hospital.
6	Dickson & Eddy.....	June 20, 1904	Anthracite coal.
7	Union Petroleum Co.....	June 27, 1904	Gas oil.
8	Osceola Coal Co.....	July 7, 1904	Gas coal.
9	Long Island Charcoal Co.....	July 9, 1904	Charcoal.
10	John Maxwell's Sons.....	Aug. 6, 1904	Granite curbing.
11	General Electric Co.....	Dec. 6, 1904	Construction and installation of generators, motor generators, and switchboard.
12	The Babcock & Wilcox Co.....	Feb. 7, 1905	Furnishing, erecting, and installing boiler and mechanical draft plant.
13	Providence Engineering Works.	Mar. 27, 1905	Construction and installation of boilers and engines for electric lighting.
14	Cyrus Borgner.....	May 15, 1905	Floor benches for gas works.
15	Buffalo Steam Roller Co.....	May 22, 1905	Steam road roller.
16	United States Cast Iron Pipe and Foundry Co.	May 18, 1905	Cast-iron pipe and special castings.
17	Robins Conveying Belt Co.....	May 19, 1905	Furnishing and installing coal-conveying apparatus for heating and lighting plant.
18	Broderick & Wind Engineering and Construction Co.	May 24, 1905	Construction of 2 double and 4 triple sets of officers' quarters, and erection of cadet barracks.
19	Lloyd Collis (Incorporated).....	June 3, 1905	Building intake and laying 20-inch cast-iron water pipe.

All of the above contracts, with the exception of those enumerated in Nos. 1, 2, 3, and 11 to 19, inclusive, have been completed.

The following improvements and repairs have been made:

Erecting building for water-closet with 12 closet bowls, urinals, etc., at the E. M. C. schoolhouse.

Erecting new guardhouse for the artillery detachment.

Erecting two-story addition against south side of quarters No. 37.

Painting and papering quarters No. 39; book shelves and new double doors.

- Rebuilding ice house holding 1,500 tons of ice at the Sinclair Pond.
- Building cold storage ice box at the post exchange meat market.
- Renovating, papering, and painting quarters No. 21.
- Constructing new kitchen porch at quarters No. 21; laying new floors in two attic rooms.
- Placing new tin roof on post-office kitchen.
- Painting upper and lower halls of the headquarters building.
- Placing new brick floors in front of retorts in the gas house.
- Rebuilding chimneys of 40 sets of enlisted men's quarters.
- Building target house for pistol practice on back road.
- Whitewashing riding hall and painting wainscoting in same.
- Building stable for polo ponies on north side of cavalry riding hall.
- Repairing roof of cavalry barracks.
- Repairing and renewing furnace pipes and furnaces throughout the post.
- Building lockers and shelving for the soldiers' hospital.
- Building platform and stairway in rear of the cadet hospital.
- Placing new roof on the cadet laundry.
- Reshingling quarters at the cadet mess garden.
- Building cobblestone gutters and brick boxes on the east, west, and north sides of the cadet commissary.
- Painting interior of the cadet store.
- Painting grand stand for athletic games.
- Repairing roof of memorial hall; repairing walls and painting ceilings and walls in basement and subbasement, including all halls.
- Building granolithic walk to coal bin in front of officers' mess.
- Painting and renovating all the living rooms at the observatory; and repairing and painting dome at the observatory.
- Overhauling and repairing slates in the academic building; repairing elevator and repairing tiled floors throughout; also bronzing the radiators in halls.
- Building new ice box for the army service barracks.
- Renovating interior of quarters No. 61.
- Repairing basement and rebuilding areas of quarters No. 55.
- Renovating and painting interior of quarters No. 49.
- Renovating and painting interior of quarters No. 48.
- Renovating and painting interior of quarters No. 47.
- Renovating and painting interior of quarters No. 44.
- Renovating and painting parlor and dining room of quarters No. 42.
- Renovating and painting interior of quarters No. 36.
- Placing new plaster ceiling in dining room of quarters No. 33; painting woodwork and papering walls and ceilings in library.
- Renewing fence in front of quarters No. 31.
- Renovating and painting rooms in quarters No. 29.
- Papering and painting parlor and bedrooms at quarters No. 27, also new ceiling in bedroom.
- Renovating and painting interior of quarters No. 26.
- Painting greenhouse and conservatory of quarters No. 23.
- Renovating and painting interior of quarters No. 17.
- Renovating and painting interior of quarters No. 13.
- Renovating and painting interior of quarters No. 12.
- Painting halls and bedrooms of quarters No. 11.
- Painting and renovating interior of quarters No. 9.
- Painting and papering interior of quarters No. 7.
- Painting and papering interior of quarters No. 5.
- Building new picket fence in front of quarters No. 5.
- Papering and painting interior of quarters No. 2.
- Whitewashing and painting basement of quarters H.
- Painting and papering interior of quarters B.
- Painting and renovating interior of quarters A.
- Constructing 79 picture frames for department of tactics.
- Putting new tin roofs, leaders, and gutters on 30 sets of enlisted men's quarters and painting each two coats of paint.
- Putting new board roof on Quartermaster's coal shed and painting same.
- Painting porches and papering and painting parlor and dining room of quarters No. 55.
- Renovating and painting interior of West Point restaurant.
- Renovating and painting the interior of the West Point hotel; also painting porches of same.

- Painting the exterior woodwork of memorial hall.
- Painting the interior of quarters occupied by the superintendent of gas works.
- Building storm shed for the gymnasium, planing bowling alleys, painting walls of bowling alley and swimming tank.
- Building ten new storm sheds for new officers' quarters at south end of post.
- Painting interior walls of band practice room.
- Painting soldiers' bath house.
- Painting porches of quarters No. 57.
- Painting galleries, ladies' toilet room, and telephone room in memorial hall.
- Building blacksmith shop near riding hall.
- Papering and painting rooms in quarters No. 23.
- Repointing terrace at officers' mess.
- Plastering and renovating interior of cadet barracks.
- Plastering and renovating interior of cadet guardhouse.
- Plastering and renovating interior of cadet sinks.
- Building two-story frame addition against the north side of the army service barracks.
- Repairing and tarring rail fences throughout the post.
- Repairing tent platforms in cadet camp.
- Building platform 40 feet square for band in cadet camp.
- Renovating and painting interior of cadet camp sinks.
- Repointing stonework of Kosciusko monument and painting iron fence around same.
- Painting lamp-posts and lamps throughout the post.
- Painting iron area fence in front of cadet barracks, academic building, and cadet mess hall.
- Painting the interior of the cadet mess and doing about 600 jobs of various kinds in the same place.
- Finishing 5,000 jobs on order cards of various kinds throughout the post.
- All steam plants on post kept in repair and proper working order.
- Statement of receipts and disbursements under various heads of appropriations during the year ending June 30, current year, is attached and marked "A."

QUARTERMASTER'S DEPARTMENT, UNITED STATES ARMY.

The duties pertaining to this office are enumerated in paragraph 1009, Army Regulations, 1904.

Contracts entered into during the year and prior thereto remaining in force in part or for the whole of the fiscal year are as follows:

No.	Contractor.	Date.	Purpose.
1	Dickson & Eddy.....	Apr. 18, 1904	Anthracite coal.
2	Clark & Wilkins.....	.....do.....	Hard and soft pine wood.
3	William E. Dante.....	Aug. 29, 1904	Hay.
4	Chas. L. Rickerson.....	.....do.....	Oats, middlings, and bran.
5	Joseph T. Gaynor.....	Sept. 1, 1904	Straw.
6	Alexander S. Traub.....	Apr. 14, 1905	Remodeling engineer and ordnance boathouse.

All of the above contracts have been completed with the exception of No. 6.

The following improvements and repairs were made by the Quartermaster's Department during the year:

General repairs to the quarters occupied by the officers on duty with troops and of the married enlisted men.

Lavatory for main guardhouse.

Water-closet and urinal for ordnance barracks.

Repairs to soldiers' hospital and covering steam pipes in same.

Building stable for artillery detachment, 170 feet long by 70 feet wide.

Artillery barracks: Inside walls, ceilings, and woodwork painted; exterior woodwork painted; doorways repaired; floor of lavatory repaired; exterior walls painted.

Army service barracks: Repairing plaster, painting interior walls, ceilings, and gutters.

Fire-engine house: New doors; new wooden ceilings; repairing plaster on walls; painting interior with cold-water paint; painting exterior walls, woodwork, and roof; repairing floor and windows.

Main guard house: New porch and roof; plastering repaired throughout; walls and ceilings whitewashed and woodwork painted; new furnace in basement; closet and wash basin in prisoners' room.

Post commissary: Whitewashing walls and ceilings and painting woodwork of store rooms; calcimining walls and ceiling of office and painting woodwork.

Post exchange: Painting interior walls, ceilings and woodwork; painting exterior woodwork; new leaders and repairing gutters; pointing brick and stone work.

South guard house: Plastering repaired; interior walls, ceilings and woodwork painted; exterior walls pointed and woodwork painted; roof painted.

Barracks for field musicians: New basement steps and coal box; painting exterior of building; repairing roof; repairing and renewing plastering; painting interior walls, woodwork, and ceilings.

Band barracks: Roofs and gutters repaired and renewed where necessary; rebuilding 90 feet of area wall; repairing and renewing concrete drains and gutters; painting interior woodwork.

Under date of September 8, 1904, an allotment of \$3,000 from the appropriation for army transportation was made by the War Department for the purpose of enlarging the present ordnance boathouse and combining it with the engineer boathouse for the protection of the electric launch furnished the post last year and other small boats belonging to the Quartermaster's Department at this place. As it was too late in the year to commence the work and get it completed before freezing of the river, advertisement for proposals was postponed until last spring. After due advertisement award of contract was made on April 14, 1905, and the work started in the latter part of the month. It will probably be completed by the latter part of August.

Transportation.—In addition to the daily demand made upon this office for draft purposes and the policing of the post, transportation has been furnished for hauling freight and materials during the year amounting in weight to 56,248 tons. During the year the quartermaster had available to meet these demands 78 horses and 16 mules. This number of animals was able to meet normal or average requirements, and when these were exceeded it was necessary to employ such civilian teams as could be secured. It will be difficult for several years to come, on account of the large amount of construction that will be going on, to hire these outside teams to meet emergency demands.

In anticipation of this condition, and for the purpose of improving the service of transportation at this post, this office, in April, 1904, forwarded a requisition for the supply of two electric automobile trucks with a carrying capacity of 3 tons each. Before submitting this requisition I made careful inquiries as to the ability of these machines to meet the practical and special requirements and conditions at this place. The result of these inquiries was favorable, and it has since been confirmed by the action taken by express and transportation companies in the various large cities, which have during the past year largely replaced their teams with automobile trucks. I have kept data of the work done by a small gasoline automobile truck sent here a year ago by the Quartermaster-General for test and in comparison with work done by teams. This has further confirmed the figures furnished with my request for the trucks, which show that the hauling can be done by motor trucks at one-half the cost per ton mile possible with the use of teams of two horses.

A 3-ton electric truck will do the work of three teams in less time and at less cost. It is true that the first cost of the electric trucks is more than that of teams and wagons, but the saving is so much greater that this difference will be more than made up in the course of a few years.

Post cemetery.—This cemetery has been in use since 1816. The total number of interments up to June 30, 1905, is 1,277. Twenty-six interments were made between July 1, 1904, and June 30, 1905. The care and maintenance of this cemetery is provided for in the appropriations for the United States Military Academy. The present Superintendent has kept it in excellent condition.

A small appropriation was obtained from Congress last winter for the purpose of enlarging his house, which is entirely too small and not at all in harmony with the surroundings. The appropriation did not become available until July 1. Plans, however, have been prepared, and the work will be started this month.

Detachment of Army Service Men, Quartermaster's Department.—Since July 1, 1905, this detachment has had a total strength of 175, and furnished men required as clerks, janitors, mechanics of various classes, printers, teamsters, engineers, firemen, and laborers. It is still insufficient to meet the demands which seem to increase annually and which will undoubtedly increase in the near future when some of the new public buildings, such as the new academy building, headquarters building, and gymnasium are completed. Additional men are required in memorial hall, library, and gymnasium for the proper care and maintenance of these buildings, and in the case of the gymnasium to assist in the instruction of cadets, which now applies to the entire corps instead of as formerly to the fourth class only.

A noncommissioned officer and two men are now detailed constantly on police duty to enforce guard, police, and fire regulations, not included in the duties of the armed guard which is mounted daily.

Owing to the increase in the size of the post proper and the extent of grounds now covered and that will be covered by the new buildings, an increase in the size of this police detail I consider to be absolutely necessary for the proper care and protection of public buildings and property. This will be especially the case during the next six or seven years while the work of construction and improvement is going on, when a large number of workmen employed by the contractors will of necessity be on the reservation. This detail should consist of at least 3 noncommissioned officers and 9 privates, and required to be on duty day and night in eight-hour reliefs. The number of laborers available for general work is also short and necessitates the hire of civilians during most of the season. I believe that an increase in the size of the detachment of 25 men, giving it a total strength of 200, the number requested two years ago, when the increase of 25 was provided, is very necessary, and I recommend that an effort be made at the coming session of Congress to secure it.

The work of the men in the detachment is, with few exceptions, done faithfully and well, and, as care is exercised in enlisting men for it, it has become a body of excellent and self-respecting men. As far as possible, enlistments are confined to men who have had previous service in the Army and who have been discharged with "Excellent" character. No man is taken under any circumstances who has not received a character of at least "Very good."

Fuel.—The consumption of coal was very heavy last year, as it was the winter before, owing to the unusually cold weather which lasted some three or four months. It is expected, however, that with the appropriations obtained last winter we shall be in a position to meet any such conditions as have prevailed heretofore.

Disbursements.—The amounts received, disbursed, etc., under the various heads of appropriations are shown by the accompanying statement, marked "B."

PUBLIC WORKS.

Work upon the road from south dock to south end of post, referred to in my last annual report as being prosecuted, was practically finished last fall and the road thrown open for traffic. The use of this road in connection with the new work going on at the south end of the post has shown abundant justification for its construction and completion at this time.

In the current Military Academy bill there is an appropriation for regrading cadet camp, subsoil drains, surfacing the companies' streets with broken stone, and replacing present unsightly wooden posts and rails used for supporting the tents with iron posts and rails which can be removed when the camp is not occupied. Plans for this work are being completed and it is expected it will be started about September 1, after the cadets vacate the camp. All of the work contemplated will be completed before the cadets go into camp next June.

During the year a considerable portion of the roads in the main part of the post were repaired, and that portion of the road between the chapel and the hotel was rebuilt. As funds become available and time permits, it is expected to continue the work of putting the roads throughout the post and reservation in good serviceable condition.

The work of repairing and repainting the walls, ceilings, woodwork, and ironwork of the academy was commenced July 1, when the appropriation therefor became available. All or nearly all of this work will be completed by the end of August.

Under date of June 5, 1905 (Special Orders, No. 109, Headquarters, United States Military Academy), Capt. H. W. Stickle, Corps of Engineers, was detailed as my assistant in connection with the work of construction, it being found impossible for me alone to attend to the innumerable details connected with the actual work of building and at the same time give attention to other duties. Captain Stickle has shown himself to be well qualified for the work and has thus far given me a great deal of valuable assistance in its prosecution.

While absent from my duties last spring owing to illness, the work of the disbursing officer and quartermaster of the Military Academy was attended to by First Lieut. R. C. Foy, First Cavalry, assistant to the quartermaster, in a very able, thorough, and satisfactory manner. I desire to express officially my appreciation of the thoroughness with which he has attended to his duties, not only at this period but since he has been here in his present capacity.

Since my last annual report plans and specifications have been completed and approved for cadet barracks, cadet headquarters and store, post headquarters, 7 buildings comprising 19 sets of officers' quarters, guardhouse and fire engine house, aca-

demio building, and quartermaster and commissary storehouse and shops. There were also completed by the consulting engineer plans and specifications for the boilers, engines, and electrical equipment for the new heating and lighting plant.

The architects are now working on plans for the cadet chapel, gymnasium, bachelor officers' quarters, hotel, memorial gateway, elevator, new dock, and approaches to the railroad station and elevator, and quartermaster's stable and wagon shed.

The consulting engineer has nearly completed the plans and specifications for the building for the heating and lighting plant, and for the steam tunnels and mains and electrical conduits for the lighting system. It is expected that the plans for the building proper will be completed very soon, and possibly in time to advertise for bids for its construction by September 1.

In addition to the above this office has been preparing plans, in consultation with Messrs. Olmsted Brothers, for roads, walks, retaining walls, terraces, etc., which are required for new buildings, and has prepared plans for sewer systems, water and gas connections for the new buildings.

In the interests of economy and to avoid any damage to the railroad tunnel and adjacent railroad property, and possible injury to the site itself, this office, with the approval of the Superintendent and the War Department, undertook the work of excavating for the proposed heating and lighting plant, which is located immediately south of the present riding hall and directly over the railroad tunnel. This work commenced on January 17, 1905, and involved the removal of about 17,500 cubic yards of rock, at an estimated cost of \$2 per cubic yard. The work required careful handling and good judgment in the use of explosives, and I take pleasure in reporting that thus far it has been successfully carried on, largely due to the experience and ability of the foreman in charge, and that it will be completed within the time originally set—that is, by September 1, 1905. The cost will in all probability be less than \$2 per cubic yard. By October next it should be possible to commence the construction of the building itself, which will be by contract.

On March 21, 1905, advertisement was issued inviting proposals to be opened April 20, 1905, for the construction of two double and four triple sets of officers' quarters and the cadet barracks. The bids were opened on the date set and the award was finally made to the lowest bidder for the entire group of buildings—The Broderrick & Wind Engineering and Construction Company, of New York City—at a total cost of \$507,500. Contract was duly made and work on the officers' quarters commenced as soon as the weather permitted—that is, on May 15, 1905. Work on the cadet barracks was not started until July 1, as the site was occupied by several sets of quarters from which the occupants could not be removed before that date. At the present time nearly all excavation work for the officers' quarters has been completed, about 50 per cent of the concrete footings, and about 25 per cent of the foundation walls. A large amount of material has been delivered, and it is expected that, barring unavoidable delays, these quarters will be ready for occupation early in the year 1906.

On the cadet barracks all of the buildings occupying the site have been removed and the excavation about 60 per cent completed. Preparations are being made to start the concrete footings.

On June 29, 1905, advertisement was issued for proposals for the construction of barracks and stables for the cavalry and artillery detachments and for one gun shed in connection therewith. Bids were opened on July 29, 1905, and award of contract has been made to the lowest bidder for the entire group of buildings—the Church Construction Company, of New York City—at their bid of \$400,376. It is expected that this work will be started by the 15th of August and that it will be completed in about twelve months.

On September 7, 1904, advertisement was issued inviting proposals for the construction and installation of 4 water tube boilers, 2 tandem compound and 1 simple Corliss engines, and electrical equipment for the new power house. Bids were opened October 6 and recommendations made for the award of contracts as follows: Water tube boilers to the Babcock & Wilcox Company, of New York City; engines to the Providence Engineering Works, Providence, R. I., and electrical equipment to the General Electric Company, Schenectady, N. Y.

The War Department approved the award for the electrical equipment to the General Electric Company, at their bid of \$42,700, it being the lowest, but directed the rejection of all the bids for the boilers and engines and readvertisement after making certain modifications in the specifications. Advertisement was again issued on January 7, 1905, inviting proposals for boilers and on January 23, 1905, inviting proposals for engines. Bids for the former were opened on January 28, 1905, and award made upon the recommendation of this office to the Babcock & Wilcox Company at their bid of \$37,447.

Proposals for the engines were opened on February 15, 1905, and award made, upon the recommendation of this office, to the Providence Engineering Works at their bid of \$32,970.

Work upon all of the above contracts for boilers, engines, and electrical equipment was commenced by the successful bidders promptly after they received notification of the award, and it is expected that the different apparatus will be completed and ready for installation when the building is sufficiently completed to receive it.

On March 6, 1905, advertisement was issued inviting proposals for furnishing and installing coal-conveying apparatus, forming a part of the equipment of the heating and lighting plant. Bids were opened on March 30, 1905, and upon recommendation of this office contract was awarded to the Robbins Belt Conveyor Company, at their bid of \$19,610. The contractors are now constructing the apparatus, and it is expected they will have it ready for installation at the proper time.

During the winter and spring, plans, specifications, and estimates were prepared by this office for the construction of the necessary sewer systems for the buildings at the south end of the post now under construction or whose construction is about to be started, and for a storm sewer and drain required for draining the ground at the south end of the post, which is to be used for cavalry and artillery drill purposes. These plans and specifications were approved and allotments made from the general appropriation for the execution of the work. The plans and estimates also included the necessary water and gas connections required for these buildings.

It was deemed advisable to construct the house sewers and lay the water and gas mains by hire of labor and purchase of material rather than to do the work by contract, as it was necessary that this work should be prosecuted in connection with the construction of the building and was of such a character that it would have been difficult to have had it done by contract.

It was decided, however, to build the storm sewer and drain by contract, and advertisement calling for proposals for that work was issued July 10, 1905. Proposals are to be opened on August 8, 1905.

In the Military Academy appropriation bill approved March 3, 1905, was an item appropriating \$2,500 for building a provisional contagious-disease hospital, to be immediately available. This is a one-story temporary frame building, intended for use of cadets, containing two small wards for contagious diseases and accommodations for necessary attendants. Work was commenced about May 1, and it is expected that the building will be completed and ready before the end of August. The delay in its completion has been due to the difficulty in getting material required delivered promptly and to the smallness of the appropriation.

A suitable brick stable to accommodate ambulances and animals attached to the soldiers' hospital should be constructed in place of the present frame building, which has about outlived its usefulness. Such a building will enable the surgeon to keep the ambulances and animals adjacent to the hospital, where they should be located and ready for emergency calls, instead of as at present at the quartermaster's stable, which is remote from the hospital, and where delay in meeting calls occurs, due to the time consumed in calling up the stable by telephone, turning out the driver and animals, and getting to the place indicated. A suitable brick building with slate roof and containing necessary accommodations could be constructed for about \$5,000, and it is recommended that an appropriation for that purpose be inserted in the next year's Military Academy appropriation bill.

The general plan for improvements at the Military Academy provides for the erection of six stone buildings, i. e., riding hall, power house, academic building, headquarters building, cadet barracks, and gymnasium, all of large size. In addition, the proposed railroad station, elevator tower, and a monumental bridge connecting the old with the new academic building, are to be of stone. For the purpose of preserving harmony with the existing buildings the architects proposed to use local granite. As soon as the general plan was approved by the Secretary of War, on January 27, 1904, which approval included the project submitted by the architects covering the general character of the construction, the ways and means of securing and providing the necessary local stone were taken up and the question given careful study and consideration.

The records of the academy show that since 1890 local stone has been used in the erection of one building—the present gymnasium; large additions to two buildings, cadet hospital and cadet mess, and for substructure or two-story basements of memorial hall and officers' mess. In the cases of three of these buildings—gymnasium, cadet mess, and cadet hospital—the contractors failed, and the work was completed by their bondsmen. In the case of the officers' mess the contractors complained bitterly of the excessive cost to them of the stonework for the substructure. From personal knowledge of the cost of quarrying stone on the reservation and of the

methods adopted by these contractors for getting it out I became convinced that the cause of failure or complaint was due almost entirely to the fact that the contractors had underestimated the cost of quarrying and dressing local stone, which is of unusual hard character. Having in each instance but a comparatively small amount of stone to quarry, the contractors confined themselves to hand drilling and hand derricks, which is the most costly way of handling local granite. If such methods were to be depended upon in the prosecution of the new work, it was felt that, in view of past experience of contractors, the bids for the stone buildings would be very high, mainly for the reasons, first, that there was no assurance that the same contractors would be awarded contracts for all the buildings, and, second, the contractors would be able to use only about 50 per cent of the stone obtained from the quarry for building purposes, the balance being of unsuitable character or waste.

It was considered that should the Government undertake to operate the quarry and deliver the stone in the rough to the contractors at the quarry it would result in a large saving being made and more favorable proposals obtained not only on those buildings with stone exterior, but in all buildings where any local granite would be used. Owing to the nature of the rock formation in this vicinity, the cost of quarrying good building stone is an uncertain factor, and if contractors were required to do this themselves they would undoubtedly provide a very generous margin to protect themselves against possible loss. On the other hand, should the Government operate the quarry, this uncertain factor would be eliminated from the estimates of the contractors, and they would be enabled to base their proposals upon accurate and reliable data and submit a closer bid for the work, controversy over the quality of the stone to be placed in the building would be obviated, the stone could be procured from one spot, and probable confusion and delay avoided. Furthermore, the work of quarrying stone could be started immediately without waiting for award of any contracts, continued almost throughout the entire year, and stone accumulated in advance of the actual construction of the buildings, thus avoiding one source of delay.

It was estimated that about 44,000 cubic yards of stone would be required for the different buildings, which includes not only that necessary for rubble foundation walls, but also for ashlar work. Of this amount it is expected that 14,000 cubic yards will be obtained from excavations, which can be used for foundation walls, etc., leaving 30,000 cubic yards to be quarried.

The economy in the Government operation of the quarry is due mainly to the fact that all material obtained can be utilized in the new work. Stone unfit for building purposes can be used in the construction of retaining walls, grading, and crushed for use in concrete work and in repairing roads; even the waste at the quarry could be utilized in filling in low places and bringing them up to established grade. This economy could not be obtained by individual contractors, for evident reasons. Furthermore, the Government had on hand the necessary steam boilers, hoisting engines, steam drills and stone crusher. With this plant the stone could be quarried economically, quickly, and properly, and waste avoided.

It was estimated that it would cost, with the plant on hand, approximately 50 cents a cubic yard, in place, to get the rock out. The cost of that part of it which could be used for building purposes could not, of course, be even approximately determined until the quarry could be opened up and the character of the rock ascertained. One feature which adds to the cost of quarrying stone on the reservation and interferes with even approximate estimates being made is the existence of pockets and strata of what is termed "soft rock," which is of absolutely no use for building purposes, but can be used in retaining walls, repairing roads, and for concrete work. No preliminary examination or test can be relied upon to determine how much of this "soft rock" will be found. It is more troublesome to quarry than the sound stone and more expensive.

After carefully considering the subject from different points of view and believing that a large saving could be made, this office recommended, under date of March 17, 1904, that authority be given for it to operate the quarry, utilizing such machinery as was on hand and such permanent employees as could be spared. A preliminary allotment of \$15,000 was requested and made from the appropriation for general improvement. Operations in the quarry began in May, 1904.

The quarry was located at a point about 100 yards south of the Lusk Reservoir and adjacent to the back road. This point was selected, as from it stone had been previously obtained for the dam of the reservoir and for several buildings erected within the past five years. It gave evidence of providing suitable stone and absence of any large amount of soft rock. Operations have been continued throughout the year, except for about two months last winter, when the cold weather and large amount of snow interfered. It is estimated that about 10,000 cubic yards of building stone have been quarried, which has been piled up near the quarry ready for delivery

to the contractors. By commencing the work of quarrying in May, 1904, it was possible to get at least a year's start before any of the stone buildings would require its product. The first stone building to be started was the cadet barracks, on which work commenced July 1, 1905.

As the development of the quarry progressed, it was possible to secure some definite idea of the cost of getting out the stone. After a year's operation it is found that this averages in the neighborhood of \$1.40 per cubic yard. Last June it was necessary to secure an additional allotment of \$15,000 from the general appropriation to continue work in the quarry, and it may be necessary to secure next year a further allotment, which I believe will be all that will be required to cover the cost of getting out the stone necessary for the new buildings.

While the cost has run up to nearly \$1.50 per cubic yard, it must be remembered that all waste material of the quarry is being utilized in the building of retaining walls, construction and repair of roads, and for broken stone for concrete, for which the Government receives due credit for that taken by the contractors. I am convinced after a year's experience that the contractors could not possibly operate the quarry as economically as the Government, and that the Government's doing so will make a material saving in the total cost of the work.

I wish to call attention to the gravel paths around the grass plain and to suggest that all or a portion be replaced with granolithic walks. Extensive repairs must be made upon these paths every spring, and more or less repairing must be done after every heavy rain. While the first cost of the granolithic walk is greater than one of gravel, the cost of maintenance is much less, and I believe the substitution would result in economy in the end. The granolithic walk can be laid here at 25 to 30 cents per square foot, depending upon the amount built at the same time.

The path across the southwest corner of the plain, from in front of the new cadet barracks to a point near the present academic building, could be made granolithic, 4 feet wide, for about \$900. This particular path is probably used more than any other around the plain, and the narrow strip of flagstone which was placed in the middle of it some years ago is not wide enough for two people to pass, or walk together. Should a granolithic walk be substituted the flagstone can be saved and utilized in the courtyard of the proposed headquarters building.

GAS WORKS, UNITED STATES MILITARY ACADEMY.

As director of the gas works, I am charged with providing the necessary illuminating gas for the needs of the post. The revenue derived from the sale of gas, coke, and tar, is applied to payment of the civilian employees at the gas works and purchase of gas coal—if the appropriation therefor is not sufficient—and for miscellaneous expenses not provided for by the annual appropriations of Congress. Gas is charged for at the rate of 75 cents per 1,000 feet to all persons using it for personal use and for public buildings, which is chargeable to the United States Quartermaster's Department, except cadet barracks, which is paid for from an annual appropriation.

Coke is sold at \$1.17 per 18 bushels. During the past year it was sold by the wagon-load at the same proportionate price.

It is customary to receive bids for the yearly output of tar. The accepted price during the past fiscal year has been 4½ cents per gallon.

During the fiscal year 23,427,200 cubic feet of gas were manufactured; 5,273,000 pounds of gas coal, and 2,995 gallons of oil were used in the manufacture of this gas.

In this connection attention is invited to report of last year, in which reference is made to the demands upon the gas plant and the difficulty of meeting them. The same state of affairs exist at the present time and will continue to exist until the new heating and lighting plant is completed and electricity can be substituted for gas.

For the purpose of relieving this demand to some extent and providing the means of carrying us over this interval and avoiding the necessity of making any addition to the gas plant, a contract was entered into last September, with the approval of the War Department, with the Welsbach Street Lighting Company of America for the rental of 65 of their incandescent boulevard street lamps, which were substituted for an equal number of the old pattern lamps along the main roads. The old posts were used; the only change being in the burner and lantern. The old burner used approximately 5 cubic feet of gas per hour; the new burners have been adjusted to consume approximately 3 cubic feet per hour. Besides the economy in the use of gas, the new lamps have about three times the candlepower of the old ones, and this enables us to place a number of the old lamps out of commission. It was estimated that the substitution of the Welsbach street lamps would reduce the consumption of gas for street lighting purposes by approximately 600,000 cubic feet in the year, and that the cost of the new lamps would be approximately \$600 per year.

These expectations have been*realized. The tabulated statement in Appendix D shows a decrease in the amount of gas consumed on the post over the preceding year of 598,300 cubic feet, which means a saving of about \$420. The new lamps were installed during the latter part of August and early part of September, 1904, and payment therefor commenced on September 15, 1904. The contract provides for a payment of \$8.50 per lamp per year; the company supplying six mantels per year for each lamp. The Government lights and extinguishes the lamps and keeps them in order. The total amount paid for these lamps from September 15, 1904, to June 30, 1905, was \$437.39, an amount but little more than the value of the gas saved. In addition to this economy the post is better lighted.

Notwithstanding the diminution in the amount of gas consumed for the entire year, the amount used for the six months ending June 30, 1905, was in excess of the amount consumed for the corresponding period ending June 30, 1904, by 73,200 cubic feet. While this increase is slight, it nevertheless indicates that we may look for an increase this coming year without counting the demand that will surely occur with the completion of 16 sets of officers' quarters now under construction and which will be ready for occupancy before the heating and lighting plant will be ready for duty. These new officers' quarters will require in the winter months in the neighborhood of 80,000 cubic feet of gas per month. I believe, however, that we can take care of this additional demand by using electricity in place of gas in the cadet hospital by attaching it to the dynamos in the present small power plant. The cadet hospital is wired and prepared for illumination by electricity, and, by taking advantage of this fact, I estimate we will be able, for the time being, to take care of the new buildings mentioned above.

All of the new buildings are being piped for gas in addition to being wired for electricity. A scheme is now being considered for utilizing the present gas plant, after the use of electricity has commenced, by supplying gas to the various officers' quarters and buildings requiring it, for cooking and heating purposes. It is believed that there is no practical difficulty in providing such a service and supplying gas for the purpose at a cost which will make its use as cheap as coal, if not cheaper, so far as the consumer is concerned. The present system of gas mains and connections can be utilized, the only expense attached being the removal of the gas plant from its present location to a more suitable one and the equipment of the officers' quarters with gas ranges and gas burners in the heating furnaces. Gas ranges are now on the market and are used extensively in the cities where that kind of fuel can be obtained, and many people use the gas in preference to coal, even where they have to pay in the neighborhood of \$1 per thousand cubic feet. The only difficulty in the way of the proposed scheme thus far met with is securing a suitable burner which can be used in connection with the coal grate, and it is believed that even this obstacle can be overcome. Could gas for cooking and heating purposes be provided, the saving to the Government in the hauling of coal and ashes would in a few years compensate it for the expense in removing the present plant to a new location.

The receipts and disbursements pertaining to the gas works are shown in the statement of special contingent fund marked "C."

The amount of gas manufactured during the fiscal years 1904 and 1905 is given by months in appendix marked "D."

SPECIAL CONTINGENT FUND, UNITED STATES MILITARY ACADEMY.

This fund is derived from the rent of hotel, stables, store, post-office, and miscellaneous receipts. Expenditures from this fund are made under direction of the Superintendent, by authority of chapter 212, act of Congress, May 1, 1888. Expenditures for repairs of the buildings which pay rent are paid from receipts of rentals.

During the past year a plan for forestry improvement has been perfected by the Bureau of Forestry of the Agricultural Department, approved by the Superintendent and the War Department, and put into operation. The expenditures for this purpose are shown in the statement pertaining to the special contingent fund. It is expected that the sale of cord wood will more than cover the annual cost of executing the plan. It has been found necessary to construct a cabin and stable for the use of the men employed in this work. These will be completed early in September and will cost for material and labor not over \$1,000, which will be paid from the special contingent fund. The receipts and disbursements are included in the statement marked "C."

Very respectfully,

J. M. CARSON, Jr.,

Major and Quartermaster, U. S. Army.

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

A.—Abstract of disbursements at the United States Military Academy at West Point, N. Y., during the year ending June 30, 1905.

	Date.	Current and ordinary expenses.	Miscellaneous items and incidental expenses.	Buildings and grounds.	Memorial hall.	Total.
Cr.						
Balance on hand, fiscal year—						
1903-4	July 1, 1904	\$17.75	\$171.45	\$50.09		\$239.29
1904	do	7,465.02	1,178.84	3,895.74		12,539.60
1904-5	do			28,235.69		28,235.69
Urgent deficiencies, June 30, 1904.	do	1,852.16		42.40		1,894.56
Officers' quarters and mess.	do			4,040.61		4,040.61
Enlarging the Military Academy.	do			53,198.83		53,198.83
Terrace platform, memorial hall.	do			382.00		382.00
Memorial hall	do				\$4,000.55	4,000.55
Received since fiscal year—						
1904	do	247.48				247.48
1905	do	115,181.50	56,326.00	33,285.34		204,792.84
1905-6	do			5,000.00		5,000.00
Enlarging the Military Academy.	do			275,000.00		275,000.00
Total		124,763.91	57,676.29	403,130.70	4,000.55	589,571.45
DR.						
Deposited, fiscal year—						
1903-4	June 30, 1905	17.75	166.95	50.09		234.79
1904	do	2,745.90	.08	85.79		2,831.77
Urgent deficiencies, June 30, 1904.	do	40.97		42.40		83.37
Memorial hall	do				4,000.00	4,000.00
1905	do		8,730.00			8,730.00
Disbursed, fiscal year—						
1903-4	do		4.50			4.50
1904	do	4,966.60	1,178.76	3,624.61		9,769.97
Urgent deficiencies, June 30, 1904	do	1,811.19				1,811.19
1904-5	do			27,985.96		27,985.96
1905	do	102,664.49	41,304.35	32,941.48		176,910.32
1905-6	do			1,253.50		1,253.50
Officers' quarters and mess	June 30, 1905			3,040.61		3,040.61
Enlarging the Military Academy	do			120,278.72		120,278.72
Terrace platform, memorial hall	do			382.00		382.00
Memorial hall	do				.55	.55
Balance on hand, fiscal year—						
1904	do			185.34		185.34
1904-5	do			249.73		249.73
1905	do	12,517.01	6,291.65	343.86		19,152.52
1905-6	do			3,746.50		3,746.50
Officers' quarters and mess	June 30, 1905			1,000.00		1,000.00
Enlarging the Military Academy	do			207,920.11		207,920.11
Total		124,763.91	57,676.29	403,130.70	4,000.55	589,571.45

J. M. CARSON, Jr.,

 Major and Quartermaster, U. S. Army,
 Disbursing Officer United States Military Academy.

WEST POINT, N. Y., August 1, 1905.

B.—Statement of funds pertaining to the Quartermaster's Department, United States Army, received and disbursed during the fiscal year ending June 30, 1905.

Balance on hand June 30, 1904	\$11,403.62
Received since:	
Regular supplies	54,500.08
Incidental expenses	11,583.24
Army transportation	16,645.93
Barracks and quarters	9,887.45
Sales to officers, etc	8,107.75
Sales at auction	115.75
Military post exchange	610.00
Marking civilian graves, post cemetery	25.50
Hospitals	415.00
Clothing and equipage	264.00
Total to be accounted for	<u>113,558.32</u>
Disbursed:	
Regular supplies	47,672.51
Incidental expenses	11,656.41
Army transportation	15,479.93
Hospitals	414.66
Clothing and equipage	257.66
Military post exchange	609.88
Marking civilian graves, post cemetery	25.50
Deposited	9,278.11
Balance on hand June 30, 1905	18,221.95
Total	<u>113,558.32</u>

J. M. CARSON, Jr.,

Major and Quartermaster, U. S. Army.

WEST POINT, N. Y., August 1, 1905.

C.—Statement of receipts and expenditures pertaining to the special contingent fund, United States Military Academy, from July 1, 1904, to June 30, 1905.

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1904.	
July 1. By balance on hand per last account	\$3,474.75
1905.	
June 30. By amount received:	
Rents—	
Hotel	\$2,000.00
Post-office	187.50
Stables	360.00
Store	125.00
Miscellaneous	60.00
	<u>2,732.50</u>
Sales of—	
Gas	6,967.73
Coke	1,124.40
Coal tar	1,067.52
Miscellaneous	171.22
	<u>9,330.87</u>
June 30. Total to be accounted for	15,538.12

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June 30. To amount disbursed as per abstracts	12,684.51
June 30. Balance on hand	<u>2,853.61</u>

J. M. CARSON, Jr.,

Major and Quartermaster, U. S. Army,
Treasurer Special Contingent Fund, U. S. Military Academy.

WEST POINT, N. Y., August 1, 1905.

D.—Statement of gas manufactured from July 1, 1904, to June 30, 1905, showing quantity of coal and oil used in manufacture.

Month.	Gas made.	Gas sent out.	Coal used.	Oil used.
Fiscal year 1904:	<i>Feet.</i>	<i>Cubic feet.</i>	<i>Pounds.</i>	<i>Gallons.</i>
July.....	1,216,500	1,214,700	263,700	310
August.....	1,431,600	1,431,100	313,400	390
September.....	1,718,300	1,698,900	354,600	590
October.....	2,183,500	2,173,500	450,700	630
November.....	2,485,500	2,481,700	549,700	600
December.....	2,792,600	2,801,800	618,700	620
January.....	2,822,600	2,844,700	644,200	620
February.....	2,377,700	2,370,500	528,260	545
March.....	2,287,100	2,297,100	502,000	330
April.....	1,872,400	1,890,300	460,600	255
May.....	1,622,500	1,619,400	390,800	155
June.....	1,197,100	1,201,800	295,600	150
Twelve months.....	24,006,800	24,025,500	5,434,200	5,195
Fiscal year 1905:				
July.....	1,139,300	1,128,700	281,800	155
August.....	1,229,100	1,233,100	278,800	155
September.....	1,655,000	1,659,600	389,300	210
October.....	2,018,200	2,026,200	456,200	270
November.....	2,305,900	2,309,400	528,700	356
December.....	2,826,400	2,818,700	616,400	372
January.....	2,819,200	2,819,200	615,300	372
February.....	2,256,600	2,256,500	491,700	310
March.....	2,228,600	2,242,400	484,700	280
April.....	1,841,100	1,847,100	409,000	210
May.....	1,686,100	1,665,400	388,900	155
June.....	1,421,000	1,420,900	332,200	150
Twelve months.....	23,426,500	23,427,200	5,273,000	2,995
Fiscal year 1904.....	24,006,800	24,025,500	5,434,200	5,195
Fiscal year 1905.....	23,426,500	23,427,200	5,273,000	2,995
Decrease.....	580,300	598,300	161,200	3,200

Very respectfully,

J. M. CARSON, Jr.,
 Major and Quartermaster, U. S. Army,
 Quartermaster, U. S. Military Academy,
 Post Quartermaster and Director of Gas Works.

WEST POINT, N. Y., August 1, 1905.

APPENDIX K.

REPORT OF THE FORESTER.

WEST POINT, N. Y., *August 15, 1905.*

SIR: I beg to submit the following report of the forestry work upon the forest reservation of the United States Military Academy army post performed in accordance with the working plan for forestry improvement adopted and put into effect April 1, 1905:

First. There has been cut and stacked from compartments IV and VII, ready for immediate use, 220 cords of first-class hardwood fuel and 20,000 board feet of red and white oak logs and chestnut poles.

Second. There have been cleaned out, pruned, and improved about 15 acres of hemlock and old growth land immediately bordering on the academy limits for the improvement of the forest conditions and the general landscape effects.

Third. There has been established a forest nursery for the raising of all the nursery stock necessary for the reforestation and underplanting on the reservation. This nursery consists of about 1½ acres of well protected, cleared land about 100 yards north of the Upper Crow Nest Reservoir.

This spring's planting should yield about 40,000 white pine, about 5,000 red spruce, and about 4,000 eastern hemlock, which will be ready for planting on the reservation in 1907, and about 2,000 American elm, which will be utilized for landscape work as demanded.

Fourth. There has been marked by the forester about 1,200 cords of hardwood and about 50,000 board feet of oak, chestnut, and tulip saw logs for removal this winter from compartments 16 and 17 and 7.

Fifth. There are in process of construction by the quartermaster a foresters' lodge, 40 by 20 feet, for the accommodation of the woods foreman and the woodsmen employed on the reservation, and a stable 20 by 20 feet for housing the team used on the forestry operations. These are situated on the forest nursery grounds and will be connected by telephone with the headquarters building at the post.

Sixth. The organization for the execution of the approved plan for the management of the forest reservation has been perfected and will, it is believed, give satisfactory results. It has, with the advice and approval of the quartermaster, been deemed advisable to procure and keep upon the reservation a permanent force of about six experienced woodsmen for the cutting and other work upon the forest reservation. These men will be paid \$45 a month and board themselves at the foresters' lodge, where a permanent mess under the charge of the woods foreman has been established.

Seventh. Expenditures to June 30, 1905:

Forester, services and expenses.....	\$152.65
Woods foreman salary.....	255.67
Woodsmen.....	380.91
Supplies (tools, etc.).....	25.43
Total.....	814.66
Receipts, none.	
Estimated value of cut timber:	
220 cords firewood.....	\$1,100
20 M board feet.....	500
Total.....	1,600

Very respectfully,

ROY L. MARSTON,
Forester, United States Military Academy.

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