

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., August 31, 1906.

SIR: I have the honor to submit the following report of the Military Academy for the year ending August 31, 1906:

I have performed the duties of Superintendent thruout the year, except for short periods of time when absent on leave or in connection with the affairs of the academy.

PERSONNEL.

The number of officers and instructors on duty here at the present time are 8 professors, 2 associate professors, 82 commissioned officers, 1 librarian, 1 chaplain, 1 contract dental surgeon, 1 teacher of music, and 4 civilian instructors of languages, a total of 100. Of this total 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 are present 1 contract dental surgeon on temporary duty and 3 civilians employed as instructors in fencing, broadsword exercises, and other military gymnastics.

The total September 1, 1905, was 97; the difference in total between this year and last being accounted for by the increase of 1 officer on duty as aide-de-camp, of 1 as assistant to the quartermaster, and of 1 retained on duty temporarily to fill the place of an officer who is ordered on detached service to take effect next November.

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

The maximum number of cadets is 523, and 5 foreign cadets receiving instruction under the provisions of joint resolutions of Congress—2 from Costa Rica, 1 from Ecuador, and 2 from China. The academic year will open with 475 cadets on the rolls of the academy, divided among the four classes as follows:

First class.....	111
Second class.....	112
Third class.....	124
Fourth class.....	128

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

Discharged for deficiency in studies.....	15
Discharged for deficiency in conduct.....	1
Discharged for physical disability.....	6
Resigned.....	13
Died.....	1
Withdraw.....	1
Graduated.....	78
Total.....	115

The usual examination of candidates for admission was held at various army posts beginning May 1. For this examination there were appointed 315 candidates, including principals and alternates, and including also 6 former cadets. Of this number 87 failed to report, 8 failed to complete the examination, 28 were rejected by the medical boards, being qualified mentally; 24 were rejected upon the mental examination, being qualified physically, and 7 were rejected both mentally and physically. There were no vacancies for 30 qualified alternates.

Admissions were as follows: In June, 116; in July, 1 (a foreigner for instruction), and in August, 5—a total of 122. The following table gives the number of those admitted on examination, on certificate, etc.:

Admitted on certificate (75 principals and 7 alternates).....	82
Admitted on examination (28 principals and 8 alternates).....	36
Former cadets taking physical examination only.....	3
Foreign cadets.....	1
Total.....	122

The appointment of three alternates instead of two, under the same conditions as now authorized by law, would insure a slightly larger percentage of vacancies being filled at the annual entrance examination and would give the academic board a wider field in the selection of the best qualified alternates.

HEALTH.

The report of the surgeon is inclosed, marked "Appendix B." No serious epidemics of sickness have occurred during the year. One case of typhoid fever was contracted by a cadet while he was on furlough. Mumps and chicken pox appeared in the families of enlisted men, but their spread was promptly checked. The surgeon reports a marked decrease in the number of cases of malarial fever as compared with last year. The cases which did occur were mainly among cadets coming from the South and Southwest, the manifestation of the disease being caused by the change of climate. The

limited number of malarial complaints can no doubt be attributed to energetic measures taken to destroy the mosquito larvæ. It is worthy of record that no cadet has died at West Point since 1895. In 1901 a cadet, who was on sick leave, died from disease contracted before entering; and Cadet Lamme, of the third class, lost his life in a hotel fire in Minneapolis last January.

A complete drainage system has been installed upon the site of the cadet camp, putting it in perfect sanitary condition. In recent years the tent floors have been raised about ten inches above the ground, permitting free circulation of the air underneath. Tent poles of galvanized iron pipe have been substituted this year for the unsightly wooden poles heretofore in use. The iron poles can be removed easily, leaving the camp site entirely open when it is not occupied.

The regulations at present require each class at the academy to be examined physically once each year. The results of this requirement, as shown by the examination held last June, indicate that it is unnecessary and inadvisable. I have already made a full report upon this subject and have submitted recommendations providing for a more thoro physical examination at admission and for dispensing with the examination of the other classes, except the graduating class. I strongly urge the adoption of changes along these lines as the present regulations are extremely unsatisfactory. The new fourth class was reexamined physically by the same medical board that examined the other classes in June, and the result demonstrated the necessity for a more uniform standard of physical qualifications for admission than is required by the present methods.

CADET ALLOWANCES AND SUPPLIES.

The inclosed report of the treasurer and quartermaster and commissary of cadets (Appendix C) gives in detail the operation of the departments under his charge, which have been managed by that officer in an efficient and satisfactory way.

The supplies furnished cadets and the food provided for them have been excellent. It is a pleasure to call special attention to the figures relative to the accounts of cadets and the amounts paid to them upon graduation. A total of \$38,000 remained to the credit of the class of 1906 after they had paid an average of \$100 per man for uniform and equipment purchased thru the cadet store. In other words, an average of over \$480 was saved by each graduate during his cadet career—a sufficient amount to go a long way toward paying for his necessary outfit as an officer. The same liberality as heretofore has been permitted for purchases by cadets of the simple luxuries authorized by the regulations, for their contributions to athletic funds and other purposes, and in the amounts of money given them to spend while on leaves of absence earned by good conduct.

DISCIPLINE.

Conditions under this head are eminently satisfactory. Hazing has been entirely absent and the spirit which in former years prompted it has in a great measure disappeared. The attitude of all the upper classes toward the fourth class is good generally, and the members of the present first class in particular have shown due appreciation of their responsibilities in maintaining proper relations between old and new cadets. First-classmen exclusively were detailed to act as instructors of new cadets during their preliminary training. The good effects of this policy were evident.

PRACTICAL INSTRUCTION.

The accompanying reports of the commandant of cadets (Appendix D) and of the instructor of practical military engineering (Appendix E) describe the work accomplished in their respective departments during the year. The usual visits by the first class to Gettysburg, Watervliet, and Sandy Hook, and by the second class to the Metropolitan Museum of Art, New York City, were made. The first class was also sent to Fort H. G. Wright, N. Y., for five days of practical instruction in coast-artillery work. Last year the class visited Fort Totten, but Fort Wright was selected this summer for the reason that target practise could be held there and could not at Fort Totten. I understand also that Fort Wright is at present very completely equipped with the accessories of coast-artillery work. Diligent preparation for this trip was made by instruction in the fundamental principles of fire control and range finding, using apparatus temporarily installed at West Point. This material will be permanently installed as soon as possible. The visit to Fort Wright was most satisfactory to all concerned; its success was in no small measure due to the hearty cooperation of the commanding officer of that post, Lieut. Col. G. N. Whistler, Artillery Corps. In a letter to the commandant of cadets, written as the class was leaving his command, Colonel Whistler says:

I desire to express to you my appreciation of the work done by the first class at this post during the past week.

Their conduct was exemplary and their work most excellent. Their instruction in position finding prior to coming here undoubtedly was excellent as shown by the manner in which they took hold of the work here. The work of the range detail for the 12-inch battery during the practise was beyond praise; it could not have been better. The reason for a failure to make any hits was due to the fact that the cadets are too light in weight to handle a 12-inch gun without much more practise than it is possible to obtain in a week's time. They were unable to send the shot home with any certainty. I would recommend in the future that the 10-inch gun be used for their practise.

The work with the 6-inch guns speaks for itself. Two scores each of 100 per cent of hits showed most excellent work. The ranges were sent from the station of the 12-inch battery by the same detail that served the station during the practise with the 12-inch guns.

The work at the 3-inch guns was also excellent—80 per cent of hits out of 10 shots.

During the battle command drills at night the gentlemen showed a most intelligent appreciation of the subject. On Tuesday night Mr. Steese acted as battle commander, with cadet fire commanders and battery commanders, and the work was most excellent.

* * * * *

I concur in Colonel Whistler's recommendation that hereafter the 10-inch guns be used for target practise by cadets instead of the 12-inch.

The week ending with the 25th instant was utilized this year, as last, for the purpose of familiarizing cadets with actual field conditions by means of a practise march performed under the direction and personal supervision of the commandant of cadets. Theoretical instruction was given by the medical officers in the selection of camp sites, and the problems in minor tactics which closed the march of each day were discust in the afternoons and evenings.

The cadets have taken a great interest in the regular target practise course given during the encampment and have made an excellent showing.

At the present time there are two artillery officers detailed for duty in the department of tactics. The senior of these two officers has command of the academy detachment of field artillery. An additional artillery officer should be provided as soon as more quarters are available at the academy. Two officers are not enough to properly supervise the practical instruction in artillery, which, at certain seasons of the year, includes simultaneous instruction in coast artillery, field artillery, and standing gun drill. The heaviest of this work comes during the summer encampment, and this year an artillery officer was sent here on temporary duty during July and August. It is advisable, however, that this be made a permanent detail as soon as possible, especially as additional officers will be needed in the department of tactics when the battalion is divided into eight companies instead of six, as at present.

The division of the battalion into eight companies should be effected as soon as the new cadet barracks are completed. The eight companies can be organized into two battalions of four companies each, with a major in command. This division will admit of the number of cadet officers and noncommissioned officers being materially increased and will facilitate the administration of cadet affairs. At present the battalion is too large. The number of explanations, permits, and requisitions which must pass thru the hands of the commandant of cadets, together with other questions which he must act upon, make undue demands upon the time and capabilities of that officer. With assistants commanding the two battalions uniformity of action can be secured and at the same time the commandant will be left free of many of the less important functions which now pertain to his office.

DETACHMENTS.

All of the Military Academy detachments are in a satisfactory condition; except the cavalry detachment. In that detachment, despite untiring efforts to improve its condition, there is a great lack of the proper military spirit and deportment. There are practically no reenlistments in this detachment and the number of desertions is very large. The cause for this condition exists largely in the character of the work required of the men. This work begins in the early morning and lasts until nightfall. Practically the members of the detachment are grooms only, and the proper care of the horses belonging to the detachment entails more labor than is generally required of twice as many soldiers. In addition to the care of the horses, the detachment has to perform its share of guard duty, escort duty, etc., and a certain amount of drill is indispensable. A partial remedy would be to provide extra-duty pay for all members of the detachment. This would tend to bring about reenlistments or the transfer of old soldiers to the detachment, provided a sufficient number of quarters were also available. The only other method which I believe would result in satisfactory conditions is the employment of civilian hostlers for the care of the extra horses, making the soldiers perform only those duties usually assigned cavalry commands. A model detachment should be secured in this way.

ACADEMIC INSTRUCTION.

The progress of cadets in the various classes thruout the year has been satisfactory. The results indicate that the character of the instruction imparted has been unusually efficient and successful.

The War Department has invariably responded to applications for the detail of officers by sending the particular individuals requested, even in the face of numerous difficulties, and has allowed the retention, after the expiration of their regular tours of duty, of a few officers who were especially needed in the work of the academy. Such consideration for the welfare of the academy is highly appreciated by those responsible for its administration and forms no small factor in maintenance of satisfactory conditions.

I desire to renew again the recommendation made in previous reports that all instructors at the academy be made members of the detailed staff, appointments thereto causing vacancies in branches of the service at large to be filled by the regular order of promotion. The advisability of such action, from the standpoint of the Military Academy, was fully set forth in my last annual report. The question is also of great importance to the service at large not only directly in relieving the scarcity of officers on duty with their regiments, but also indirectly by insuring the proper education of future officers. In

view of the vital interest which the academy has in such legislation, I believe that the approval of Congress should be sought to a suitable provision in the academy appropriation bill if it becomes evident that relief can not be obtained by a general provision for filling vacancies caused by detached officers.

Reference was made in the report of the Superintendent last year to the examination of the present curriculum, with a view to its revision, which had been undertaken by the academic board. This work of examination has been steadily prosecuted in the meantime. Various reports from the general committee having it in charge have been before the academic board and have received the careful attention which they deserve. Before discussing these reports in general, it is pertinent to mention briefly certain tentative changes and experiments which have been given a trial during the last twelve months. A general rearrangement of the hours of study and attendance at recitations, adopted by the board during the summer of 1905, was made effective September 1, but was found to be unsatisfactory in certain respects. A second rearrangement, worked out during September, was made effective October 1, and has been in operation since. The general objects sought to be attained by this rearrangement were:

1. Placing the dinner hour earlier so as to more nearly equalize the period between breakfast and supper. Prior to this year breakfast had been at 6.30, dinner at 1, and supper at various hours—from 5.30 to 7. By the new schedule breakfast is at the same hour as before, dinner at 12.15, and supper at 6 p. m., the supper hour being the same for all seasons of the year, except during the period of the summer encampment, when it is a little later.

2. Provision for the physical training of the three upper classes from November 1 to March 15. Previously, compulsory physical training was given the fourth class only. I believe no more important step than this, in securing and maintaining a proper physical condition in the corps of cadets, has been taken for a long time.

3. To provide time for the practise of athletics without interfering with the recitation schedule. This question had long perplexed the Military Academy authorities. It was particularly difficult to arrive at a satisfactory solution for the football season, toward the close of which the days at West Point are very short. It is, of course, understood that at the academy cadets who have not a satisfactory standing in their classes are not allowed to engage in athletics. Those who have a satisfactory standing and who do desire to participate in such sports as football, baseball, and fencing must be allowed a reasonable time for practise with the teams during the hours of daylight. Cadets had ample time for this practise during their hours of recreation, but such hours were distributed in small periods over the entire day and

the longer of these periods came when darkness prevented practise. West Point has long occupied a prominent position in intercollegiate athletics and this position has been won, notwithstanding the principle which has been rigorously insisted upon that all members of athletic teams should give as much time to their studies and their military duties as other cadets. In other words, West Point believes that satisfactory athletic teams can be developed by devoting to practise no more time than is allowed to all cadets at the academy for recreation purposes. If the most efficient team can not be developed under this principle, then success in athletics must be sacrificed to more important work. The record of the academy in athletics shows that first-class teams *can* be developed with a reasonable amount of time devoted to their training and without the sacrifice of studies.

While the above principle has been rigidly enforced, it was, prior to last year, necessary to make certain rearrangements in the recitation schedule of members of the football and baseball teams for the purpose, as stated above, of allowing them proper time for training during daylight hours. This disarrangement was unsatisfactory for many reasons which will be readily appreciated by anyone acquainted with the exacting requirements of a cadet's daily life. The academic board had been considering the problem in connection with the hour for dinner and the new course in physical training for many months, and the solution arrived at last fall has proved itself, by the test of actual experience, to be most satisfactory. The main changes in the new schedule of hours for duty are the placing of guard mounting, etc., in the afternoon and the closing of the recitation period for the day at 3.30 o'clock p. m. Not only are the questions of a better hour for dinner and proper time for athletics solved by this schedule, but also a period of study for all cadets is provided between breakfast and the hour of attendance at the first recitation, which heretofore they did not have. This is recognized as a distinct advantage irrespective of the other questions. I believe it will not be denied that the new schedule is the most satisfactory which has ever been in effect at the academy. Following its general lines it can be further improved when the new academic building is completed, giving more recitation rooms.

These improvements are, however, of minor importance when compared with the real work which has been undertaken by the academic board, namely, the revision of the course of studies. In a late report the general committee say as follows:

In considering the demands for a larger supply of immediately available knowledge, it should be an important trust to the academic board to preserve that breadth of foundation which is necessary to a well-rounded education of the undergraduate, considering the limitations as to time and purpose and the initial preparation of our students. Among those who have been most closely in touch with the Military Academy there is very little

doubt, if any, as to the essential correctness of its curriculum. It seems to the committee that much of the criticism of the academy is based upon a misconception of the proper character of the undergraduate education for the military service.

The function of the Military Academy as a general school of military instruction must be to lay a sound foundation in the basic principles of the arts and sciences tributary to the art of war, with such practical applications as are necessary for their comprehension and assimilation. It must also give such technical instruction as will enable its graduates to enter upon the performance of their duties as subalterns in the various corps of the Army with intelligence, and will prepare them to receive with the greatest profit the special technical instruction of the general service and the service schools. In addition to this, the academy owes its students something more than the mere technical preparation of military specialists. A portion of its instruction should be devoted to broadening their general intelligence, and to training their minds in order that they may take a position among educated men which shall be creditable to the military profession and shall prepare them for any special duties which they may be called upon to perform. To that end a considerable portion of their study should have for its object the training of their powers of thought and the acquisition of general knowledge.

The tendency of some graduates to demand of this institution that expert knowledge which is the province of the specialist in a particular corps, whether of the line or staff, and to narrow its instruction to details of practical application, which should be the work of the service schools, is to be deprecated, since the effect of such a policy could only be harmful to the academy and its curriculum. To specialize instruction at this school would surely weaken the value of its course as an institution of general military education, whose relations to the military student correspond to that of the college or university in civil life. There is less excuse at this time than ever before for forcing the academy from its legitimate function into the rôle of a special school, for the reason that elaborate provision has been made for schools of application in every branch of the service. These service schools not only cover the field of special technical development for scientific courses, but take up, review, and practically apply the course of the Military Academy bearing on the special duties of the line officer. The committee believes, therefore, that the policy of this institution should not deviate essentially from the principles which have governed its development in the past, and that it should always be borne in mind that it is not the final, but only a preparatory, school; that its function is to lay a broad and solid foundation; and that all increase of, and specializing in, technical professional studies should revert to the postgraduate schools of application.

In general, the opinions expressed by the committee seem sound and correct. It may be felt by some that the statement that "all increase of, and specializing in, technical professional studies should revert to the postgraduate schools of application" is too broad. If, for example, electricity is covered by the term "technical professional studies," it would be a mistake to say that in the last fifteen years there should have been no increase in the attention given it and the length of time devoted to it at the Military Academy. This, however, is probably not what the committee had in mind when making their report, and I am glad to express the heartiest concurrence in the general estimate of the functions of the Military Academy which they express.

I wish to record here my appreciation of the broad, serious, and high-minded attitude which the committee have assumed and the unremitting diligence with which they have prosecuted their arduous

labors. In their work during the past year they have given particular attention to the work done by the service schools with a view to bringing the Military Academy curriculum into its proper relations with the curricula of those schools. This is a work which can not be done by one side alone, and the service schools should be kept in close touch with the work being accomplished at the academy. The committee studied carefully the curricula of foreign military schools also.

Certain general rules and principles have been submitted by the committee governing the work of the revision of the course and its improvement. Some of these have already been adopted by the board, while others are still under consideration. Among the most important is the following recommendation:

As regards the apportionment of the amounts of each subject to the different portions of the class, that, before the final action by this committee and the academic board, each subcommittee shall propose a maximum course, a minimum course, and a medium course in each subject where the character of the work justifies a division into three parts.

The maximum course shall embrace a reasonable amount to be covered with thoroughness by the upper part of the class.

The minimum course shall demand a good understanding of the simple fundamental principles of the course and a reasonable facility in handling the processes necessary in their practical applications. If there be parts of the course beyond this limit which are considered necessary in the development of the subject or the student they may form a part of the minimum course, and the standard of proficiency on that part may be less than that on the fundamental principles.

The medium course shall be adapted to the average capacity of the class.

Each subcommittee shall submit to the general committee copies of the books used with the different courses indicated therein.

The most important part of this recommendation is the following: "The minimum course shall demand a good understanding of the simple fundamental principles of the course and a reasonable facility in handling the processes necessary in their practical applications." The committee also place themselves on record as believing that improvements of the various courses may be accomplished "by covering less ground for proficiency in all courses and by exacting a higher standard on the ground covered."

Friends of the academy will welcome such statements from the academic board. They indicate that the board has a full appreciation of its responsibilities and a complete understanding of the methods of growth which are certain to be found in an institution organized on the lines of this school. The heads of the various departments of instruction are, one and all, to be commended for the progress made by their separate departments. At the same time, in such a school, there should be and must be occasional periods of readjustment and coordination of the various departments, which in the long run are, to a greater or less extent, independent of each other and tend toward a state of noncooperation. It is at such

times that the academic board, as a whole, should determine not only if the objects of each department be in accord with the general policy of the institution, but also whether or not the growth of each course has been along lines best calculated to insure such objects being attained. It has been stated that the tendency of late years at the academy has been to lower the standards of intellectual attainment. I believe the contrary to be the fact. The lines of the work of the present general committee have, perhaps, in some departments been foreseen and forestalled and the effort has been made not to cover a maximum amount of ground, but to secure a thoro and complete understanding of all necessary fundamental principles. Without instituting unfair comparisons, it may not be amiss to submit the examination papers of the department of philosophy for the years 1904 and 1905 (Appendix F).

I am sure I am not mistaken in saying that these sample examinations show that material progress has been made in this course of late years, and that in the department concerned the standard of proficiency and of intellectual accomplishment has not been lowered. Perhaps in other courses of the academy as much change for the better can not be found, because there was not the same room for improvement. In other cases, it is certain that progress has been made along other lines, such as the incorporation into the course of necessary subject-matter demanded by the general advance in scientific knowledge and investigation. That progress in this direction may have gone too far can be admitted without acknowledging that there has been a lowering of the standard of proficiency; but if such progress in one department is too rapid and is not compensated for in some other department, the result is bound to be an overcrowding of the curriculum. To the correction of the results of such tendencies the efforts of the board are now being directed, and the above remarks, taken from the report of the general committee, indicate that the committee is alive to this tendency and is earnestly seeking at the present time to make the readjustments essential to the best welfare of the institution.

That other improvements must come as a result of such labors follows as a matter of course, and no single utterance from members of the academic board will, I believe, be regarded with more satisfaction by sincere friends of the academy competent to speak regarding its work than the following statement, which is quoted from the last committee report:

By insuring in the various departments of instruction a greater freedom of access of the cadet to the instructor for all proper purposes connected with the subject-matter of the course. It is believed that a reasonable amount of intellectual freedom and frankness should be encouraged in cadets, and that the rigidity of the military atmosphere should be relaxed in the section room to an extent compatible with respectful attention and proper subordination.

Knowing the Military Academy from an experience of eight years as its Superintendent, I am free in saying that, aside from the great personal gratification I experience in seeing adopted by the board ideas which I have long held, I feel confident that no more certain or more effective line of progress could be laid out than that indicated by the above quotation.

Beyond the internal reorganization of each course a rearrangement of the courses among themselves will be necessary. The details of this have not yet been perfected and probably it will be impossible to put all of the final plans into operation until the new academic building is completed. The lack of space has hampered not a little the committee in their recommendations for the present changes. What may be regarded as essential features agreed upon are:

1. Placing the course in Spanish in the first class year.
2. Placing the course in ordnance and gunnery in the second class year.
3. The correlation of the courses in philosophy and mathematics.
4. The creation of a department of history and English.
5. The abolition of the department of practical military engineering.

I am heartily in accord with each of these features. To a large proportion of the graduates a speaking knowledge of Spanish immediately upon entering the service is of great value, and this can best be given them by placing Spanish in the first class year, so that they leave the academy with the language fresh in their minds. Ordnance and gunnery is naturally one of the subjects to be displaced by Spanish. Furthermore, as ordnance and gunnery is allied to both philosophy and mathematics, a more satisfactory coordination of these three subjects can, it is believed, be obtained by placing ordnance and gunnery in the second class year. The relations between the subjects taught in the course in philosophy and the course in mathematics are most intimate. At the present time the committee recommend an alternation in daily recitations in these subjects. I am not satisfied that a better solution of the problem can not be arrived at by teaching elementary mechanics in the department of mathematics. This is the practise at a great many scientific institutions; the time devoted to the various subjects makes it a suitable arrangement for the academy; the system of detailing instructors makes it advisable that an instructor in mechanics should have reviewed his mathematics before teaching the former subject, which plan could be readily carried out were mechanics a part of the course in mathematics; and, finally, the influence upon the department of mathematics of teaching an application of pure theory could hardly fail to be beneficial. At the present time the subjects of law and history are taught in the same department and in the first class year. The academic board has expressed itself as believing that history can with advantage be placed earlier in the course and that the subject of English can be advantageously

combined with that of history under a single head. At present the course in English, such as it is, is under the department of modern languages. One professor, with able associates, has all he can do in the efficient management of French and Spanish. The board has made favorable recommendation for the establishment of this new department, and a full report of the facts and conditions should later be submitted with the request for the necessary Congressional authority. The department should be put in operation at the beginning of the next academic year. The work of the department of practical military engineering is very closely related to other practical instruction given cadets thruout the summer encampment and during the fall and spring drill seasons. As a separate department there is no reason for its further existence, altho its work is most important and should be fostered and developed under the supervision of the department of tactics.

Other recommendations have been made by the committee looking to the separation of the department of modern languages into two departments—one of French and one of Spanish; the division of the department of chemistry, mineralogy, and geology, and also the department of civil and military engineering and the art of war. I am not in favor of these further divisions at the present time, nor do I believe that they will be essential to the progress and best interests of the Military Academy, unless the number of cadets is materially increased. So long as the head of a department can perform his proper functions of supervision and keep himself definitely informed as to the progress of the best men and the poorest men in the class in all of the subjects taught in his department, which subjects, of course, should be related, I do not believe that further additions to the personnel of the academic board are advisable. The main reason that I hold this opinion is because every addition to the membership of the board makes it that much more difficult for the board to act as a unit in maintaining the perfect balance of all courses comprized in the curriculum. It is to be remembered that the academy has no elective courses and that each graduate must pass thru the hands of each department with the mark of proficiency placed opposite his name. To subdivide the course of study into departments beyond the limits of absolute necessity, while relieving the heads of departments of responsibility, would increase the tendency of each department to magnify its own work. The effect of such a condition upon the student is likely to result in what a member of the academic board has aptly exprest as "mental indigestion." The proper method to accomplish the relief of the heads of departments from undue responsibility is, I believe, to provide associate professors for all important departments. The associates should be instructors having had the experience of one or more tours of duty at the academy

and should be able to assume many of the onerous duties of administration, leaving the professor free to deal with the more important functions of his office.

During the past academic year the experiment was tried in the department of mathematics of not marking the fourth class on advance—that is, the first time over the subject. In this department each subject is covered three times—by advance, review, and general review, respectively. Marks were given only on review and general review. This left the instructor free, the first time over the subject, to give in the section room all necessary assistance. The consensus of opinion among the instructors of the department making the experiment was strongly in its favor. The question is later to be given further consideration by the entire academic board.

By Executive order the department of military hygiene was established during the past winter, and legislation placing it upon an even footing with the other departments was past by Congress. The subject of physiology, heretofore taught in the department of chemistry, has been transferred to the department of military hygiene.

The question of the mental entrance requirements to the academy is one demanding careful study and will, no doubt, be taken up in connection with the revision of the course of study. I believe that the elementary subjects of arithmetic, geography, reading, writing, and spelling should be omitted and that elementary physics should be included in these requirements.

The report of the instructor of ordnance and gunnery is inclosed (Appendix G). In the estimates an item has been submitted renewing the recommendation made last year that the head of this department be given the title of professor, with the rank, pay, and allowances of a lieutenant-colonel. The reasons for this recommendation are set forth in a note attached to the estimates. Attention is also invited to the recommendation on this subject made by the Board of Visitors for 1905.

I have freely expressed above my opinion in connection with the curriculum of the academy and its revision. My convictions upon two points are so strong and the questions involved are of so much importance that I wish to emphasize them as much as possible. They are, first, that a thoro knowledge of fundamental principles and how to apply them is a higher standard of scholarship than a shallow knowledge of wider scope; and, second, that no single thing can be more effective in accomplishing the objects of the intellectual training at the Military Academy than the development of the most cordial and untrammelled intellectual relations between the instructor and cadet.

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. It is to be hoped that Congress will continue the liberal support of this valuable adjunct of the Military Academy.

WATER SUPPLY.

Attention is invited to the report of the officer in charge of the water supply of the academy (Appendix I). It is most gratifying to state that the execution of the project for the new source, Popolopen Creek, is practically completed and that this vexatious question is thereby settled for an indefinite period. Water from Popolopen was turned into the Lusk reservoir on the 26th instant. Maj. Mason M. Patrick, Corps of Engineers, is to be complimented and congratulated on his most efficient prosecution of this difficult piece of work. His labors have been untiring and directed with the greatest foresight and good judgment.

BUILDINGS AND GROUNDS.

By the act of Congress approved June 28, 1906, the limit of the total expenditure for improvements at the Military Academy was extended \$1,700,000, making a total of \$7,500,000 for this work. This action was taken after the Congressional committees had thoroly examined the general plan of improvements as approved by the Secretary of War, and the act takes cognizance of this plan in providing that the improvement shall be in accordance with its features. The academy is to be congratulated not only upon the existence of a well-formulated scheme for its growth, which has received the stamp of approval from the National Legislature, but also upon the fact that an ample appropriation is available for the execution of the scheme.

The Secretary of War has approved the following schedule of allotments:

FIRST CATEGORY.—*Expenditures to June 1, 1906, and allotments made for contracts and work now in progress.*

1. Expenses connected with selection of architects, architects' fees for completed plans, landscape plans, etc.....	\$167,063.35
2. Survey of reservation.....	9,000.00
3. Purchase of Dassori property.....	20,000.00
4. Enlargement of cadet mess hall.....	127,349.10
5. Grading, roads, retaining walls, sewers, water and gas mains, surveys for buildings, temporary addition to south dock.....	214,310.00
6. Quarrying stone for new buildings, labor, materials, tools, etc.....	52,000.00
7. Contingencies and office expenses for advertising, printing plans and specifications, civil engineers, inspectors, etc.....	33,046.12
8. Contract for officers' quarters and cadet barracks.....	520,611.20
9. Contract for cavalry and artillery barracks, stables, and gun shed.....	415,839.00
10. Contract for post headquarters.....	519,626.00
11. Heating and lighting plant and distributing system.....	600,000.00
12. Improvement of water supply.....	400,000.00
	3,078,844.77

SECOND CATEGORY.—*Estimated cost of proposed buildings for which plans have been completed, or are being drawn, and other work in connection with improvements not included in first category.*

13. Bachelor officers' quarters.....	\$220,000.00
14. Academic building.....	600,000.00
15. Gymnasium.....	300,000.00
16. Hotel.....	220,000.00
17. Cadet chapel.....	300,000.00
18. Riding hall.....	695,000.00
19. Cadet headquarters and cadet store.....	275,000.00
20. Guardhouse and fire-engine house.....	63,000.00
21. Quartermaster's and commissary storehouse and shops.....	300,000.00
22. Quartermaster's stables and wagon shed.....	100,000.00
23. Post exchange.....	50,000.00
24. Officers' quarters (17 sets).....	255,000.00
25. Cadet laundry.....	50,000.00
26. Post school for children.....	25,000.00
27. South gate guardhouse.....	20,000.00
28. Public stable.....	10,000.00
29. Elevator and gateway.....	50,000.00
30. Memorial bridge.....	50,000.00
31. Two cadet battalion headquarters.....	30,000.00
32. Enlargement of band barracks and remodeling old artillery barracks, post exchange, and quarters Nos. 27 and 29.....	40,000.00
33. Railroad freight shed, dock, and cableway at north end.....	115,000.00
34. Remodeling basement of present cadet barracks, and heating system....	45,000.00
35. Completion of officers' mess.....	25,000.00
36. Completion of memorial hall.....	25,000.00
37. Removing and rebuilding present cadet chapel.....	20,000.00
38. Alterations to present academic building.....	30,000.00
39. Army service barracks.....	125,000.00
40. Quarters for married enlisted men.....	50,000.00
41. Remodeling engineers' barracks.....	10,000.00
42. South dock.....	25,000.00
43. Noncommissioned staff officers' quarters.....	20,000.00
44. Special fittings for new academic building.....	25,000.00
45. Furniture for post headquarters.....	5,000.00
46. Furniture for cadet headquarters.....	2,500.00
47. Roads, retaining walls, walks, sewers, water and gas mains, etc.....	100,000.00
48. Contingencies, salaries of inspectors and engineers, advertising, printing, architects' fees, etc.....	145,655.23
Total under second category.....	4,421,155.23
Total under first category.....	3,078,844.77
Grand total.....	7,500,000.00

Material progress has been made upon a number of buildings, detailed information regarding which is contained in the report of the quartermaster (Appendix J). It is to be regretted that the new cadet barracks and new officers' quarters are not more nearly completed. The cause of the slow progress on these buildings has been unavoidable and in no way due to the Government or its representatives.

The act of Congress approved March 3, 1905, provides that after general plans for the improvements have been prepared and approved by the Secretary of War, he may, within the limit of cost fixt, proceed with their execution in such manner, by contract or otherwise, as he may see fit. I believe that this provision will permit the erection of buildings by firms of the highest financial standing on a percentage basis of profit. Several large and important buildings, the erection of which has not yet commenced, are very much needed, particularly the riding hall, the gymnasium, the bachelor officers' quarters, and the new academic building. A great amount of time in the execution of this work might be saved by contracting for it upon the percentage basis, which is more certain than the ordinary form of contract in guaranteeing prompt construction, and has frequently proved in the business world the most economical method of undertaking important construction work.

The general plan of landscape treatment for the cultivated portions of the West Point Reservation has been submitted by Messrs. Olmstead Brothers, of Brookline, Mass., and has been tentatively approved. Another year's operation of the forestry plan has had a visibly beneficial effect upon the uncultivated portion of the reservation. The report of the forester, Prof. Roy L. Marston, is inclosed herewith (Appendix K).

ESTIMATES.

The estimates for the next fiscal year are forwarded with this report, together with full notes explaining the necessity for the few new items submitted.

In relinquishing the superintendency of the academy, which I do this day, I wish to express grateful appreciation of the able support and effective assistance which I received from the officers on duty at West Point, from those in the War Department, and from others, not only during the past year but also during my entire tour of duty here. On behalf of the academy I would also record its indebtedness to Congress, and particularly to the Congressional committees having charge of its appropriation bill, for the vivid interest and keen appreciation manifested as to its needs and the liberal measures enacted for its support.

There can be no doubt that the academy is in a condition of material prosperity, and I trust that my successor will also find that the spirit of the institution is alive and progressive, and that its traditions, upon which depends to no small degree its usefulness as a national military school, have been fostered and are vital forces at the present day.

Very respectfully,

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

THE MILITARY SECRETARY,
War Department, Washington, D. C.

APPENDIX A.

ROSTER OF OFFICERS AND TROOPS.

SUPERINTENDENT.

Albert L. Mills, brigadier-general, United States Army.

PERSONAL STAFF.

First Lieut. Francis W. Clark, Artillery Corps, aide-de-camp.

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.

First Lieut. William S. Browning, Artillery Corps, commissary.

Capt. Sam F. Bottoms, commissary, in charge of post exchange.

Maj. Mason M. Patrick, Corps of Engineers, in charge of water supply.

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.

Capt. Robert C. Foy, Tenth Cavalry, assistant to quartermaster.

First Lieut. Walter D. Smith, Fourteenth Cavalry, assistant to quartermaster.

Maj. Charles M. Gandy, surgeon, United States Army.

Capt. Thomas L. Rhoads,^a assistant surgeon, United States Army.

First Lieut. John W. Hanner, assistant surgeon, United States Army.

First Lieut. Lloyd L. Smith, assistant surgeon, United States Army.

Michael A. Rebert, contract surgeon.

ACADEMIC STAFF.

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

^aOn detached service.

DEPARTMENT OF TACTICS.

Robert L. Howze, lieutenant-colonel, United States Army (captain, Sixth Cavalry), commandant of cadets and instructor of tactics.

Capt. Francis C. Marshall, Fifteenth Cavalry, senior instructor of cavalry tactics.

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

Capt. Morton F. Smith, Twentieth Infantry, senior instructor of infantry tactics.

Capt. Merch B. Stewart, Eighth Infantry, assistant instructor of 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. Charles W. Exton, Twentieth Infantry, assistant instructor of tactics, commanding company of cadets.

Capt. Herman J. Koehler, United States Army, master of the sword, instructor of military gymnastics and physical culture.

Capt. Llewellyn W. Oliver, Twelfth Cavalry, assistant instructor of tactics, commanding company of cadets.

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

First Lieut. Charles M. Bundel, Twenty-fifth Infantry, assistant instructor of tactics, commanding company of cadets.

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

Second Lieut. Benjamin E. Grey, Twenty-ninth Infantry, assistant instructor of tactics and gymnastics.

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

DEPARTMENT OF CIVIL AND MILITARY ENGINEERING.

Gustav J. Fiebeger, colonel, United States Army, professor.

Capt. Lytle Brown, Corps of Engineers, assistant professor.

Capt. James A. Woodruff, Corps of Engineers, instructor.

Capt. Lewis H. Rand, Corps of Engineers, instructor.

First Lieut. Francis A. Pope, Corps of Engineers, instructor.

First Lieut. Laurence V. Frazier, Corps of Engineers, instructor.

DEPARTMENT OF NATURAL AND EXPERIMENTAL PHILOSOPHY.

William B. Gordon, lieutenant-colonel, United States Army, professor.

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, United States Army, professor.

- Capt. George Blakely, Artillery Corps, associate professor.
- Capt. William R. Smith, Artillery Corps, assistant professor.
- 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. Guy E. Carleton, Artillery Corps, instructor.
- Second Lieut. Wade H. Carpenter, Artillery Corps, instructor.
- Second Lieut. Charles R. Alley, Artillery Corps, instructor.
- Second Lieut. Chauncey L. Fenton, Artillery Corps, instructor.

DEPARTMENT OF CHEMISTRY, MINERALOGY, AND GEOLOGY.

- Samuel E. Tillman, M. A., colonel, United States Army, professor.
- Capt. Richmond P. Davis, Artillery Corps, assistant professor.
- Capt. Milton L. McGrew, Eleventh Infantry, instructor.
- First Lieut. Charles B. Clark, Fifth Infantry, instructor.
- First Lieut. Julian A. Benjamin, Third Cavalry, instructor.
- First Lieut. William P. Stokey, Corps of Engineers, instructor.
- First Lieut. William R. Bettison, Artillery Corps, instructor.

DEPARTMENT OF DRAWING.

- Charles W. Larned, colonel, United States Army, professor.
- 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.
- First Lieut. Frank P. Amos, Eleventh Cavalry, instructor.
- First Lieut. George B. Comly, Third Cavalry, instructor.

DEPARTMENT OF MODERN LANGUAGES.

- Edward E. Wood, colonel, United States Army, professor.
- Capt. William Kelly, jr., Ninth Cavalry, associate professor.
- Capt. William O. Johnson, Tenth 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.
- First Lieut. Charles F. Martin, Fifth Cavalry, instructor.
- First Lieut. Charles R. Lawson, Artillery Corps, instructor.
- First Lieut. George M. Russell, Fifteenth Cavalry, instructor.
- Second Lieut. Stephen Abbot, Artillery Corps, instructor.
- Second Lieut. Edward J. Moran, Twenty-seventh Infantry, instructor.
- Second Lieut. George A. Lynch, Seventeenth Infantry, instructor.
- Second Lieut. Joseph W. Stilwell, Twelfth Infantry, instructor.
- Civilian instructors: A. Marin La Meslee and Georges Castegnier, in French; Jose M. Asensio and N. T. Quevedo, in Spanish.

REPORT OF THE SUPERINTENDENT

DEPARTMENT OF LAW AND HISTORY.

Edgar S. Dudley, LL. B., colonel and judge-advocate, United States Army, professor. (By assignment under act June 6, 1874.)

First Lieut. Irvin L. Hunt, Nineteenth Infantry, assistant professor.

First Lieut. Samuel T. Ansell, Eleventh Infantry, instructor.

First Lieut. Clement A. Trott, Fifth Infantry, instructor.

First Lieut. Edwin G. Davis, Artillery Corps, instructor.

First Lieut. Pressley K. Brice,^a Artillery Corps, instructor.

First Lieut. Edward Canfield, jr., Artillery Corps, instructor.

Second Lieut. Marion W. Howze, Artillery Corps, instructor.

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

Lytle Brown, captain, Corps of Engineers, instructor.

First Lieut. Michael J. McDonough, Corps of Engineers, senior assistant instructor.

DEPARTMENT OF ORDNANCE AND GUNNERY.

Ormond M. Lissak, major, Ordnance Department, instructor.

Capt. Edward P. O'Hern, Ordnance Department, senior assistant instructor.

First Lieut. William P. Ennis, Artillery Corps, instructor.

Second Lieut. Thomas E. Selfridge, Artillery Corps, instructor.

DEPARTMENT OF MILITARY HYGIENE.

Charles M. Gandy, lieutenant-colonel (major, Medical Department), professor.

LIBRARIAN.

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

CHAPLAIN.

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

EXAMINING AND SUPERVISING DENTAL SURGEON.

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

TEACHER OF MUSIC.

George Essigke. (October 15, 1895.)

FORESTER.

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

TROOPS.

BATTALION OF CADETS.

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

^aAbsent sick.

DETACHMENT OF HOSPITAL CORPS.

Maj. Charles M. Gandy, surgeon, commanding.
 Capt. Thomas L. Rhoads, assistant surgeon.
 First Lieut. John W. Hanner, assistant surgeon.
 First Lieut. Lloyd L. Smith, assistant surgeon.

UNITED STATES MILITARY ACADEMY DETACHMENT OF ARMY SERVICE MEN.

Capt. Robert C. Foy, Tenth Cavalry, commanding.
 First Lieut. Walter D. Smith, Fourteenth 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 DETACHMENT OF ORDNANCE.

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

UNITED STATES MILITARY ACADEMY DETACHMENT OF CAVALRY.

Capt. Francis C. Marshall, Fifteenth 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, United States Army.....	Sept. 20, 1898
PROFESSORS.		
Larned, Charles W.....	Professor (July 25, 1876).....	Aug. 28, 1874
Tillman, Samuel E.....	Professor (December 21, 1880).....	Aug. 28, 1879
Wood, Edward E.....	Professor (October 1, 1892).....	Aug. 28, 1889
Fieberger, Gustav J.....	Professor (May 4, 1896).....	May 30, 1896
Gordon, William B.....	Professor (March 27, 1901).....	May 2, 1901
Echols, Charles P.....	Professor (June 29, 1904).....	Dec. 27, 1898
COLONEL.		
Dudley, Edgar S.....	Colonel and judge-advocate, professor (July 31, 1901)	July 31, 1901
LIEUTENANT-COLONELS.		
Howze, Robert L.....	Captain, Sixth Cavalry, commandant of cadets (June 15, 1905).	June 15, 1905
Gandy, Charles M.....	Lieutenant-colonel (major, Medical Department), professor (July 5, 1906).	June 20, 1906
MAJORS.		
Carson, John M., jr.....	Quartermaster's Department.....	July 8, 1903
Patrick, Mason M.....	Corps of Engineers.....	Aug. 31, 1903
Lissak, Ormond M.....	Ordnance Department.....	July 1, 1904

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

Name.	Corps or regiment.	On duty at academy since—
CHAPLAIN.		
Travers, Rev. Edward S.	Chaplain.	Dec. 1, 1905
ASSOCIATE PROFESSORS.		
Blakely, George.	Captain, Artillery Corps.	Jan. 24, 1903
Kelly, William, jr.	Captain, Ninth Cavalry.	Oct. 19, 1898
CAPTAINS.		
Hagadorn, Charles B.	Twenty-third Infantry.	Aug. 20, 1902
Johnson, William O.	Sixteenth Infantry.	Aug. 22, 1904
Pierce, Pamer E.	Thirteenth Infantry.	Nov. 8, 1901
Thayer, Arthur.	Third Cavalry.	Aug. 22, 1904
Davis, Richmond P.	Artillery Corps.	Aug. 22, 1906
Marshall, Francis C.	Fifteenth Cavalry.	July 5, 1904
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
Smith, Morton F.	Twentieth Infantry.	Feb. 26, 1906
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.
Bottoms, Sam F.	Subsistence Department.	July 12, 1906
Newbold, Henry L.	Artillery Corps.	Aug. 20, 1903
Christian, John B.	Ninth Cavalry.	Aug. 22, 1905
Exton, Charles W.	Twentieth Infantry.	Sept. 15, 1903
O'Hern, Edward P.	Ordnance Department.	Aug. 22, 1905
Brown, Lytle.	Corps of Engineers.	Jan. 12, 1903
Woodruff, James A.	do.	Aug. 24, 1906
Stickle, Horton W.	do.	Aug. 22, 1904
Koehler, Herman J.	Instructor of military gymnastics and physical culture.	Feb. 1, 1885
Rand, Lewis H.	Corps of Engineers.	Aug. 1, 1904
Rhoads, Thomas L.	Medical Department.	Aug. 19, 1904
Foy, Robert C.	Tenth Cavalry.	Sept. 1, 1904
Oliver, Llewellyn W.	Twelfth Cavalry.	Aug. 22, 1906
FIRST LIEUTENANTS.		
Clark, Charles B.	Fifth Infantry.	Aug. 22, 1906
Hunt, Irvin L.	Nineteenth Infantry.	Aug. 1, 1903
Simonds, George S.	Twenty-second Infantry.	Aug. 22, 1904
Ansell, Samuel T.	Eleventh Infantry.	June 14, 1906
Trott, Clement A.	Fifth Infantry.	Aug. 23, 1906
Bundel, Charles M.	Twenty-fifth Infantry.	Do.
Baer, Joseph A.	Sixth Cavalry.	Aug. 29, 1905
Whiflock, Frank O.	Fourteenth Cavalry.	Do.
Martin, Charles F.	Fifth Cavalry.	Oct. 24, 1903
Morris, Willis V.	Sixth Cavalry.	Aug. 22, 1903
Wesson, Charles M.	Eighth Cavalry.	Aug. 20, 1903
Amos, Frank P.	Eleventh Cavalry.	Aug. 22, 1906
Benjamin, Julian A.	Third Cavalry.	Aug. 22, 1905
Comly, George B.	do.	Aug. 20, 1903
McDonough, Michael J.	Corps of Engineers.	Apr. 17, 1903
Pope, Francis A.	do.	Aug. 22, 1906
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
Hanner, John W.	Medical Department.	May 19, 1906
Glade, Herman.	Sixth Infantry.	Mar. 14, 1902
Smith, Lloyd L.	Medical Department.	Aug. 25, 1906
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
Ennis, William P.	do.	Aug. 19, 1904
Carleton, Guy E.	do.	Aug. 28, 1904
Smith, Walter D.	Fourteenth Cavalry.	Aug. 22, 1905
Russell, George M.	Fifteenth Cavalry.	Aug. 28, 1906
Bettison, William R.	Artillery Corps.	Aug. 20, 1903

a Absent sick.

List of officers at the United States Military Academy—Continued

Name.	Corps or regiment.	On duty at academy since—
SECOND LIEUTENANTS.		
Carpenter, Wade H.....	Artillery Corps.....	Aug. 22, 1904
Casad, Adam F.....	do.....	Aug. 22, 1905
Abbot, Stephen.....	do.....	Aug. 22, 1904
Moran, Edward J.....	Twenty-seventh Infantry.....	Aug. 22, 1906
Howze, Marion W.....	Artillery Corps.....	Aug. 22, 1905
Lynch, George A.....	Seventeenth Infantry.....	Do.
Selfridge, Thomas E.....	Artillery Corps.....	Aug. 22, 1906
Grey, Benjamin E.....	Twenty-ninth Infantry.....	Do.
Alley, Charles R.....	Artillery Corps.....	Do.
Fenton, Chauncey L.....	do.....	Do.
Stillwell, Joseph W.....	Twelfth Infantry.....	Do.

HEADQUARTERS UNITED STATES MILITARY ACADEMY,
West Point, N. Y., August 31, 1906.

Official:

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

APPENDIX B.

REPORT OF THE SURGEON.

CADET HOSPITAL,
West Point, N. Y., June 30, 1906.

SIR: I have the honor to make the following report for the medical department for this post for the year ending June 30, 1906:

Admissions to the cadet hospital, including officers and cadets:	
1906.....	874
1905.....	865
Number of days lost to cadets in study thru sickness:	
1906.....	5,414
1905.....	5,675
Number of days gained during the past year.....	261
Admissions to soldiers' hospital, for 1906.....	400
Prescriptions filled at the cadet hospital.....	9,716
Prescriptions filled at the soldiers' hospital, including the subdispensary.....	5,328

There have been no fatal cases among the cadets during the past year, altho there have been a number of cases of serious illness and operations.

GENERAL HEALTH.

Number of deaths among civilians..... 9

CAUSES.

Acute enteritis.....	2	Old age.....	1
Malarial fever.....	1	Pneumonia.....	1
Myelitis, chronic.....	1	Tuberculosis, pulmonary.....	2
Heart disease.....	1		

Number of deaths among soldiers..... 5

CAUSES.

Cancer of stomach.....	1	Suicide.....	1
Drowning.....	1	Tuberculosis, pulmonary.....	1
Pneumonia.....	1		

Table A, attached hereto, gives the classification of operations performed during the year.

Table B, attached hereto, classifies the number of admissions to the hospital during the past year.

Table C, attached hereto, classifies the eye cases during the past year.

The largest number of admissions were due to bronchitis, tonsilitis, and indigestion.

A large number of admissions were due to slight injuries, contusions, and sprains received by the cadets in the riding hall or in their athletic games; none were serious.

CONTAGIOUS DISEASES.

None in the corps of cadets.

INFECTIOUS DISEASES.

One severe case of typhoid fever contracted by a cadet while on furlough.

There has been a mild epidemic of mumps and chicken pox among the families of the enlisted men of the post.

There is a marked decrease in the number of malarial fever cases as compared with last year; most of these cases occurred in the latter part of summer or the early part of fall. A number of these cases occurred in cadets coming from the South and Southwest, saturated with the poison, only to manifest itself again by a change to this northern climate.

SANITATION.

During the past year, whenever the weather would permit, the "mosquito squad," consisting of a sergeant and four men of the detachment of army service men, under the immediate charge of one of the medical officers, has been continuously at work exterminating the mosquitoes from this post; swampy places and all sources of stagnant water have been drained and 3,000 gallons of crude petroleum have been used during the past year. The efficiency of this work has been shown in the marked decrease in malaria.

A house-to-house inspection of the quarters and barracks has been made and a record kept, and all sanitary defects, as soon as reported, have been remedied.

Whenever a house has been vacated on the post the quartermaster has notified the medical department, and, as a sanitary precaution, the house has been disinfected with formaldehyde gas.

The food furnished by the cadet mess has been daily inspected by a medical officer and found to be excellent in quality and abundant in quantity.

The cadet latrines have been inspected two or three times a week and regularly disinfected.

The sanitary condition of the present Camp John M. Schofield is the best I have ever seen; nothing has been neglected or overlooked that would render it perfect from a sanitary standpoint.

There have been examined 102 men, and 93 have been accepted as recruits.

The report of the dental surgeon is hereto appended, marked "D."

Very respectfully, your obedient servant,

H. O. PERLEY,
Lieutenant-Colonel, Deputy Surgeon-General, U. S. A., Surgeon.

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

TABLE A.—Operations performed.

By Capt. Thomas L. Rhoads, assistant surgeon, United States Army:	
Abscess, axillary, incision and drainage of (soldier, 1).....	1
Abscess, palmar, incision and drainage of (cadet, 1; soldier, 1).....	2
Appendicectomy (cadet, 1; civilian, 3).....	4
Circumcision (cadet, 1).....	1
Dislocation right elbow reduced (cadet, 1).....	1
Dislocation semilunar cartilage, right knee, reduced, passive motion (cadet, 1)...	1
Exploratory celiotomy (soldier, 1).....	1
Extirpation of ganglia of wrist (soldier, 1).....	1
Extirpation of lymphadenoma of neck (soldier, 1).....	1
Hemorrhoids, excision of (cadet, 1; soldier, 1).....	2
Herniotomy, left inguinal, direct (cadet, 1; civilian, 1).....	2
Ingrowing toe nails, both great toes, incision of (cadet, 1).....	1
By First Lieut. George M. Ekwurzel, assistant surgeon, United States Army:	
Amputation of index finger, left hand (soldier, 1).....	1
Tonsilotomy (cadet, 1).....	1
By First Lieut. James W. Van Dusen, assistant surgeon, United States Army:	
Abscess, ischio, incision and drainage of (soldier, 1).....	1
Abscess, femoral, incision, drainage, and curettage of (civilian, 1).....	1
Bubo, incision, drainage, and curettage of (soldier, 1).....	1
Dislocation of wrist reduced (civilian, 1).....	1
Fracture, compound, comminuted, tibia and fibula set (civilian, 1).....	1
Herniotomy (soldier, 1).....	1
Total.....	26

TABLE B.

	Officers and cadets.		Enlisted men.	
	Admis- sions.	Ratio per 1,000 of mean strength.	Admis- sions.	Ratio per 1,000 of mean strength.
Abrasions.....	6	5.94	3	2.97
Abscesses.....	16	15.84		
Adenitis.....	1	.99	1	.99
Albert's disease.....	2	1.98		
Alcoholism.....	1	.99		
Appendicitis.....	5	4.95	5	4.95
Asthma.....	3	2.97		
Blepharitis.....	1	.99		
Blepharospasm.....	1	.99		
Bronchitis.....	88	87.12	62	61.38
Bruises.....	1	.99		
Bubo.....			1	.99
Bunion.....			2	1.98
Burns.....			1	.99
Bursitis.....	1	.99		
Callositas.....			4	3.96
Carcinoma.....			1	.99
Cardiac irregularity.....	1	.99		
Catarrh.....	4	3.96		

TABLE B—Continued.

	Officers and cadets.		Enlisted men.	
	Admissions.	Ratio per 1,000 of mean strength.	Admissions.	Ratio per 1,000 of mean strength.
Cellulitis.....	13	12.87	1	.99
Cephalalgia.....	14	13.86		
Colic.....			1	.99
Colitis.....	4	3.96	3	2.97
Concussion.....	1	.99		
Conjunctivitis.....	5	4.95	1	.99
Constipation.....	3	2.97	2	1.98
Contusions.....	49	48.51	24	23.76
Corns.....	9	8.91		
Coryza.....	11	10.89		
Cystitis.....	4	3.96	3	2.97
Dental caries.....	7	6.93		
Deviation nasal septum.....	1	.99		
Diarrhea.....	4	3.96	6	5.94
Dislocations.....	4	3.96		
Dysentery.....			2	1.98
Echymosis.....	1	.99		
Eczema.....	2	1.98		
Enteritis.....	1	.99		
Epistaxis.....	1	.99		
Erythema.....	3	2.97		
Eye strain.....	1	.99		
Favus.....	1	.99		
Fever, enteric.....	1	.99		
Fever, malarial.....	34	33.66	15	14.85
Felon.....			2	1.98
Fractures.....	10	9.90	6	5.94
Furuncles.....	26	25.74	19	18.81
Gastric diseases.....			8	7.92
Gunshot wounds.....	1	.99		
Hemoptysis.....	1	.99		
Hematuria.....	1	.99		
Heat exhaustion.....	1	.99	1	.99
Hemorrhoids.....	6	5.94	5	4.95
Hernia.....	2	1.98	2	1.98
Herpes.....			1	.99
Herpes zoster.....	3	2.97	1	.99
Impetigo contagioso.....			1	.99
Incontinence of urine.....	2	1.98		
Indigestion.....	159	157.41	4	3.96
Inflamations.....	1	.99		
Influenza.....	7	6.93	3	2.97
Ingrowing toe nails.....	4	3.96		
Injuries.....	31	30.69	1	.99
Insanity.....			1	.99
Insomnia.....	5	4.95		
Intestinal diseases.....			21	20.79
Lacerations.....	4	3.96		
Laryngismus stridulus.....	1	.99		
Laryngitis.....	13	12.87		
Lumbago.....	4	3.96	5	4.95
Lymphangitis.....	1	.99		
Melanchoia.....			1	.99
Mitral regurgitation.....			2	1.98
Nasal septum.....	1	.99		
Necrosis.....	1	.99		
Nephritis.....			1	.99
Neuralgia.....	5	4.95		
Neurasthenia.....	1	.99		
Oedema alar ligament.....	2	1.98		
Onychia.....	2	1.98		
Orchitis, traumatic.....			2	1.98
Otitis media.....	2	1.98	3	2.97
Papilloma.....	1	.99		
Paralysis.....			1	.99
Parotitis epidemic.....			19	18.81
Pedicle corporis.....	2	1.98		
Pedicle pubis.....	5	4.95		
Pericementitis.....	1	.99		
Pericystitis.....	2	1.98		
Pharyngitis.....	43	42.57	6	5.94
Phlebitis.....	1	.99		
Pleurisy.....			2	1.98
Pneumonia.....	1	.99	1	.99
Prostatitis.....	2	1.98		
Pterygium.....	2	1.98		
Pulpitis caries.....	1	.99		

TABLE B—Continued.

	Officers and cadets.		Enlisted men.	
	Admissions.	Ratio per 1,000 of mean strength.	Admissions.	Ratio per 1,000 of mean strength.
Rheumatism.....	3	2.97	8	7.92
Rhinitis.....	14	13.86		
Rhus toxicodendron.....	28	27.72	2	1.98
Scabies.....	2	1.98	26	25.74
Sprains.....	84	83.16	27	26.73
Strains.....	1	.99	2	1.98
Syncope.....	4	3.96		
Synovitis.....	9	8.91	6	5.94
Tinea circinata.....	3	2.97		
Tinea sycosis.....	2	1.98		
Tonsillitis.....	27	26.73	19	18.81
Torcellis.....			1	.99
Trismus.....	1	.99		
Tuberculosis.....			4	3.96
Tumor.....	1	.99		
Ulcer, corneal.....			1	.99
Ulcers.....	1	.99		
Urticaria.....	1	.99	2	1.98
Vaccinia.....	2	1.98	1	.99
Wounds.....	25	24.75	10	9.90
Wounds, infected.....			2	1.98
Total.....	874		400	

TABLE C.—Classification of eye cases treated and prescribed for by First Lieut. George M. Elkwurzel, assistant surgeon, United States Army.

Anisometropia.....	1	Glaucoma.....	2
Astigmatism, hyperopic.....	37	Hyperopia.....	11
Astigmatism, myopic.....	16	Keratitis.....	1
Astigmatism.....	1	Myopia.....	12
Cataract.....	4	Paralysis, partial, third nerve.....	1
Cerebral hemorrhage, old.....	1	Presbyopia.....	13
Conjunctivitis.....	1	Retina, detachment of.....	1
Corneal ulcer.....	1	Strabismus.....	4
Dacryocystitis.....	4		
Emmetropia.....	5	Total.....	119
Exophoria.....	3		

APPENDIX C.

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

OFFICE OF THE TREASURER,
 UNITED STATES MILITARY ACADEMY,
 West Point, N. Y., August 14, 1906.

SIR: In compliance with instructions contained in Memorandum No. 46, 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, 1906:

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 28 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.....	\$267,343.22	\$276,380.47
Athletic association.....	3,319.50	3,319.50
Balances paid.....	34,102.70	33,798.32
Barber.....	1,081.50	1,081.50
Cadet cash.....	26,794.74	26,519.47
Cadet hospital.....	2,943.24	2,943.24
Cadet laundry.....	16,553.10	17,601.14
Cadet store.....	113,927.50	115,834.23
Cadet mess.....	112,691.76	107,641.46
Confectioner.....	368.84	368.84
Corps of cadets.....	340,227.04	342,717.21
Damages, ordnance.....	57.77	57.77
Dancing.....	739.50	739.50
Dentist.....	352.00	340.00
Deposits.....	16,885.82	16,692.84
Dialectic society.....	363.77	546.13
Equipment fund.....	36,235.90	51,080.25
Expressage.....	26.02	27.42
Hops and german.....	3,625.15	3,607.01
Miscellaneous fund.....	64.28	64.28
Miscellaneous items.....	1,974.18	1,974.18
Oaths (notary public).....	29.00	29.00
Paymaster.....	226,948.87	226,948.87
Purchasing commissary.....	49,431.60	49,431.60
Periodicals.....	44.45	44.45
Photographer.....	28.00	28.00
Travel pay.....	4,789.86	4,789.86
Young Men's Christian Association.....	570.55	557.92

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 26, 1906, and reported as follows:

Assets.	Amount.	Liabilities.	Amount.
Assistant treasurer.....	\$26,111.06	Balances paid.....	\$189.25
Cadet cash.....	692.68	Cadet laundry.....	171.03
Cadet store.....	22,133.72	Corps of cadets.....	5,297.71
Cadet mess.....	15,469.71	Deposits.....	110.89
Dentist.....	12.00	Dialectic society.....	335.78
Washstand, etc., fund.....	254.41	Equipment fund.....	79,164.55
Reserve fund.....	10,000.00	Expressage.....	1.40
Cash on hand.....	10,935.90	Miscellaneous fund.....	296.17
		Young Men's Christian Association..	102.70
Total.....	85,609.48	Total.....	85,609.48

I append herewith a statement which shows the volume of business transacted by this office for the fiscal years ending June 30, 1905 and 1906, respectively:

Total Dr., fiscal year—	
1905.....	\$1,329,706.98
1906.....	1,282,674.29
Balance in favor 1905.....	47,032.79
Total Cr., fiscal year—	
1905.....	1,286,489.14
1906.....	1,264,010.03
Balance in favor 1905.....	22,479.11

Concerning the financial condition of the cadets, some data are given below which may be of interest at the present time.

Amounts paid to the cadets of the graduating class.

Year.	Total amount.	Highest.	Lowest.	Average.
1897.....	\$18,200.07	\$466.71	\$129.73	\$267.74
1898.....	15,218.45	338.80	162.87	257.92
1900.....	12,669.87	395.82	96.45	222.27
1901.....	14,033.27	340.89	49.61	196.28
1906.....	30,125.33	533.88	199.04	386.22

It is to be noted that the amounts paid in 1906 are those balances actually paid the cadets upon graduating after deducting the amounts due the cadet store for furnishing uniforms and equipment, the average cost of which was \$100 per man, which will raise the total amount paid to \$38,000 and increase other amounts by \$100.

The cash disbursed to cadets to be used in paying their expenses while on leaves of absence, in purchasing articles such as athletic goods, photographic material, confectionery—in fact, for all things purchased for their personal pleasure or profit for the year ending June 30, 1898—amounted to \$11,792.09, the average amount so disbursed during this year for each cadet amounting to \$40.94.

During the year ending June 30, 1906, the cash disbursed to cadets for the same purpose amounted to \$26,794.74. The average amount disbursed during the year for each cadet amounted to \$60.

On May 1, 1906, the corps of cadets was out of debt \$15,859.81.

QUARTERMASTER OF CADETS.

The business of the cadet store has slightly increased, due to the increase in sales of goods other than necessities, such as athletic goods. A great increase has been made in the sales of officers' uniforms to the members of the graduating class, every member of the class that graduated this year except two having purchased their uniforms, either in whole or in part, from the cadet store. This is regarded with considerable satisfaction, as it shows the business acumen of these cadets, they having purchased their uniforms from the cadet store after having had full opportunity to examine the wares and compare the prices of others with those of the cadet store. It is believed that these uniforms are superior in quality, cut, and workmanship, and lower in price, to those made by military tailors anywhere, and that the cadets are fully aware of this fact is shown by the greatly increased sales to graduates.

The old store building has been repaired and repainted and numerous minor alterations in arrangement and fixtures have been made during the past year, but it is entirely inadequate for the present needs of the store and business can not be as economically conducted as will be the case when the new store building is available.

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

	Manufac- tured.	Repaired.
Dress coats.....	356	982
Overcoats.....	210	804
Blouses.....	492	1,492
Trousers:		
Gray.....	973	1,442
White.....	1,290	1,394
Riding.....	90	
Line officers'.....	61	254
Staff officers'.....	11	
Officers' service.....	100	
Riding breeches, officers'.....	106	15
Dress coats, officers'.....	14	36
Overcoats, officers'.....	5	38
Blouses, officers'.....	217	164
Capes, officers'.....	4	6
Miscellaneous, including "cits.," etc.....		1,650
Chevrons sewed on.....		466
Service stripes sewed on.....		1,294
Socks tagged, pairs.....		3,600
Shoes.....		2,639
Total.....	3,929	16,276

CADET LAUNDRY.

The amount of work done at the cadet laundry during the past year has decreased, as is shown by the following comparative statement. The laundry plant is in excellent condition, numerous improvements and additions to the machinery having been made, and the building is in a better condition than it has ever been, considerable money having been spent in the past year in making absolutely necessary repairs and in repainting the building, but these repairs have only been of such a character as were urgently demanded, as it has been deemed unwise to spend any money not absolutely necessary on this building, as it is anticipated that the new laundry building will be completed within a few years. A greater output with a smaller number of employees has been accomplished this year than ever before.

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

For cadets.

Belts, shoulder.....	45,726	Shirts, white and negligee.....	32,567
Belts, sword.....	3,986	Shirts, night.....	9,837
Belts, waist.....	22,946	Shirts, gray.....	2,235
Blankets, single.....	24	Shirts, under.....	50,318
Coats, fatigue.....	8	Socks, pairs.....	55,110
Clothes bags.....	10,096	Towels.....	80,045
Collars.....	121,713	Trousers, gray.....	161
Cuffs, pairs.....	88,366	Trousers, white.....	41,983
Drawers.....	47,198		
Gloves, pairs.....	42,493	Total.....	806,457
Handkerchiefs.....	90,748	Total 1904-5.....	799,303
Pajamas, suits.....	9,178		
Pillowcases.....	18,675	Increase during year.....	7,154
Sheets.....	33,044		

For cadet hospital.

Aprons.....	107	Shirts, hospital.....	250
Bedspreads.....	311	Tablecloths.....	196
Blankets, single.....	58	Towels.....	10,309
Gowns, operating.....	27		
Mattress covers.....	8	Total.....	19,669
Napkins.....	907	Total 1904-5.....	24,773
Pajamas, suits.....	1,169		
Pillowcases.....	2,966	Decrease during year.....	5,104
Sheets.....	3,361		

For cadet mess.

Aprons.....	9,807	Tablecloths.....	18,903
Caps.....	442	Table felts.....	1,952
Jackets.....	9,552	Towels.....	30,266
Meat cloths.....	340		
Napkins.....	160,233	Total.....	236,533
Overalls.....	929	Total 1904-5.....	242,137
Pillowcases.....	1,291		
Sheets.....	2,818	Decrease during year.....	5,604

For soldier hospital.

Aprons.....	14	Shirts, hospital.....	68
Bedspreads.....	313	Tablecloths.....	27
Blankets, single.....	38	Towels.....	2,113
Caps.....	5		
Gowns, operating.....	28	Total.....	5,182
Mattress covers.....	11	Total 1904-5.....	9,703
Pajamas, suits.....	425		
Pillowcases.....	872	Decrease during year.....	4,521
Sheets.....	1,268		
Grand total of pieces laundered.....			1,067,841
Grand total of pieces laundered 1904-5.....			1,075,916
Decrease during year.....			8,075

COMMISSARY OF CADETS.

The work of the cadet mess has been about the same as last year. The entire plant is in very good shape and the work required of it is conducted with the minimum amount of expense and friction, and, it is believed, with the maximum amount of satisfaction to all. Funds are now available with which to tile the floors and wainscoting of the working rooms on the main floor of the north wing. This will greatly improve the mess.

The cost of food supplies has been about the same as has obtained for the past few years. The numerous trips away from West Point made by the cadets, the cost of the subsistence of which is borne by the cadet mess, has added considerably to the cost of operation.

The cost of board for cadets during the past year has been 63 cents per day, the same as the cost per day for the preceding year.

Respectfully submitted.

THOS. FRANKLIN,

Captain and Treasurer, United States Military Academy.

The ADJUTANT,

Present.

APPENDIX D.

REPORT OF THE COMMANDANT OF CADETS.

HEADQUARTERS UNITED STATES CORPS OF CADETS,
West Point, N. Y., August 7, 1906.

SIR: In compliance with Memorandum No. 46, Headquarters United States Military Academy, dated July 9, 1906, I have the honor to submit the following report:

As far as practicable the recommendations contained in my report of last year concerning changes in the practical instruction of cadets have been carried out with satisfactory results.

The program of exercises submitted with my last annual report was carried out to completion. The problem in minor tactics, preliminary to the practise march, was held on the date fixt, August 12, 1905. It was well handled by all concerned and enabled the department to prepare the cadets' minds for the work to be done on the practise march, which followed from August 19 to 23, inclusive. On this march the whole corps of cadets, except the furlough class, was present, and the cadets of the first class served either in the capacity of officers or of troopers. The march was made under service conditions with highly satisfactory results. The exercises for the day, in addition to the day's march, consisted in the solution of one or more field problems. Officers and cadets entered keenly and intelligently into the spirit of the work. The camps were made in accordance with field service regulations, and the instruction of cadets in all matters pertaining thereto was quite thoro and complete. A marked increase in time has been devoted to practical field work of all arms.

On August 4 of this year a preliminary field problem, similar to the one of last year, was held with good results. On August 20 the whole corps of cadets, except the furlough class, will go on a practise march of six days, under service conditions. It is believed that the success of last year will attend the efforts of the officers this year, in training the cadets in marching, construction of camps, camp sanitation, solution of problems in minor tactics, making of route sketches and sketches of the field of operation, etc. The value of this field work can not be overestimated. Definite rules govern the solution of the tactical problems, and they are enforced with as much uniformity as theoretical conditions will admit of.

From August 13 to August 17, 1905, the whole first class visited Fort Totten, N. Y., and received instruction at the fortifications and in submarine defense. This was accomplished thru the courtesy and cooperation of Colonel Murray, the commandant of the School of Submarine Defense. Arrangements have been made to send the present first class to Fort H. G. Wright, N. Y., for this valuable instruction from August 12 to August 19, this year, and Colonel Whistler, the commanding officer of that post, is doing everything to make the visit successful in all respects. This station was selected because the conditions there will admit of actual practise with the guns, which will complete the instruction that we are now able to start in a preliminary way here.

The change in schedule of hours for academic duties, which went into effect September 30, 1905, has, I think, been of marked benefit to the cadet. Under this schedule, having call to quarters immediately

after breakfast during the academic year, the opportunity is afforded the cadet to devote at least forty-five minutes to study without the interruption of guard mounting, which formerly existed.

The cadets now have dinner at 12.15 p. m., thus shortening the period from breakfast to dinner. The academic day is completed at 3.30 p. m., and all the outdoor military instruction, including guard mounting, is given consecutively after 3.30 p. m. During the closed season the cadets have sufficient time for voluntary athletic training and without any interference whatever with their academic or military duties. The present schedule appears satisfactory, and, in my opinion, is a marked improvement over the old one.

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

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

The method of handling new cadets, adopted this year, was the best which has ever been followed. The entire instruction of the new cadet, under direction of Capt. M. B. Stewart, Eighth Infantry, was placed in the hands of the first class. Captain Stewart carefully systematized a scheme, gave the cadet instructors definite orders and instruction, and then required them to carry out his ideas. Without exception, the results were excellent, and the work of the instructors was distinguished by an absence of the objectionable features heretofore existing. In addition to the benefits, due to the greater experience and knowledge of the cadet instructors, which have been received by the fourth class, the first-classmen themselves derived a peculiar and valuable knowledge of methods of drill, of giving commands, self-confidence, etc., which will add to their efficiency as cadets and officers. With a few inappreciable exceptions, it is believed that the method of handling the new cadet this year is as nearly the proper one as can be devised.

The individual instruction in riding has been as heretofore. The amount is too small, because the present riding hall is not large enough. This deficiency is overcome to some extent by giving considerable instruction during the summer and by detailing first-classmen as artillery drivers, and by encouraging voluntary riding, polo, etc.

Over 50 per cent of the cadets of the first class play polo. This necessitates at least 40 serviceable polo ponies. The life of a polo pony is about four years, so provision should be made to supply 10 ponies annually for cadets. The improvement in riding, due to playing the game, is very marked, and every opportunity should be given the cadet to take part in it. The interest in the game continues unabated.

It is noted that no graduates of this year's class have been ordered to Fort Riley, Kans., for instruction in horsemanship and equitation. This instruction is particularly important to the cavalry service, and it is hoped that graduates who enter the cavalry will get the opportunity to take the course.

The instruction in artillery has been improved and modernized during the year. One complete battery of field artillery, model of

1902, was received early last fall, and cadets have been instructed in its use in the various positions and duties, theoretically and practically; at target practise and in the gunners' course; in harnessing and in fitting of harness. There has been a marked increase in field artillery instruction since receiving the new field battery, and it is found that the number of horses now allowed for the battery is insufficient and the work required of the horses is too great. One hundred horses are necessary for the field artillery work here, and I recommend that the number now authorized be increased to 100.

The equipment of a temporary fire-control system has been procured and installed, and cadets of the first class have received instruction in fire-control system and the third class in the service of the guns.

Instruction in subcaliber practise has been conducted.

Four new carriages, model of 1906, have been received for 5-inch siege guns, and arrangements are being made for target practise with these guns.

Cadets have been instructed in the service of mountain artillery and machine guns.

There is urgently needed a field battery, guns model of 1904, with carriages, for instruction in the school of the cannoneer and squad. Also, one battery commander's telescope and one set of field artillery fire-control equipment.

To complete and protect the installation for coast artillery instruction the following are needed: One primary station, one secondary station, one battery commander's station, one searchlight station, with searchlight and communications, telautographs and aroscope. Active efforts are being made to complete the above equipment, so that the cadet can be given quite thoro preliminary training before he goes to the fortification for the practical instruction in firing, etc.

Owing to the fact that the new installation of seacoast material, instruments, etc., has been accomplished, cadets can be given preliminary instruction in the duties of seacoast artillery, and because of the necessity of giving more instruction in field artillery, a great deal more time than formerly is devoted to the subject of artillery instruction. To carry out the proper instruction of cadets in this important branch, the services of another officer of artillery is urgently needed in the department, and the request for the detail of such an officer will be made the subject of a special communication at an early date.

At target practise the recommendations contained in my last report have been followed with entirely satisfactory results.

The course of the summer has not been completed. So far, of the 103 cadets of the first class who have completed the marksmen's course, 54 have made marksmen. This is a marked improvement over any previous year. The cadets receive instruction in the essential parts of target practise. The course is progressive, and instructors give the best attention to the instruction.

A rifle team was sent to the National match at Sea Girt last year. The team shot as well as could have been expected, but, because of the want of anything like proper training, the team was outclassed by all teams which had any show to win. It is not possible to train a cadet team here to a degree where it should be permitted to participate in such contests. The interest in rifle shooting among the

cadets is sufficiently keen, and there is no fear of a falling off in that interest.

The cadets of the first class have received considerably more instruction in revolver practise than heretofore. To increase the interest in this practise and to encourage officers and cadets in the use of the revolver I again recommend that medals be issued for excellence in the use of that arm.

The revised schedule for physical training during the academic year, which included cadets of all classes, was carried out with satisfactory results.

The uniform of cadets has been in no way changed, except that a new shoe has been adopted, which is satisfactory in appearance, in wear, and in comfort to the foot. The former hop shoe has been replaced by a dancing pump.

The discipline of the corps of cadets is very good, and the usual high standards govern.

Several investigations under the provisions of paragraph 128, Regulations for the United States Military Academy, relative to hazing have been held. No fourth-classman has suffered any abuse.

When the new cadet barracks are completed the corps of cadets should be organized into 8 companies, and these companies further organized into 2 battalions of 4 companies each. Under this arrangement the companies will have about 60 cadets each, and the battalion about 240 cadets each. Such an organization will be more handleable and better in every way than the present one, and the drill ground and other appliances and equipment can be better utilized. The necessity for this division of the corps of cadets into two battalions is evident to every officer who has given it any thought, and it should be effected as soon as practicable. A special recommendation upon this subject will be made at an early date, and in that communication I will set forth more in detail the reasons why this division should be made, and I will request the assignment of the necessary number of officers to properly command the battalions and companies.

Very respectfully,

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

The ADJUTANT UNITED STATES MILITARY ACADEMY.

NOTE.—The program of practical instruction in the department for the year is omitted because it differs so little from the one submitted with my last report.

APPENDIX E.

REPORT OF THE INSTRUCTOR OF PRACTICAL MILITARY ENGINEERING.

UNITED STATES MILITARY ACADEMY,
DEPARTMENT OF PRACTICAL MILITARY ENGINEERING,
West Point, N. Y., August 7, 1906.

SIR: In accordance with instructions contained in Memorandum No. 46, dated Headquarters United States Military Academy, West Point, N. Y., July 9, 1906, I have the honor to submit the following

report upon the work of the department of practical military engineering covering the period from September 1, 1905, to July 31, 1906:

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 pay for extra duty of the skilled mechanics from the engineer detachment as authorized by law.

CADET INSTRUCTION.

Third class.—The period of instruction for this class extended from June 21, 1906, to August 15, 1906. From June 21 to July 7 one-third of the class attended daily, Sundays excepted, from 7.15 a. m. till 12 m. From July 7 to August 15 one-third of the class attended daily, Sundays and Saturdays excepted, from 8.05 a. m. till 12 m.

The work consisted in the use, care, and adjustments of the engineer's level and transit, the use of the stadia method with transit, and the use of the steel tape. When proficiency in the handling, care, and adjustments of the instruments had been attained, together with the method of keeping records of notes, a topographical survey of a portion of the reservation was made, and the notes were platted on a scale of 100 feet to 1 inch. The platting was done in the field with the ground in view by the draftsman. The order of the work was, care and use of the engineer's level and its adjustments, care and use of the engineer's transit and its adjustments, the stadia method, use of the steel tape, topographical survey of a varied piece of ground.

The class had had no previous instruction in the theory of surveying, and therefore the instruction was slow and tedious in comparison to what it would have been had preliminary instruction been given in the section room in the general objects of surveying and the means of attaining them.

Four officers, in addition to the two of this department, were specially detailed for this work. This force gave the basis for very thoro instruction of the subject in hand. The ratio of instructors to cadets was 1 to 7. After the preliminary work had shown the relative aptitudes of the different cadets for the work the sections were divided accordingly, so that the most apt might have no impediment in the way of their progress. The best sections were made larger than the others, as they took instruction more readily and worked with more efficiency.

The only reasonable change that would greatly improve this course is that some preliminary theoretical instruction be given in the subject of surveying near the close of the fourth-class term. It would save endless repetition of instruction in the field and allow of much more ground being covered there. It is greatly to be desired to have all cadets become familiar with the plane table, but on account of lack of time this can not now be brought about.

Second class.—During the month of April, 1906, the second class attended drill in signaling with the flag and heliograph. The attendance was daily, by the half class, Wednesdays, Saturdays, and Sundays excepted, from 3.40 p. m. till 4.40 p. m. An officer outside of the department was detailed specially for this work, and a detail of enlisted men from the engineer detachment assisted.

First class.—During the month of October, 1905, the first class attended practical military engineering daily, by the half class, Wed-

nesdays, Saturdays, and Sundays excepted, from 3.40 p. m. to 4.40 p. m.

The drills consisted in the following work: Making rafts of casks, assembling and launching canvas pontoons, loading ponton wagons, construction and use of pile driver, mixing and placing concrete, and trestle bridge on land. One extra officer volunteered his services in assisting in this instruction.

During the month of April, 1906, the first class attended drill in practical military engineering as just described for October and received instruction in the following subjects: Profiling and tracing, hydrography (measuring the discharge of stream by weir), launching expedients in bridge building, obstacles (wire entanglements, military pits, abatis), road location and construction. One extra officer volunteered his services in assisting in this instruction.

From July 7, 1906, to August 11, 1906, the first class attended instruction in practical military engineering daily, by the half class, Saturdays and Sundays excepted, from 10 a. m. till 12 m., and received instruction in the following subjects: Single and double lock-spar bridges, Birago and pile trestle bridges over water, boat drill and ponton bridge, trail bridge and rope ferry, making of fascines and gabions, location and construction of intrenchments (skirmish, kneeling, standing, and full-sized trench to resist field artillery), bomb-proof; on the same schedule, but not carried out at date of report, reconnaissance sketching and map reproduction in the field.

From experience in the instruction of the first class it was fully evident that one officer can not do full justice to the work, as he has to handle a section of about 50 cadets. The proper marking of such a number is out of the question, and the supervision of the work is at best superficial. It is therefore to be earnestly recommended that in the future one engineer officer from the department of civil engineering be detailed for summer duty with the department of practical military engineering, as is now done from the department of mathematics, or, preferably, an additional lieutenant of the Corps of Engineers should be permanently assigned to duty with the detachment of engineers, to which three officers are not too many, strength being larger than infantry company and work being of many details.

The short period of the drills in practical military engineering, together with the nature of the work to be done, makes the efficient service of the engineer detachment a vital necessity to cadet instruction. Much preparatory work is always necessary, and if it is not done by the detachment the cadet instruction dwindles down to a mere waste of time in pure manual labor. During the present summer the smallness of the details from the engineer detachment (20 privates maximum, 10 average) greatly crippled the efforts of the department. By various little details they were deflected from their legitimate function. Furthermore, it is always to be recommended that only the best-trained engineer soldiers be selected for this detachment. Recruits are an incumbrance and a nuisance.

Very respectfully,

LYTLE BROWN,
Captain, Corps of Engineers,
Instructor of Practical Military Engineering.

The ADJUTANT UNITED STATES MILITARY ACADEMY.

APPENDIX F.

EXAMINATION IN MECHANICS, DEPARTMENT OF PHILOSOPHY, DECEMBER, 1904, AND DECEMBER, 1905.

EXAMINATION IN MECHANICS, DECEMBER, 1904.

1. Crane diagram given:
 - (a) Make complete solution of the stresses on parts of the frame.
 - (b) Check the stress on the guy by moments.
 - (c) Construct the resultant of the reactions at the foot of the guy and upright.
2. A given center of moments, a given couple, and a given force. Find a force acting at (32,32) which will produce equilibrium.
3. Two homogeneous spheres are in external contact, diameters 1 and 2. How must their densities compare so that their center of gravity shall be at the point of contact?
4. A frustum of a cone is generated by revolving (0,32) (24,64) about (32,32) (32,64). Find the area of the frustum by Pappus' Theorem.
5. Frame diagram and force polygon given. Complete and letter the stress diagram, and mark character of stress on frame diagram.
6. A spiral spring is elongated from (32,72) to (32,8), starting at zero of scale. The tension is 1 pound for an elongation of 2 inches.
 - (a) Find the work done and give the unit in which it is measured.
 - (b) Represent the work graphically, scale 1 inch=1 pound.
 - (c) What mass, falling from rest at zero of the scale, would produce (and come to rest at) the given elongation?
 - (d) Represent the work of the weight over the given path.
 - (e) Find the velocity at the middle point of the path by equating the kinetic energy of the mass to the excess of the work of the weight over that of the spring.
7. A body whose mass is 100 pounds starts from the origin with $V=(0,0)$ (8,32). $X=0$, $Z=-25$ pounds intensity. ($g=32$.)
 - (a) Construct the path described in 8 seconds. (By quarter seconds.)
 - (b) Construct the circle of curvature for $t=4$ seconds.
 - (c) Construct the linear velocity and acceleration for $t=4$ seconds.
 - (d) Find the angular velocity and acceleration about the origin for $t=4$ seconds.
 - (e) Find the horsepower at $t=4$ seconds, $t=0$, and the average horsepower for the first four seconds.
8. Interpret the equations:

$$\sum I \cos \alpha = 0$$

$$\sum I x' \cos \beta - \sum I y' \cos \alpha = 0$$
9. $X = \sum I \cos x = \sum m \frac{d^2 x}{dt^2} = \sum m \frac{d^2 x_0}{dt^2} + \sum m \frac{d^2 x'}{dt^2}$
 reduces to

$$X = \sum I \cos x = M \frac{d^2 x_0}{dt^2}$$
10. (a) Interpret the equation $v^2=2gh$.
 (b) A body is thrown vertically downward with a velocity of 64 f/s. What velocity will it have when it reaches a point 100 feet below?
11. Deduce the value of the kinetic energy of rotation of a body in terms of the moment of inertia and the angular velocity.
12. A grindstone weighs 1,610 pounds and its radius of gyration is 4 feet. The diameter of the circle described by the crank handle is 2 feet, and the moment of the friction on trunnions is 5. A force of 25 pounds is applied to the handle, tangent to its circular path. How many turns will be made in getting up a speed of one turn per second? ($g=32.2$.)
13. A fly wheel weighs 16,100 pounds and its radius of gyration is 10 feet. It is connected with a steam engine whose stroke is 3 feet, area of piston 100 square inches, and steam pressure constant at 100 pounds per square inch. Assume all the work of the steam to be converted into kinetic energy of the fly wheel. How many turns does the wheel make in getting up a speed of 180 turns per minute? ($g=32.2$.)
14. A sphere is supported on two inclined planes. (Figure given.) Construct the equilibrium so as to show the pressure on each of the inclined planes.

15. Three homogeneous cylinders are in equilibrium on a horizontal plane, as shown in section, upper cylinders held by cords to centers of ends. Weight of one cylinder given by (18,64) (18,54).
- Construct the equilibrium so as to show the tension on the cords and the weight of the smallest cylinder.
 - Check the equilibrium of the system by finding whether the weights of the upper cylinders have a moment which would roll the largest cylinder on the horizontal plane.
16. Central forces:
- Give the law of areas.
Give the law of the angular velocity.
Give the law of the linear velocity.
 - Assume an elliptical orbit with the center of force at the center of the ellipse, and show by proportions that the above laws are consistent for values taken at the extremities of the axes.
17. (a) Give the rule for the pressure on a submerged surface.
(b) Find the pressure on the interior surface of a hollow sphere filled with water, in terms of the weight of the water.
18. (a) Give the rules for the intensity and point of application of the buoyant effort of a liquid.
(b) How is the principle of the buoyant effort used to find the specific gravity of a body?
19. A 3-inch hydrant connects directly with a 6-inch pipe, and it is open under a head of 100 feet. What is the pressure per square inch in the 6-inch pipe?
20. What horsepower is required to pump water to a height of 100 feet at the rate of 1 cubic foot per second?

Eleven cadets, who had failed to show satisfactory progress on the course, were given the above examination. Each cadet made proficient, the average mark being 2.52.

EXAMINATION IN MECHANICS, DECEMBER, 1905.

- (a) Construct the velocity of "A" as seen from "B."
(b) Construct the velocity of separation of "B" from "A." (Figure given.)
- (a) How many poundals are in 1 pound force?
(b) A free mass of 100 pounds is acted on by a force of 1 pound. What is the acceleration?
(c) A free mass under the action of 1,000 dynes has an acceleration of 500 c. m./s. What is the mass?
- (a) A force of 1 pound will give a mass of 1 pound what acceleration?
(b) A force of 1 pound will give a mass of 32.2 pounds what acceleration?
(c) What is the 32.2-pound mass called?
(d) When is it used?
- A particle moves so that $x=4t^2+6$ and $y=3t^2-10t+12$.
 - Trace the path described in 5 seconds, using $t=1, 2, 3, 4,$ and $5s$. (Start with $t=0$.)
 - When $t=1s$, diagram $Ax, Ay, A, v_x, v_y, v, v^2/\rho$.
 - Find ρ when $t=1s$.
- A wheel turns so that $\beta=4\pi t$.
 - What is the angular velocity?
 - What is the angular acceleration?
 - How many turns per second is the wheel making when $t=5s$?
 - How many turns does the wheel make from $t=0$ to $t=5s$?
- Find the center of gravity of the area included between the two circumferences tangent internally whose diameters are 16 and 12.
- Give the Theorem of Pappus and apply it to find the expression for the volume of a sphere.
 - Apply the Theorem of Pappus and find the conical surface generated by the hypotenuse of a right-angle triangle having sides 3 and 4 revolving about the longer side.
- The cylinder supports the indicated masses of 100, 40 and 260 pounds. The friction of the cord on the cylinder is assumed to be 100 pounds.
 - What is the acceleration of the weights?
 - Find the tensions on each branch of the cord. (Figure given.)

9. Construct the stresses on tie, boom, and guy.
Construct the reactions at lower ends of guy and upright.
Construct the resultant of these reactions.
Check the stress on the guy by making its moment with respect to the foot of the upright equal to the moment of the load with respect to the same point. (Figure given.)
10. Complete the stress diagram marking the points as they are determined. Determine the strains and mark tensions "t" and compressions "c" on the given frame diagram.
11. Graphical construction of parallelogram of moment required; work to be checked by moment of resultant. (Figure given.)
12. (a) Deduce the laws of constant forces.
(b) Find the space past over by a falling body from the 3.4 to 7.8 seconds.
13. A body weighing 400 pounds on a plane inclined at 30° to the horizontal. A force of 320 pounds acting parallel to the plane opposes the weight of the body. Assuming friction on the plane to be 20 pounds, $g=32$, and neglecting all other resistances:
 - (a) What is the acceleration?
 - (b) Starting from rest how long will the body be in moving 64 feet?
 - (c) What kinetic energy will it have?
 - (d) How much work will have been done?
14. A homogeneous cylinder, 12 feet in diameter, is mounted on journals 6 feet in diameter. Weight of cylinder=16,000 pounds; of journals, 1,280. $\left(k^2 = \frac{r^2}{2}\right)$ A weight of 2,240 pounds is suspended on a rope wound on the cylinder and its acceleration is found by experiment to be 4 feet per second. (Assume $g=32$ and neglect the stiffness of cordage.)
 - (a) What is the tension on the rope?
 - (b) What is the friction on the trunnions? (All other friction neglected.)
 - (c) What is the horsepower developed by the tension on the rope when $t=10$ seconds?
15. A free mass of 4 pounds is attached to a center at a distance of 6 feet by a cord. If the mass revolves 360 times a minute, find the pull on the cord.
16. A solid shot 2 feet in diameter and having a density of 7 is lying on the bottom of a tank filled with water to the depth of 12 feet.
 - (a) What is the fluid pressure on the shot?
 - (b) What is the pressure of the shot on the bottom of the tank?
17. The water in the large reservoir is kept with a constant head of 40 feet above the middle of pipe "B," whose diameter is 4 feet. The water is flowing freely from the pipe "C," of 2 feet diameter, into the open air under Torricelli's law. What height above "C" is "B," since the water does not rise in the piezometer tube "A" inserted in the pipe "B?"
18. A rectangular tank gate, 10 feet wide, is hinged and held by a steel rod as shown (Figure given.)
 - (a) Find the pull on the rod.
 - (b) Represent the resultant pressure of the water.
19. A uniform plank 10 feet long weighs 200 pounds. It is upended from the horizontal to the vertical by a force applied at one end and perpendicular to the length as shown.
 - (a) Write the law of the force "I" in terms of the weight and the angle β , the varying angle between the plank and the horizontal.
 - (b) Write the expression for $I dp$ in terms consistent with "a."
 - (c) Integrate between the limits $\beta=0$ and $\beta=90^\circ$ for the work done.
 - (d) Check "c" by finding the work of the weight as a direct product.
20. The walls, floor, and struts support the two spheres as represented in diagram. Assume that there is no friction and construct the equilibrium, the weight of "A" being as represented.
 - (b) Assuming the spheres to be homogeneous, what are their relative densities? (Figure given.)

APPENDIX G.

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, 1906.

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, 1906:

DEPARTMENT OF ORDNANCE AND GUNNERY.

The advance and improvement in the ordnance sciences and the many changes in ordnance material since the publication of Bruff's Ordnance and Gunnery, the text-book of instruction, render imperative the production of a new text. During the year the academic board has authorized the replacement of certain chapters of the present text by chapters newly prepared, and the class recently graduated has had the benefit of instruction from these new parts. Other parts are now prepared and being prepared, and for the next class probably more than half of the course will be taught from new text.

A model of the latest breech mechanism for field guns has been manufactured at the ordnance machine shops, and a model of the latest rapid-fire breech mechanism is now under construction. In addition, models of the latest field-gun shrapnel and of primers and fuses have been purchased.

The instrument building at the proving ground near the seacoast battery is in bad repairs, its rear wall having been damaged by the water and snow and ice that collect against it from the hillside in rear. I would recommend that the rear wall of the building be repaired during the summer.

MUSEUM.

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

Chinese scroll. Maj. J. C. F. Tillson, Fourth Infantry.

Case of buttons, buckles, and other Revolutionary relics from site of upper defenses of New York City. Mr. Reginal P. Bolton, New York City.

One Filipino drum.

Six Filipino lantacas (bronze guns). Watervliet Arsenal.

Doctor Whitehead's very valuable and interesting collection of old arms and armor has been suitably installed as an exhibit.

By the addition of steam heaters to the system of heating by hot air the winter temperature of the museum has much improved, and the room is comfortable now at all times.

LABORATORY.

The replacing of the steam power plant by an electric plant has greatly improved the machine shop, and has materially reduced the cost of manufacture there.

The steam boiler for the engine has been replaced by a steam heater that is used for warming the shops in winter.

In the men's bathroom a new tank has been placed, thru which the pipes of the steam plant pass and heat the water in winter. Gas heaters are provided under the tank to heat the water when the steam plant is not in operation.

Very respectfully,

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

The ADJUTANT UNITED STATES MILITARY ACADEMY.

APPENDIX H.

REPORT OF THE LIBRARIAN.

LIBRARY, UNITED STATES MILITARY ACADEMY,
West Point, N. Y., August 5, 1906.

SIR: I have the honor to submit a brief report of library work during the past year.

At this time, when the Superintendent is about to remove to another station, it is eminently proper to record here the great indebtedness of the library to his initiative and care. The building it occupies was remodeled in 1900-1901 and refurnished in 1901, during the earlier years of the Superintendent's tour of duty. His presentation of its needs to Congress secured liberal appropriations, which have provided very notable additions to its collections of military and other books. His steady support of a new policy has resulted in a greatly increased usefulness of the library to officers and to cadets, which there is reason to believe may be still further developed in the future.

Library committee.—The library committee consists of the professors of drawing, chemistry, modern languages, and engineering. All important matters are decided by them on the recommendation of the librarian. Purchases are made thru the quartermaster of the United States Military Academy, whose office conducts all the business affairs of the library and saves much thankless labor to the library staff, which is correspondingly grateful.

Library policy.—The experience of the past five years appears to lead to the conclusion that the library of the United States Military Academy must be considered as composed of several partial collections very different in their nature and objects. The chief of these are:

I. What may be called a university or college library.

II. A special military library.

III. A library of Congressional documents.

IV. A small and select library of the general principles of law, etc., including all the publications of the United States on law. (The law department of the United States Military Academy already has a special law library—cataloged—of about _____ volumes—State reports, etc.)

I. The college library should contain (1) all books likely to be of service to the instructors and cadets in the pursuit of the studies of our special curriculum. Together with the excellent libraries of the various departments, which are housed in the academic building, it must furnish every facility for research in our special courses of study. The very latest information should be available (usually thru periodicals) and the whole history of each science should be represented by the standard books of past times; (2) a considerable assortment of the latest standard books on topics *not* included in our curriculum. These books will supplement the teaching of the departments and open new insights to cadets; (3) a very complete collection of books of reference on all subjects that are at all likely to be inquired about here.

It may be said, I think, that our collections of this sort are now fairly complete, tho very important additions still remain to be made. The important books of each successive year must, of course, be added annually, and lacunæ must be filled as fast as practicable. The excellence of a collection of this sort depends far more on quality than on quantity. Other things being equal, a well-selected collection of 10,000 volumes will be more useful to cadets than an ill-assorted collection of 50,000. When a book has become really obsolete it should be removed from the shelves of our college library unless it represents an important epoch in the historical development of its topic. A great public library, like that of Congress, must accumulate *all* books on a subject, because *any* book may be asked for by its readers. The case is different with us, where a selection of the best books is sufficient. Moreover the books of the library of the United States Military Academy are useful just in proportion as they can be seen and handled by cadets on the open shelves, and there is a practical limit to the number of books that can be so displayed. Of course no volume should ever be classed as obsolete and removed from the library until it has been condemned by several independent judges, each of whom represents a different view. A single vote in its favor should keep it on our shelves. There are, however, a number of volumes which will, I think, be found to be of no value to us, as, for example, books on yellow fever or malaria that were written before 1898. A complete plan for the treatment of duplicates was approved by the library committee and by the Superintendent on April 19, 1906.

II. The special military library ought to contain (1) substantially every military book printed in America; (2) every important military book printed elsewhere; (3) all military manuscripts that can be accumulated which bear on the history of the American Army, especially during periods of war; (4) a sufficient collection of military and other maps.

It should be possible for an officer to write the history of cavalry, artillery, fortifications, and the like from books on our shelves, and this for any country and for any epoch. The library already contains excellent and extensive collections of the sort, but very much remains to be done to bring it to the desired state. The literature relating to the civil war, for example, is inadequate. The data immediately following illustrate the fulness of our collections:

Our military library contained in May, 1906, books on—

	Volumes
Military education.....	184
Art of war, strategy, tactics, etc.....	877
Infantry.....	486
The British army.....	241
Fortifications, coast defense, etc.....	566
History of volunteer regiments during the civil war, 1861-1865, and reports of the volunteer forces of the United States.....	416
General Orders, Adjutant-General's Office and Headquarters.....	191
Military history, etc.....	2, 376

Users of the library.—The library is used by 76 officers attached to the academy, by their families, by 460 cadets, by 13 enlisted men, and by 116 civilians, to whom its privileges have been extended by order of the Superintendent.

Accessions.—Two thousand four hundred and forty-nine books, pamphlets, maps, etc., have been received since July 28, 1905.

Periodicals.—We now subscribe to 143 periodicals, a large proportion of them being military works.

Recent fiction.—One hundred books per month are supplied, by subscription, by the Bodley Club Library, of Philadelphia.

Library hours.—Since September, 1904, the library is open from 8 a. m. to 9.30 p. m. on week days; from 2 p. m. to 6 p. m. on holidays.

Statistics of circulation.—On December 21, 1905, 235 books were returned to the library between 1 and 5.30 p. m.

Missing books.—A considerable number of volumes are missing from our shelves (21 are known to be missing at the date of writing). Most of these have undoubtedly been taken from their places and not charged, thru carelessness. There is reason to believe that a few have been stolen by persons unknown. One of the swords of honor lent to the library was stolen from a locked case by persons who broke into the room. It was found within thirty hours in the reveille gun. The effect of this theft has been to discourage friends of the academy from depositing articles of value with us. It is hardly necessary to say that every precaution has always been taken to safeguard such valued mementos.

Notable accessions.—During the past year some of the most notable accessions have been—

I. The manuscript diary of a British officer in America during the campaign of 1776 and 1777 in Canada.

II. Orderly book kept at Fort Clinton, West Point, 1779.

III. Order book of Forrest's Cavalry Corps, Confederate States Army, 1865.

A library manual giving a full list of our *memorabilia* has been ready for the printer for some months.

Card catalogs.—Statistics respecting our card catalogs were given in the report for 1905. Constant improvements and additions are being made. The main object is to save the time of cadets, who have little to spare, and much work is done for their benefit which would not be necessary in most libraries.

Printed catalogs, etc.—The American Library Association's printed catalog of the 8,000 best works in English has been marked so as to indicate those books owned by the library, and is kept where it can be conveniently consulted by cadets. Other printed catalogs are so marked and kept. Several finding lists of our books on various

military topics have already been prepared for the printer, and when they are published should be of great value to all users of the library. Others are in process of formation.

Printed cards.—Printed cards for Congressional documents furnished by the Superintendent of Public Documents and by the Library of Congress are used whenever practicable. Many thousands of our cards have been typewritten by Mr. Ostrander, assistant, and it is hoped to replace most of our written cards eventually by cards printed or typewritten.

Map room.—A new map room on the west side of the library is very much needed for the display of maps, books, and pictures. Plans of this room, which will connect the new academic building with the library, have been drawn. It is, for many reasons, desirable that this room should be built before the new academy is begun. When this room is completed no further buildings will be required for the library for half a century.

New stacks in the tower, etc.—Provision for new stacks in the tower is made in the Military Academy appropriation bill of the present fiscal year. When these are completed the attic will be fireproof, and storage for all our Congressional documents, manuscripts, and periodicals will be provided. The lobbies near the law library and near the officers' study will also be shelved during the summer. The central tower will contain 20,000 books and all manuscripts. We have to thank Capt. H. W. Stickle, Corps of Engineers, and his assistants for preparing plans and specifications for this work. Cases to contain 3,591 books will be placed in the lobby and hallway near the officers' study and 2,088 books in the hallway near the law library during the calendar year. The proposed map room will shelve about ——— volumes; the two stairway towers 6,400 volumes, and the basement about 40,000 volumes. It thus appears that the present building plus the new map room will store about 150,000 volumes, so that no other new building will be required for many years to come.

Instruction thru the eye.—The report of the Board of Visitors for 1885 contains a recommendation respecting maps in cadet rooms, and suggests that the method spoken of has wide applications. The display of pictures and manuscripts in the library is a part of the plan outlined. The commandant of cadets has set up a series of military pictures in the cadet guardhouse. The department of drawing proposes to exhibit in a frieze of the new academy a series of maps to illustrate the history of topography from the earliest times. Many such maps have been selected for this purpose by Capt. C. B. Hagadorn. The department of engineering proposes to use the same method in displaying a series of plans of fortifications, arranged chronologically. The library is fortunate in owning a great number of maps and plans suitable for these purposes.

Pamphlets.—If a pamphlet is worth keeping it is worth binding, usually in a separate cover. This maxim has been followed thruout. Most of our pamphlets, especially those on military matters, are so bound.

Periodicals and serials.—Sets of periodicals, etc., are valuable in direct proportion to their completeness. It is proposed to complete all such sets and to bind each volume, especially for such periodicals as are indexed in Poole's and other indexes.

Books transferred to the post library.—During the year 92 volumes have been so transferred, by order of the Superintendent.

Display of books.—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 galleries so that no book is more than seven feet above the floor. It is only in this way that books can be displayed so as to attract the attention they deserve. A short experimental gallery will be built in the officers' study during the summer. If it is approved all the wall cases can be arranged for convenient access in the future as necessity arises.

Duplicates.—Two (or more) copies of books frequently used are kept on the shelves if owned by the library. Duplicates of books not frequently used have been placed in a special collection and cataloged, together with certain volumes not duplicate but judged not worth keeping. All such books are inspected twice by the librarian and once by the members of the library committee before they are recommended for exchange. A considerable number of such duplicates have been exchanged, by authority of the Superintendent, with the library of the Engineer School, Washington, and with the library of the Army War College, the equivalent received in each case being the services of a clerk. Complete lists of all such exchanges are on file. It is respectfully recommended that this policy be continued. A book of no use to us may be a valuable addition to the library of some one of the army schools. The chaplain of the academy has selected the duplicates, etc., of books on religion, ethics, etc., and those in medicine, etc., have been selected by Assistant Surgeon Hanner, United States Army. Our thanks are due to these gentlemen for their valued assistance.

The thanks of the library are also extended to the following, who have given valued volunteer aid during the past year: Capt. W. H. Miller (arranging Filipino manuscripts), Capt. G. S. Simonds (editing Burgoyne manuscripts, October, 1905, to date), Lieut. J. A. Benjamin (preparation of an address list), Lieut. W. I. Westervelt (cataloging a collection of maps and plans), Lieut. E. F. Graham (editorial work on order book of Forrest's Cavalry Corps, Confederate States Army), Lieut. C. R. Lawson (selection of a series of names important in American history), Lieut. W. R. Bettison (editorial work on the records of the Corps of Artillerists and Engineers, 1795–1799), Private J. E. Grady (volunteer clerical work in his spare time during October, 1905), Cadet Paul Larned (lettering class album of 1906), Lothar von Eichhorn (copying military music of 1787 in the library of the German Emperor, Berlin), W. Larned (sorting engravings and maps).

Historic pieces of ordnance.—By direction of the Superintendent, two pieces of ordnance of historic interest are to be transferred to the library—(1) a 4-pounder gun, formerly belonging to the city of Vicksburg, from which was fired the first shot of the civil war, in April, 1861, several days before the engagements at Pensacola and Fort Sumter; (2) a 3-inch gun of Elder's Battery B, First United States Artillery, from which was fired the last shot of the civil war, at Appomattox, in April, 1865.

The Chief of Ordnance has been kind enough to send to the library a bronze 3-pounder gun ("San Lucas") which formed part of a battery

of four pieces captured in the Mexican war. There is some reason to believe that this battery was presented by Louis XIV to the Chevalier de La Salle in 1684 (?) when he set out on his ill-starred expedition to the mouths of the Mississippi River. Its history is under investigation.

Inscription.—A sentence of President Washington has been added along the base of the upper gallery of the main room, viz: To be prepared for war is an effectual way of preserving peace—Washington, 1790.

Concert.—A concert of classical music was given to the cadets in memorial hall on January 20, 1906, by the kindness of Mr. Edward de Coppet, who permitted his private quartet to come to West Point for the purpose. The benefit of such an introduction to the best music is not to be measured. It is respectfully suggested that an annual concert of the sort by one of the best New York quartets might well form a part of the program of the academy. The young gentlemen cadets ought to see and hear the very best of everything.

Publications.—By permission of the Superintendent, a department in Army and Navy Life, under the heading "Contributions from the Library United States Military Academy," is conducted by the librarian (who receives no compensation for such work). Here are printed correct copies of unique and other manuscripts, etc., to the great advantage of the academy.

A second edition of the pamphlet on the classification of military books, by the librarian, was printed and partially distributed in September, 1905, as well as a library manual for cadets, treating of the use of reference books. Other such manuals have been prepared and await printing.

Library staff.—The staff of the library has remained as before, except that first class Private Boyle, engineer detachment, was relieved February 21, 1906, and his vacancy filled by the detail of first class Private Rathke of the same detachment. Private Broughn, cavalry detachment, was detailed for a piece of special work (which was well performed) in April, 1906, and Private Grady, army service detachment, was detailed for work during July and August, 1905 and 1906.

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 cataloged 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.

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.

Portraits.—A portrait of Professor Edgerton, by Frank Fowler, and one of Brig. Gen. J. W. Clous, by B. W. Clinedinst, have been added to our collections during the past year, the latter by gift of General Clous.

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.

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.

The Military Information Division regularly sends to the library a list of all the articles from military periodicals, etc., cataloged by the division during the preceding week. In this way officers serving at West Point are provided with a complete bibliography of the latest information on military subjects, derived from books, pamphlets, journals, reports of our attachés abroad, etc. The sincere thanks of the library are returned for this most valuable index.

Thru the kindness of the American Antiquarian Society, of Worcester, the library received permission to make copies of Garrison Orders, West Point, 1781–82. For this valued gift and for the courtesy of the secretary of the society our sincere thanks are offered.

Gifts to the library.—Besides the gifts elsewhere mentioned, the library has received gifts of books, pamphlet manuscripts, maps, photographs, etc., from the following institutions and persons, for which sincere thanks are returned:

Major-General Abbot (3), Adjutant United States Military Academy (17), Adjutant-General of Florida (1), Adjutant-General of Louisiana (1), Adjutant-General of New Jersey (2), Captain Alstaetter (1), American Irish Society (1), Army Athletic Association (1), Professor Aitken (1), Professor Bailey (5), Professor Bass (2), Baylor University (1), A. D. S. Bell (1), Mr. Born (1), Prof. F. H. Bigelow (1), J. G. Brill Company (1), Col. E. E. Britton (10), British South Africa Company (1), Bureau of Education (Division of Ethnology), Philippine Islands (4), Bureau of Insular Affairs (2), Major Burr (3), Mr. C. W. Burrows (4), Carnegie Institution (13), Chamber of Commerce, New York (1), Mr. J. J. Chapman (3), Chief of Engineers (2), Chief Signal Officer (3), Maj. C. H. Clark (2), Class of 1906, United States Military Academy (1), Mr. T. S. Clay (1), Gen. J. W. Closs (3), Columbia University (1), Commissioner of Navigation (1), Comptroller of New York State (1), Confederate Memorial Literary Society (1), Confederate Memorial Associations South (1), Consul-General Argentine Republic, New York (1), Mr. T. Cooper (1), Mr. J. D. Crimmins (1), Lieut. E. G. Davis (1), Mr. G. Davis (9), Department of the Interior, Philippine Islands (1), Gen. J. W. De Peyster (12), Director Upsala Observatory (1), Miss Dunston (1), Mr. W. Eames (2), Executive Committee 250th Anniversary of the Settlement of Jew in New York (1), Gen. J. P. Farley (3), Gallencamp & Co. (1), George Washington University (2), Mr. C. S. Hall (3), Mr. L. R. Hamersly (1), Mr. Hardenbrook (1), Howard University (1), Headquarters Department Missouri (1), Headquarters Department of the East (1), Hebrew Technological Institute (2), Capt. J. T. Hilton (1), Mr. Huidekoper (2), Professor Hirth (1), Prof. E. S.

Holden (9), Col. R. L. Howze (4), John Crerar Library (2), Capt. W. O. Johnson (2), Journal of the United States Artillery (12), Keppel & Co. (6), Lieutenant Lahm (2), Colonel Larned (1), Library of Congress (1), Major Lissak (3), Colonel Lundeen (1), Maine State Library (5), Captain Marshall (4), Mr. F. R. Marvin (2), Massachusetts State (1), Doctor Maxwell (6), Merchants' Association (1), Military Information Division, General Staff (18), The Military Secretary (4), Capt. H. W. Miller (8), Military Order of the Loyal Legion of the United States (15), Newberry Library (1), New Explosive Company (1), New Jersey State Library (1), New Zealand Tourist Resorts (1), Col. J. P. Nicholson (4), North Dakota University (1), Captain O'Hern (1), Mr. V. Dalsits (1), Capt. F. H. Pope (17), Gen. Horace Porter (1), Princeton University (1), Quartermaster-General (1), Rhode Island Society of the Cincinnati (1), Mr. G. H. Richmond (2), Mr. V. H. Rigney (1), Capt. W. Robinson (3), Mr. F. G. Rosengarten (2), Major Runcie (4), Rutgers College (1), Maj. Morris Schaff (1), Secretary of the Isthmian Canal Commission (1), Secretary of Porto Rico (1), Capt. J. S. Sewell (1), Mrs. F. L. Short (1), Capt. C. S. Sperry, U. S. N. (1), Simmons College (1), State Librarian, New York (2), Capt. H. W. Stickle (1), Mr. W. W. Strong (1), Superintendent United States Coast and Geodetic Survey (1), Superintendent Public Documents (1), k. u. k. Theresianische Mil. Akad. (1), Mr. G. Thompson (1), Capt. J. T. Thompson (1), Mrs. S. E. Tillman (3), Rev. E. S. Travers (3), Trinity College (1), Tufts College (3), Union Club, New York (1), United States Geological Survey (101), United States Naval War College (1), University Club, New York (1), University of Pennsylvania (1), University of Rochester (1), Herr von Eichhorn (3), Mr. W. Ward (27), War Department Library (1), Lieut. W. I. Westervelt (2), Westminster College (1), Williams College (1), Mr. John Williams (1), Maj. J. P. Wissler (3), Capt. T. E. Woodruff (1).

Respectfully submitted.

EDWARD S. HOLDEN,
Librarian.

The ADJUTANT UNITED STATES MILITARY ACADEMY.

APPENDIX I.

REPORT OF THE OFFICER IN CHARGE OF WATER SUPPLY.

UNITED STATES MILITARY ACADEMY,
West Point, N. Y., August 8, 1906.

SIR: I have the honor to submit the following report covering the year ending August 31, 1906:

ENGINEER TROOPS.

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

During the summer months the detachment received instruction in target practise, 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 practise, indoor engineer drills, and in the carpenter and blacksmith shops.

Two small skiffs and one 25-foot launch were built during the winter and spring. The launch has been equipped with a gasoline motor, all the work of installing which was done by the men of the detachment, and the boat has proved to be quite useful in connection with various drills on the water, as well as being the means of instructing the men in the use and care of gas engines. 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 the date of my last annual report considerable anxiety was felt as to the quantity of water then stored for use. Fortunately, early in September, 1905, there came copious rains, which greatly relieved the situation. During the summer just past, while the rainfall has been much greater than last year, the level of the water in the reservoir has steadily declined since about the 1st of July, showing that the consumption of water has been much greater than the inflow into the reservoir and further emphasizing the necessity for an increased supply of water to meet the growing demands of this post.

INCREASE OF THE WATER SUPPLY.

At the date of my last annual report the work of increasing the water supply had been fairly started; a small dam had been completed and about a mile of trench opened, but no pipe had been laid. After the 1st of September, 1905, the contractor continued work until early in January, 1906, opening trench and laying pipe. When work was suspended for the winter, there had been put in place about 6,300 feet of pipe, the back filling had been partially done along this portion of the line, and the trench had been opened for a distance of about 5,000 feet farther. Work was then suspended on account of cold weather and resumed again the middle of March, 1906. Since this last date the work has been carried on as vigorously as possible. At this date 30,000 feet of pipe have been laid and the most of the trench has been sufficiently back filled to make the pipe perfectly safe. There is yet to lay a length of about 3,100 feet of pipe, and it is hoped that this will be in place and the water flowing thru it by the end of this month. This pipe line has been carried thru a country which is exceedingly rough, where the difficulties of distributing the pipe have been great, and where a large amount of rock has been encountered. The contractor has pushed the work as vigorously as possible, and his work has been well done. A small portion of the line on this reservation has been laid by hired labor, as it was important that this should be done with special care and as there were certain features which made it of considerable advantage to adopt this method.

During the year work has been continued on the acquisition of the necessary land and water rights, some progress having been made. In two cases where it was necessary to condemn land the commissioners have not as yet set a value upon the property, and these suits are still pending. It is hoped, however, that they will be settled at a comparatively early date.

REPAIRS TO FORT PUTNAM.

At the date of my last annual report the work of reconstructing the walls of Fort Putnam was in progress. This work was continued until stopt by the cold weather, and when suspended there had been put in place 269 cubic yards of masonry. During the winter a considerable amount of stone was prepared and hauled to the fort. At this date the work is in progress continuing the rebuilding of the old walls.

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 4, 1906.

SIR: In compliance with instructions contained in Memorandum No. 46, current series, Headquarters United States Military Academy, I have the honor to submit herewith the following report, in triplicate, of the operations of the quartermaster's department of the Military Academy, and post of West Point, and of the gas works, for the year ending June 30, 1906:

QUARTERMASTER'S DEPARTMENT, 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. 17, 1903	Developing competitive design for improvements, United States Military Academy.
2	Olmsted Bros.....	May 26, 1904	Plans and designs landscape improvements, United States Military Academy.
3	Henry C. Meyer, jr.....	Oct. 7, 1903	For designing and supervising the construction and installation of heating and lighting plant.
4	General Electric Co.....	Dec. 6, 1904	Furnishing generators, motor, and switchboard for power house.
5	The Babcox & Wilcox Co.....	Feb. 17, 1905	Furnishing boiler and mechanical draft plant for power house.
6	Providence Engineering Works..	Mar. 29, 1905	Furnishing Corliss engines for electric lighting.

No.	Contractor.	Date.	Purpose.
7	United States Cast Iron Pipe and Foundry Co.	May 18, 1905	For cast-iron pipe and special castings for increased water supply.
8	Robbins Conveying Belt Co.	May 19, 1905	Coal-conveying apparatus.
9	Broderick & Wind Engineering and Construction Co.	May 24, 1905	For construction of officers' quarters and cadet barracks.
10	Lloyd Collis, Incorporated.....	June 30, 1905	Building intake and laying cast-iron pipe, etc., for increased water supply.
11	Dickson & Eddy.....	do.....	Anthracite coal.
12	Union Petroleum Co.....	June 28, 1905	Gas oil.
13	The Thos. Keevy Charcoal Co....	June 29, 1905	Charcoal.
14	Westmoreland Coal Co.....	do.....	Gas coal.
15	E. A. Matthews.....	Aug. 26, 1905	For storm sewer, surface drainage, and sewer system.
16	Church Construction Co.....	do.....	Two barracks and two stables for cavalry and artillery, and one gun shed.
17	C. H. Sanborn.....	Jan. 31, 1906	Steam-heating system for post headquarters building.
18	J. W. Bishop Co.....	do.....	Construction of post headquarters building.
19	J. B. & J. M. Cornell Co.....	Mar. 6, 1906	Structural steel for power house.
20	Hildreth & Co.....	Mar. 10, 1906	Inspection of structural steel for power house.
21	P. Delany & Co.....	Mar. 16, 1906	Boiler for quarry.
22	Chicago Pneumatic Tool Co.....	Mar. 19, 1906	Compound air compressor for quarry.
23	Church Construction Co.....	Apr. 2, 1906	Construction of power house, except structural steel.
24	Waldo Bros.....	May 11, 1906	Floor benches for gas house.

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Statement of receipts and disbursements under the various heads of appropriation during the year ending June 30, is attached marked "A."

QUARTERMASTER'S DEPARTMENT, POST OF WEST POINT.

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

Contracts entered into for 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	Alexander S. Traub.....	Apr. 14, 1906	Remodeling engineer and ordnance boathouse.
2	William Lewis.....	May 16, 1905	Hard wood.
3	Clark & Wilkins.....	do.....	Soft pine wood.
4	Dickson & Eddy.....	do.....	Anthracite coal.
5	Chas. L. Rickerson.....	June 10, 1905	Hay and straw.
6	Wm. H. Schoonmaker.....	do.....	Oats and middlings.
7	O'Brien & Kellogg.....	do.....	Bran.

All of the above contracts have been completed.

* * * * *

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 material during the year amounting in weight to 19,998 tons. For this purpose the quartermaster has available 88 horses and 17 mules. As stated in my last annual report, while this number of animals is able to meet normal average requirements, it has been frequently necessary to employ civilian teams in order to meet unusual demands on account of the large amount of construction now in progress, which will continue for some years to come. The difficulty of hiring these teams is increasing each year, especially as it is not possible to assure the owners of continuous employment.

I am still of the opinion that motor trucks will meet the demands for transportation at this post much better and more economically than the present method with horses and mules. While the first cost of these trucks is large, the economy will more than compensate for this difference in a few years.

Post cemetery.—This cemetery has been in use ninety years. The total number of interments up to June 30, current year, is 1,313. Thirty-six interments were made between July 1, 1905, and June 30, 1906. Its care and maintenance are provided for in the appropriation for the support of the Military Academy.

The improvements to the quarters of the superintendent of the cemetery, referred to in my last annual report, were completed last fall. This building has greatly improved the appearance of the cemetery, and provides this employee with a much more suitable residence than he has heretofore had.

The present superintendent continues to maintain it in the same satisfactory and attractive condition that he has in previous years, and has, in my opinion, accomplished a great deal at comparatively small expenditure. In previous years we have been allowed \$2,000 per year for the hire of necessary labor, purchase of flowers and shrubs, and other material required. For the current year this amount has been reduced to \$1,500. Of course, that being all available, it will have to take care of the place for the year, but it can not be done in as satisfactory a manner as formerly. The labor alone amounts to approximately \$1,500 during the year, and no more labor is employed than is absolutely necessary. A neglected cemetery may harmonize with a deserted village, but certainly appears out of place with its surroundings at West Point. This spot is the resting place of many noted men, and is visited by thousands of people annually. The authorities are naturally held responsible for its condition, and they should be given adequate funds to maintain it in a manner demanded by its importance and location.

The number of interments made last year indicate the rate at which it is growing. We should have at least \$2,000 a year for its proper maintenance.

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 all classes, printers, teamsters, engineers, firemen, and laborers. With the growth of the academy and increase in the number of buildings the demands for maintenance, repairs, and improvements have multiplied. Additional men are needed for duty at memorial hall, library, and gymnasium, and the completion of the buildings under contract, or to be started this summer, will still further increase this demand.

A noncommissioned officer and 2 men are now detailed to enforce police regulations and guard public property during the day. This is entirely insufficient, and should be increased to 3 noncommissioned officers and 12 privates, so that a night detail could be put on. The detachment should be increased by 25 men at least, giving it a total strength of 200. I recommend that an effort be made to secure this increase at an early date.

Statement of receipts and disbursements under various heads of appropriations during the year are attached, marked "B."

PUBLIC WORKS.

The improvements at the cadet camp grounds, referred to in my last annual report, were completed this spring, and appear to give general satisfaction.

Since my last annual report plans and specifications have been completed and approved for cadet chapel, bachelor officers' quarters, memorial gateway, quartermaster's stables and wagon shed, chaplain's quarters, post exchange, building for the central heating and lighting plant, and steam tunnel and electrical subway for the distributing system.

The construction of cadet barracks and 16 sets of officers' quarters, under contract since May 24, 1905, with the Broderick & Wind Engineering and Construction Company, of New York City, has been progressing, but not as rapidly this spring as should have been the case, owing to delays in receipt of material, but principally to the lack of sufficient capital. It is believed, however, that the latter difficulty has been overcome, and that at least 14 sets of the officers' quarters can be completed in September. The cadet barracks will probably not be ready before January 1, 1907, but as this building can not be used until the necessary light and heat can be supplied by the power house, the construction of which has also been delayed, the inconvenience in respect to the barracks will not be so great.

Of the officers' quarters, 14 sets are now under roof and 8 ready for interior trim and flooring. Three sets are about ready for the plasterers and 2 up to the second floor level. The completion of the latter was delayed by the difficulty of excavating the rock on the site of this building. Most of the material, however, is on the ground, and with a sufficient force of mechanics I believe that at least 8 sets can be completed inside of sixty days.

The percentage of completion of these buildings on July 1 was as follows: Lieutenants' No. 1, 70 per cent; lieutenants' No. 2, 56 per cent; lieutenants' No. 3, 69 per cent; lieutenants' No. 4, 68 per cent; captains' No. 1, 75 per cent; captains' No. 2, 41 per cent; cadet barracks, 12.7 per cent.

The erection of barracks and stables for cavalry and artillery detachment and gun shed has been progressing since last August, and tho much delay was caused in the beginning by difficulty of completing the foundations, it is believed that these buildings will be ready for occupancy before next spring. The contract for the group was awarded to the Church Construction Company, New York City, August 26, 1905.

The percentage of completion on July 1 was as follows: Cavalry barracks, 14 per cent; artillery barracks, 27 per cent; cavalry stables, 36 per cent; artillery stables, 57 per cent; gun shed, 64 per cent.

On October 16, 1905, advertisement was issued calling for proposals for the erection of post headquarters building. Bids were opened on November 29, 1905, and contract awarded under date of January 31, 1906, to the J. W. Bishop Company, of Worcester, Mass., at their bid of \$428,624, for the building except the heating system, and for the heating system to C. H. Sanborn, of Boston, Mass., at \$11,002, these two bids being the lowest received. The building is to be completed by October 1, 1907. Work was started about April

1, 1906. Great difficulty has been encountered in securing suitable foundations, which are important, owing to the size and cost of this building. The subsoil underlying the site was found entirely unsuited to carry the weight of the building, so it became necessary to go down to ledge rock. This was not found in some places until a depth of 45 feet below the surface was reached, a most unusual condition at West Point and entirely unexpected. These great depths required special arrangements for carrying the walls of the building, and necessitated an extra agreement with the contractors, who could not be compelled, under the terms of their contract nor in justice to them, to carry the foundations down at the unit prices named in their original bid. As it was impossible to accurately determine the cost of this extra work, authority was obtained to perfect an agreement with the contractors to do it on a percentage basis; that is, the actual cost plus 10 per cent. Under parts of the building, where the ledge rock was so deep, heavy concrete piers have been put in and connected with reinforced concrete arches to carry the foundation walls. Borings have located the ledge rock at various points, so that size of the piers could be calculated and proper excavation made at the minimum cost. This work is now progressing satisfactorily, and will soon be up to where the stone walls of the building can be placed. This, of course, means a delay in the ultimate completion of the building of three or four months.

On January 2, 1906, advertisement was issued calling for proposals for the erection of the building required for the central heating and lighting plant, which included all masonry and steel work. Proposals were opened on February 1, 1906, but were rejected, by direction of the War Department, owing to the unsatisfactory nature of the bids. The building was readvertised under date of March 2, 1906, and bids were opened March 17, 1906. Contract for the entire building, exclusive of steel work, was awarded to the Church Construction Company, of New York City, at their bid of \$167,200, that being the lowest. The contract for the steel work was awarded to the J. B. & J. M. Cornell Company, of New York City, at their bid of \$58,780. The bid of this company was not the lowest in amount, but as they guaranteed to complete the building within three months after award of contract, and agreed to incur a penalty of \$50 per day for every day over and above that time required for completion, it was accepted, owing to the importance of getting this building finished at as early a date as possible. A short time after the award was made to the Cornell Company their structural steel shop was destroyed by fire, which has caused delay in erection of the steel work. According to the terms of the contract the building is to be completed by November 30, 1906. While there is yet time to do this, notwithstanding the delay already incurred in erecting the steel frame, it is probable that it will not be completed much before December 31, 1906. The excavation for this building having been completed, as described in my last annual report, it was possible for the contractors to begin at once on the footings. This work was started in April, and by July 1 was 1.7 per cent completed. The erection of steel work began in June and by July 1 was 6.3 per cent completed. No credit for the excavation work is given in these percentages.

The contracts for the boilers, engines, and electrical apparatus were awarded early in 1905, and this part of the equipment is practically ready for installation as soon as the building is ready to receive it.

Under authority of the War Department the construction of the steam-pipe tunnel, connecting the power house with the various buildings to be heated by it, is being done by the purchase of material and hire of labor. It was impracticable to do this work satisfactorily by contract, owing to the numerous old sewers, drains, water and gas pipes, etc., which it was expected would be encountered during its construction. In addition, it was considered that with the means available it could be done much cheaper. The tunnel is about 40 per cent completed. The wisdom of doing it by the purchase of material and hire of labor has been justified by the actual experience in the work. A number of old drains, sewers, etc., were encountered, which were not recorded on any existing map and which had to be taken care of as the work proceeded. It would have been impossible to have provided for all of this in any contract. The estimated cost of this tunnel is \$50,000, but the actual cost will probably be less.

As the central heating plant will not be completed in time to supply existing buildings with steam heat this coming winter, it will be necessary to utilize the present cadet boiler house and run temporary piping thru the new tunnel to connect with the heating systems of existing buildings. The small amount of material necessary to purchase, however, can be utilized in the new work.

The main sewer, into which the sewage from a majority of the buildings south of the infantry plain discharges, had to be diverted in order to clear the site of the post headquarters building, and also extended to take care of the new cadet barracks. This work has been partially finished and will be resumed this fall. It has been done by the purchase of material and hire of labor, and will be completed in the same manner. The storm sewer and drain at the south end, for which contract was let August 26, 1905, has been progressing slowly, owing to difficulties encountered in excavation, also inclement weather. Quicksand, large bowlders, and ledge rock were encountered, and these combined with bad weather necessarily resulted in very slow progress. It is, however, about 76 per cent completed.

The construction of retaining walls, roads, sewers, except the one mentioned above, laying of new water and gas mains has been done by this office by the purchase of material and hire of labor. The diversion of the main road in front of the officers' quarters at the south end and the construction of a road in front of new lieutenants' quarters has been completed, with the exception of macadamizing, laying of gutters, sidewalks, and breast high walls. Work is now underway connecting the road in front of lieutenants' quarters with that along the front of existing quarters on what is known as Knisley's Hills, and extending the same road southward to the cavalry and artillery barracks and stables.

The operation of the quarry for the purpose of supplying local stone to the contractors still continues to be satisfactory in results. In order to meet the increased demand for stone and to reduce the cost per cubic yard, authority was secured to erect an air-compressor plant for operating drills, pluggers, and hoisting engines in place of the present method by steam. While the use of steam was fairly satisfactory during the summer, it was not economical during the

cold weather, and at times it was impossible to operate the quarry at all. With compressed air the quarry can be operated throughout the year at less cost for labor and increase in the output. The installation of this plant was completed early in July. Its operation thus far has justified every expectation. The estimated cost of \$7,000 has been ample to cover the purchase of all machinery, its installation, necessary piping, purchase of pluggers, etc. The output of the quarry will not only be largely increased, but the product will be given to the contractors in better shape, all of which will tend to reduce the cost of the work of construction.

In the construction of the new buildings I have utilized the services of the post plumber and post electrician to a large extent in inspecting the plumbing and electrical work. Their services have been very valuable in this connection, and in addition to their regular work. These duties will be required of them for some years to come, viz, until the work of improvement is completed; and I believe that this extra work on their part should receive proper compensation. Each is now receiving a salary of \$1,200 per year, which is well earned in looking after their regular work on the post. This will be increased when the improvements are completed. I think the salary of each should be increased to \$1,500 per year, and I recommend that an effort to secure this increase be made at the coming session of Congress.

The completion of the plans for landscape improvements by Messrs. Olmsted Brothers will necessitate work that will require the services of a landscape gardener, not only to execute the plans but in maintaining the grounds afterwards. Up to the present time such small amount of skilled supervision of work of this character as was demanded has been done by the present superintendent of the cemetery, but his cemeterial duties have been so much increased that it will be impossible for him to attend to it in the future. I regard the employment of a landscape gardener as a necessity, if it is desired to maintain the grounds of the academy in a suitable condition and preserve the shrubbery and turf and protect the old trees, of which there are many valuable ones. I recommend that as soon as possible an effort be made to secure an appropriation for the employment of a competent landscape gardener for the Military Academy.

Owing to the trouble that was experienced in securing suitable foundations for the headquarters building, authority was obtained for the purchase of a drilling machine which would enable us to make accurate and thorough borings over the sites of other new buildings, and be able to determine before their erection just exactly to what depths we would have to go in order to secure suitable foundations. With this knowledge the plans can be more accurately drawn, and contractors will have more data upon which to base their estimates.

GAS WORKS.

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 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 appropriation of Congress. Gas is charged at the rate of 75 cents per 1,000 cubic feet to all persons using it for personal use and for such public buildings as belong to the post proper.

Coke is sold at \$1.17 per 18 bushels.

It has been customary to receive bids for the annual output of tar. The accepted price up to May, 1906, was 4½ cents per gallon, but the best price that could be secured, after due advertising, for the ensuing year was 3½ cents per gallon. The reason given for this reduction of 1 cent from the price of previous years was discrimination of freight rates. The matter has been taken up with the railroad company and has been satisfactorily adjusted, so that I believe we can have the price restored to 4½ cents.

During the fiscal year 22,883,900 cubic feet of gas were manufactured; 5,190,900 pounds of gas coal, and 2,380 gallons of oil were used. It will be observed that the amount of gas made during the last fiscal year was 542,600 cubic feet less than the year preceding, and 1,122,900 cubic feet less than the amount made in the fiscal year ending June 30, 1904. This reduction in the amount during the past fiscal year has been due to more vigilant supervision over the expenditure of gas in public buildings and street lighting, and to the comparatively open winter.

It will still be necessary, however, to economize in order to supply the gas needed for the new officers' quarters, which it is expected will be ready for occupation this fall. It will be necessary to use gas in these buildings for illuminating purposes until the central heating and lighting plant is ready for service. It is doubtful, however, whether, with all this economy, the plant will be able to supply sufficient gas to illuminate the new cavalry and artillery barracks and stables at the south end of the post, which will probably be completed during the coming winter. As these buildings are located near the village it will be practicable to light them by electricity purchased from the local electric plant until the current can be supplied from the new lighting plant. Negotiations to that end are now being conducted.

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

The amount of gas manufactured during the fiscal year 1905-6 is given by months in appendix marked "D."

SPECIAL CONTINGENT FUND.

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 receipt of rentals.

The necessary expenditures for the work of the forest improvement, now under way, are made from this fund, which is reimbursed therefor thru the sale of timber, in the shape of cord wood, sawed lumber, etc. Up to the present time we have sold 341.1 cords of wood, for which we received \$4 per cord. A large amount of cord wood is being stacked up this summer, which will be in a saleable condition this coming winter. Arrangements have been made to dispose of this wood thru dealers in that business.

The receipts and disbursements are included in the statement marked "C."

Very respectfully,

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

The ADJUTANT UNITED STATES MILITARY ACADEMY.

A.—Abstract of disbursements at the United States Military Academy at West Point, N. Y., during the year ended June 30, 1906.

	Date.	Current and ordinary expenses.	Miscellaneous items and incidental expenses.	Buildings and grounds.	Total.
Cr.					
Balance on hand, fiscal year—					
1904.....	July 1 1905.....			\$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	do.....			1,000.00	1,000.00
No year (enlarging the Military Academy).....	do.....			207,920.11	207,920.11
Received since fiscal year—					
1905.....	do.....	5,000.00			5,000.00
1906.....	do.....	116,663.68	46,555.00	55,355.54	218,574.22
No year (enlarging the Military Academy).....	do.....			715,000.00	715,000.00
Total.....		134,180.69	52,846.65	983,801.08	1,170,828.42
Dr.					
Deposited, fiscal year—					
1904-5.....	June 30, 1906.....			52.94	52.94
1905.....	do.....	4,379.62	470.19	93.12	4,942.93
1906.....	do.....	380.00			380.00
Disbursed, fiscal year—					
1904.....	do.....			185.34	185.34
1904-5.....	do.....			196.79	196.79
1905.....	do.....	13,117.09	5,821.46	250.74	19,189.29
1905-6.....	do.....			2,960.11	2,960.11
1906.....	do.....	106,199.94	36,840.38	50,802.54	193,842.86
No year (enlarging the Military Academy).....	do.....			779,120.06	779,120.06
Balance on hand, fiscal year—					
1905.....	do.....	20.30			20.30
1905-6.....	do.....			786.39	786.39
1906.....	do.....	10,083.74	9,714.62	4,553.00	24,351.36
Officers' quarters and mess	do.....			1,000.00	1,000.00
No year (enlarging the Military Academy).....	do.....			143,800.05	143,800.05
Total.....		134,180.69	52,846.65	983,801.08	1,170,828.42

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

WEST POINT, N. Y., August 4, 1906.

B.—Statement of funds pertaining to the Quartermaster's Department, United States Army, received and disbursed during the fiscal year ended June 30, 1906.

Balance on hand June 30, 1905.....	\$18,221.95
Received since:	
Regular supplies.....	53,064.84
Incidental expenses.....	11,352.02
Cavalry, artillery, and engineer horses.....	3,375.00
Barracks and quarters.....	9,862.22
Army transportation.....	20,926.29
Sales to officers.....	7,087.75
Sales at auction.....	2,121.22
Shooting galleries and ranges.....	246.05
Military post exchanges.....	665.00
Clothing and equipage.....	184.50
Total to be accounted for.....	<u>127,106.84</u>

Disbursed:

Regular supplies.....	\$58,971.74
Incidental expenses.....	10,919.37
Cavalry, artillery, and engineer horses.....	2,025.00
Army transportation.....	20,971.36
Barracks and quarters.....	9,056.71
Shooting galleries and ranges.....	236.90
Clothing and equipage.....	184.50
Military post exchanges.....	584.80
Deposited.....	12,756.07
Balance on hand June 30, 1906.....	11,400.39

Total..... 127,106.84

J. M. CARSON, JR.,
Major and Quartermaster, U. S. A.

WEST POINT, N. Y., August 4, 1906.

C.—Statement of receipts and expenditures pertaining to the special contingent fund, United States Military Academy, from July 1, 1905, to June 30, 1906.

1905.

CR.

July 1. By balance on hand per last account.....	\$1,106.35
July 1. By transfer of funds, from Lieut. R. C. Foy.....	1,747.26

1906.

June 30. By amount received:

Rents—

Hotel.....	\$2,000.00
Post-office.....	150.00
Stables.....	300.00
Store.....	312.50
Bindery.....	60.00
Miscellaneous.....	1,784.53

4,607.03

Sales of—

Gas.....	7,867.34
Coke.....	1,171.17
Coal tar.....	995.52
Miscellaneous.....	44.87

10,078.90

June 30. Total to be accounted for..... 17,539.54

DR.

June 30. To amount disbursed as per abstracts..... 15,019.60

June 30. Balance on hand..... 2,519.94

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

WEST POINT, N. Y., August 4, 1906.

D.—Statement of gas manufactured from July 1, 1905, to June 30, 1906, showing quantity of coal and oil used in manufacture.

	Gas made.	Gas sent out.	Coal used.	Oil used.
	<i>Feet.</i>	<i>Cubic feet.</i>	<i>Pounds.</i>	<i>Gallons.</i>
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 1906:				
July.....	1,177,500	1,184,400	284,900	155
August.....	1,245,500	1,257,200	299,000	155
September.....	1,735,900	1,723,200	397,000	180
October.....	1,980,000	1,986,800	457,000	248
November.....	2,330,100	2,333,400	513,400	240
December.....	2,590,000	2,570,900	600,800	248
January.....	2,579,200	2,586,200	587,000	248
February.....	2,200,900	2,177,900	478,400	224
March.....	2,199,000	2,190,800	483,100	248
April.....	1,795,200	1,784,000	402,300	190
May.....	1,630,200	1,631,800	369,200	124
June.....	1,420,400	1,435,600	318,800	120
Twelve months.....	22,883,900	22,862,200	5,190,900	2,380
Fiscal year 1905.....	23,426,500	23,427,200	5,273,000	2,995
Fiscal year 1906.....	22,883,900	22,862,200	5,190,900	2,380
Decrease.....	542,600	565,000	82,100	615

Very respectfully,

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

WEST POINT, N. Y., August 4, 1906.

APPENDIX K.

REPORT OF THE FORESTER.

WEST POINT, N. Y., August 18, 1906.

SIR: I have the honor to submit the following report of the forestry work upon the forest reservation of the United States Military Academy army post for the year ending August 18, 1906:

The operations of this department may be divided into three heads: First, the protection of the forest from fire, trespass, insect, and disease damage; second, the improvements upon the forest property, i. e., houses, roads, bridges, pruning, thinning where the value of the wood removed does not equal the cost of removal, the forest nursery, etc.; third, the cutting of cord wood, lumber, poles, posts, piles, etc., which have a monetary value large enough to defray the expenses of the whole department.

Under the first head I am pleased to report that the past year has been very free from damage of any kind to the forest. Constant

watchfulness and efficient patrol during the exceedingly dangerous dry period last fall enabled us to get thru with but one small ground fire, doing but insignificant injury. A wet spring and correspondingly moist summer has prevented any fires during this usually dangerous period. The special order of the Superintendent requiring that everyone connected with the post must have an order from the quartermaster or from the heads of the various departments for anything to be taken from the forest, and that the same must be taken where and in a manner prescribed by the woods foreman or furnished by the woods foreman himself, has done away with the promiscuous trespassing and cutting which heretofore has greatly injured the forest. Close scrutiny has revealed no insect pests doing perceptible damage to the trees. So far as means permitted all trees badly diseased and liable to spread the fungus have been removed.

IMPROVEMENTS.

The lodge for the forestry crew and stable noted in my last report have been completed by the quartermaster and occupied since last fall. A carpenter and blacksmith shop, vegetable cellar, well, cess-pool, and reservoir on Cro' Nest Brook, supplying water for the nursery beds, have been built by the woods foreman. Sleds, go-devils, sluices, etc., for this winter's operation have also been built by one of the woodsmen. A good road has been built to the top of Cro' Nest Glen, with a branch extending eastward along the foot of the Cro' Nest Cliff. A bridle path, to be used later as a wood road, has been built from the forest nursery to the high bench directly under Cro' Nest. From this bench a splendid view of the post and down the Hudson is obtained. Several old wood roads have been cleared of windfalls and bushes and made serviceable for bridle paths. It is the purpose of this department to extend these bridle trails, to the end that every part of the reservation may be covered on horseback. Log bridges have been built wherever necessary.

The work of thinning out and pruning the old stands, where hemlock forms a thick and picturesque understory, has been continued, so far as means permitted. The forest nursery has been considerably increased by this spring's planting, which has been, on the whole, successful. Scotch pine, European and American larch, Colorado blue spruce, English elm, Norway spruce, white birch, red oak, white pine, and hemlock were added. Last year's seedlings have grown very satisfactorily and will furnish ample replacement stock as occasion demands.

CUTTING.

The number of choppers was increased in June by 15 Italians, who have not proven in every way a success. Even after being carefully trained in our methods of felling trees they have required individual supervision. On that account, so far as possible, they have been replaced gradually by native woodsmen. During the summer from 25 to 30 men have been employed in the chopping crew. Owing to the large demand for labor on the construction for the post it has been very difficult to employ efficient men for the forest reservation. Compared with the labor usually found in lumbering regions the men which could be secured for this place are distinctly inexperienced

and inferior. Notwithstanding this disadvantage, however, a satisfactory showing has been made. About 1,000 cords of fuel, 74,000 feet B. M. of lumber, and a considerable amount of poles, piles, posts, and special timbers for the post authorities have been cut. All of the trees furnishing above product were marked by the forester last fall. It should be understood that these trees are the inferior specimens, whose presence interfered with the satisfactory development of the rest of the stand and that their removal is a distinct benefit to the forest. Of the amount removed this year about 235 cords of fuel and 14,000 feet B. M. of logs were cut from compartment VII, about 649 cords of fuel and 59,000 feet B. M. of logs were cut from compartment XVI, and about 110 cords of fuel and 890 feet B. M. of logs from compartment XVII. The cutting upon compartment XVI has been completed, and it is expected that compartments XVII and XVIII will be cut over next year. In addition to the above there has been cut and delivered from various parts of the reservation miscellaneous forest products for the engineers, the quartermaster, and the cavalry detachment to the value of \$711.13.

A small portable sawmill, with planer and edger, has been ordered and will be immediately installed in order that a more complete utilization may be insured of the product which is of too good quality for fuel wood. It is expected that the revenues of the forest reservation will be materially increased with the addition of this mill. The quartermaster has contracted with a local dealer for the sale of at least 1,000 cords per annum of fuel at a minimum price of \$4.50 per cord for wood within 2 miles of the dock and \$4 per cord for wood over 2 miles from the dock. The contractor is to receive a bonus of 25 per cent for hauling the wood to the dock and for selling it. As this wood is all within the 2-mile limit it will therefore bring in at least \$3.37 as it stands in the woods. The cord wood cut in the woods therefore has a value of at least \$3,350. The 74,900 feet B. M. of lumber, at \$20 per thousand, has a value of \$1,480. Adding the \$711.93 worth of miscellaneous product furnished the post authorities, and the value of the product of the forest reservation during the past year is \$5,541.93.

Following is a statement of the receipts and expenditures of this department:

DR.	CR.
To salaries, hire of labor, purchases of material, erection of foresters' cabin, etc.....	By sale of wood and poles.....
\$6,327.54	\$1,639.28
6,327.54	Balance due special contingent fund, United States Military Academy.....
	4,688.26
	6,327.54

ROY L. MARSTON, *Forester.*

Gen. A. L. MILLS,
*Superintendent United States Military Academy,
West Point, N. Y.*

