

# ANNUAL REPORT

OF THE

## SUPERINTENDENT

OF THE

# UNITED STATES MILITARY ACADEMY.

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1901.

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**THIS BOOK CANNOT  
BE TAKEN OUT.**

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HEADQUARTERS UNITED STATES MILITARY ACADEMY,  
*West Point, N. Y., September 24, 1901.*

SIR: I have the honor to submit the following report for the Military Academy for the year ending September 1, 1901:

I have been absent during the year for short periods of time in Washington in connection with affairs pertaining to the Academy, and for four weeks on leave, July 31 to August 28, 1901.

### PERSONNEL.

The number of officers and instructors for duty at West Point, September 1, 1901, was 7 professors, 1 associate professor, 71 commissioned officers, 1 chaplain, 1 contract dental surgeon, 1 teacher of music; a total of 82. The total for duty September 1900, was 74. The net increase in the number of officers at the Academy is 8, the additional officers having been detailed as instructors to meet the demands of the increased size of the classes.

Important changes in the faculty have occurred during the year. Death has claimed its dean, Peter S. Michie, who died February 16 last, after thirty years of conspicuous service as the head of the department of philosophy; Col. George B. Davis, professor of law and history, has been called to the responsible office of Judge-Advocate-General of the Army, and Lieut. Col. Otto L. Hein, commandant of cadets, after a tour of duty in which he brought the practical instruction of cadets to a plane of the highest efficiency, has joined his regiment. The respective offices have been filled by Capt. William B. Gordon, Ordnance Corps; Lieut. Col. Edgar S. Dudley, judge-advocate, and Capt. Charles G. Treat, Artillery Corps.

The appended roster shows the unusual number of captains doing duty as instructors, a circumstance occasioned by the rapid promotion the increased Army has brought to subaltern officers. The preponderance of captains must continue until lieutenants of sufficient length of service are available for this duty.

### THE CORPS OF CADETS.

The maximum number of cadets is 482. The academic year opens with 464 cadets on the rolls of the Academy, the largest number ever belonging to it at one time. They are divided between the four classes as follows: First class, 54; second class, 97; third class, 151; fourth class, 162. Of this number 1 is a foreigner from Venezuela, receiving

instruction at his own expense under special authority of Congress. September 1, 1900, there were 429 cadets, which number included 3 foreigners.

The following changes occurred during the year in the strength of the corps of cadets: Discharged for deficiency in studies, 29; for physical disability, 2; dismissed, 7; resigned, 12; died, 1; withdrew, 2; graduated February 18, 1901, 72; graduated June 1, 1901, 2.

The date of graduation of the first class was advanced to February 18 by the Secretary of War, due to the need for officers arising from the act of Congress reorganizing the Army. One cadet of the first class was not graduated until June 1, on account of physical disability, and the other was detained until June 1 also, serving the sentence of a court-martial.

Three examinations for the admission of candidates were held during the year—in March, at 11 army posts, including West Point; in June and on July 25, at West Point.

Before the different boards 308 candidates appeared. Sixteen of them, having passed the entrance examination at some former time, were examined physically only. One of these failed, leaving 15 who were admitted. Two hundred and ninety-two appeared for both the physical and mental examinations.

Seventy-seven failed to pass the mental examination (14 of them failing on the physical examination also), and 21 who passed the mental examination were not physically qualified to enter.

Of the remaining 194 who were qualified for entrance 49 were alternates who could not be admitted, as their principals had also passed. This left 145, and with the 15 who had passed the physical examination only, made the total number of admissions 160.

#### HEALTH.

The health of cadets has continued good throughout the year. No epidemics of sickness or serious accidents have occurred. Their carefully regulated duties, together with the attention given to the quality and character of their food, and their hygienic surroundings in other respects, all tend to the promotion of health and the development of vigor of both body and mind. Varied military exercises of not too long duration alternate with the hours devoted to study and serve to increase the capacity for academical work, while the opportunities afforded for pleasure riding and the encouragement given to work in the gymnasium and the out-of-door athletic games of baseball, football, tennis, and golf give a necessary relaxation from the restraints of both drill and study.

For the care of the sick several important improvements have been made in the cadet hospital during the year, noticeably the transformation of an old ward into a convenient and modern surgical one. The construction also of the south wing of the hospital, in accordance with the building's original plan, is about to be begun, and when this work is completed the hospital will be in an excellent condition. To make this particular service perfect, however, a detached building for the isolation and treatment of cases of infectious diseases is necessary and should be furnished. When cadets are in barracks should such a disease break out there exists no sufficient means for properly isolating a considerable number of them.

Cases of eye trouble, due in a large measure to insufficient light, continue to occur, and emphasize what was said in my last report regarding the necessity for an adequate lighting plant. An electric one should be furnished. The present gas plant is taxed to its capacity now, and will be overtaxed when buildings under construction are completed. The existing gas plant is not believed to be capable of sufficient enlargement to meet the demands that will be made upon it.

Attention is invited to the appended report of the surgeon for the work done in his department, and his recommendations.

#### DISCIPLINE.

The discipline of the corps of cadets has greatly improved during the year, and is now in an excellent state. It is believed no military body of its size exists which excels it in soldierly appearance and in the perfection of drill and military exercises, as well as in the higher requirements of devotion to duty. This satisfactory condition has been attained by firm adherence to the measures adopted during the past three years to create among the cadets a higher soldierly regard for their obligations, in particular those pertaining to hazing. While these measures and the subject itself have been fully covered in previous reports to the War Department, both will be reviewed here at considerable length on account of their importance. Such review, it is hoped, may in a measure correct some of the many erroneous impressions given and the prejudices excited last winter by the sensational manner in which a section of the public press exploited certain allegations regarding a former cadet. These allegations made it appear that the responsible officers of the institution were derelict and indifferent to their duty and the cadet body the opposite of what its members in reality are—manly young soldiers, well qualified, with but very few exceptions, to be representatives of our country and serve in its armies.

Hazing and its attributes alone gave grounds for the criticism which was directed at the institution early in the year. In one form or another the practice has existed for many years. By repressive measures it has often been reduced to mild forms, but with any relaxing of these measures it has taken on renewed life and new features. In recent years, due in a measure to new conditions, it had developed to an extent of severity never before attained, I believe, and in cases it was carried to extremes. All cadets have not been in sympathy with the practice, nor indulged in it, and but few in any class have carried it to a point of brutality.

From the assumption of my duties as Superintendent the extent of the practice and its effect on the military training of cadets and the welfare of the institution were recognized. Lieutenant-Colonel Hein, commandant of cadets, and at that time Acting Superintendent, had been exerting all the powers of his office to suppress it. His efforts were continued throughout his tour as commandant of cadets, and were aided and seconded by me, and every endeavor was made to eradicate the practice. The utmost vigilance was exacted of the officers, under whose immediate supervision cadets live, to report violations of the many orders covering the subject. Every offense established or any act having in any way a bearing on hazing was summarily and severely punished. The privileges and responsibilities of cadets were increased

and persistent personal and official endeavor was made to create among them a healthy sentiment against the practice.

The principal obstacles encountered in combating hazing were: A defect in the regulations which previous Superintendents, as well as myself, found operated to prevent obtaining the necessary evidence to proceed against the cadets who indulged in it; a strong class and corps feeling among cadets; the fact that the majority of cadets had come to believe that hazing was one of the traditions of the institution and that more or less of it was a necessary part of the training required to hold the body of cadets to the perfection of drill and appearance; and, finally, public sentiment outside of the cadet body, instead of being arrayed against it, seemed, from the commendatory talk reaching cadets and articles that often appeared in print, rather to favor it.

When public attention was called to the subject of hazing at the Military Academy by the allegations above referred to much had already been accomplished to abate the practice. The harsher forms had been voluntarily abandoned by cadets, and a strong and rapidly growing sentiment against the practice had been created among them. The firm attitude of the War Department in supporting the authorities in the endeavors they were making had a most salutary effect, and the Department also had so strengthened and changed the regulations of the Academy that their application with the coming of this year's new class would have insured a total suppression of the practice with its attendant evils. It is to be regretted that this most desirable end was not to be attained without publicity.

While the evidence adduced before the military court of inquiry and the Congressional committee last winter showed that the allegations in the case which led to the inquiries were not true, the evidence laid bare the full extent of the practice as it had existed, and thereby resulted in much good by the public condemnation it evoked, and also by the wise legislation that followed the Congressional committee's report.

The question of the further continuance of any form of hazing was definitely settled in May last. Notwithstanding the lessons of the winter's searching inquiries, it was evident, when in March the candidates for admission appeared to take their examinations, that some members of the fourth class felt that attention, other than that exercised by authority, should be given to these prospective newcomers, and one of that class was severely punished for what, under other circumstances, would have been but a small departure from proper conduct. Shortly thereafter two members of the second class (at that time the senior class at the Academy), both being cadet officers, were also punished for offenses connected with hazing.

On April 16 a number of cadets engaged in an insubordinate demonstration directed at the Superintendent. This demonstration was the outcome of the three punishments above referred to, and was incited by a group of insubordinate cadets of the second class who resented the attitude of authority in enforcing to the letter the law forbidding hazing. The instigators of the demonstration were dismissed, the leading participants in it were suspended for a year, and the lesser ones punished according to the degrees of their offense. Regrettable as it was to have to take such drastic measures as dismissal and suspension, no other course was open, as all lesser measures had failed to secure the desired ends.

That this action, and the indorsement it met by the authorities and the public in general, has resulted in good, can not be doubted.

Throughout the past summer's encampment, which is the time when new cadets are being initiated into their new life, and when hazing is ordinarily practised, it is a fact that the great majority of cadets have obeyed the new order of affairs and the regulations loyally and willingly. Not one case of maltreatment of a new cadet is believed to have occurred; none have been required to perform services of a menial nature for old cadets; there has been no prearranged fighting, and new cadet training has made exceptional progress. One cadet was severely punished for giving an unauthorized and absurd order to a new cadet, and another for exceeding his authority as a drillmaster over them. The action of the latter arose, I believe, through excessive zeal rather than a hazing spirit. Another reform has also been accomplished—the abolition of what is known as official hazing, or the harsh and nagging tones of the cadet instructors over new cadets and cadet officers exercising authority, and the substitution thereof of methods more appropriate for the training and education of young men to command in an American army.

The good conduct and loyal spirit of obedience shown by cadets throughout the summer are most gratifying to all officers of the Academy, as also are the many encomiums passed, without a dissenting voice, as far as has been learned by the press and distinguished visitors upon the appearance of the cadets at the Pan-American Exposition by reason of their universal gentlemanly conduct and excellent military efficiency, deportment, and bearing.

The reforms that have been indicated mark an important era in the history of discipline and military instruction at the Academy. Diligence and discretion on the part of responsible officers will make these reforms permanent, without in the slightest degree marring the perfection of drill, appearance, and discipline. The custom among cadets of settling disputes or difficulties among themselves by prearranged and often brutal fist fights is over, and there need be no apprehension that the stoppage of such affairs will in any way impair a proper habit of manly self-defense against personal assaults or insult.

Following the enactment of Congress which required the Superintendent of the Military Academy to prepare regulations, to be approved by the Secretary of War, which would effectually stop hazing, the regulations which were in existence at the time of the enactment have been improved and added to, and as now strengthened by congressional sanction are so comprehensive in detail that their reasonable application not only insures the present eradication of the practice, but should for the future prevent the recurrence of the practice or any of its attributes.

#### ACADEMIC INSTRUCTION.

The most important matter to claim attention under this head is the action taken by Congress at its last session, which places for the future the entrance examination into the Military Academy in the control of the Secretary of War. By the enactment: "Appointees shall be examined under regulations to be framed by the Secretary of War before they shall be admitted to the Academy, and shall be required to be well versed in such subjects as he may, from time to time, prescribe."

This action marks a signal change in the history of the Academy and one that can not but result in broadening and making more useful its course. In 1812 the requirements for admission were fixed by statute, and, with the exception of the addition of three elementary studies in 1866, have remained unchanged to the present year, notwithstanding the fact that the country's school facilities are vastly superior to what they were at those dates, and the great educational progress our country has made in the meantime. This fact has placed the Academy at a heavy disadvantage for many years in its work.

The new departure will not only enable the War Department to maintain the requisites for admission in harmony with the standards of preparation which are established by the public schools of the country, but by bringing these requisites in the same category as the subsequent system of studies and instruction, which is under the direction of the War Department, a greater flexibility of the course will be permitted and modifications which time makes necessary can be more readily made.

Among the immediate benefits to follow the change will be a considerable reduction of the mental work required of the new cadet in beginning the course of study the first year, and before he has thoroughly adapted himself to the requirements of the Academy's course and methods. It is expected also that modifications of the course of study can be soon made, without adding to the amount of mental work now done by a cadet in the four years, so as to give a large increase in the time allowed for the study of the Spanish language over what has been formerly possible, in order to enable cadets to have a knowledge of this language more nearly in accordance with its future importance to the Army.

A copy of the new-type examination questions is hereto appended, marked "I." In determining the scope of this examination, the most careful effort was made to bring the requirements into harmony with the subjects covered in the public schools at the minimum age of admission. In this work the Academy has had the advice and assistance of the Hon. William T. Harris, United States Commissioner of Education. His aid and criticism were of great help, and his suggestions were followed. Grateful acknowledgment is made for the interest he took in the matter. The new requirements will take effect with the next annual entrance examination, May 1, 1902. These examinations in future, under orders of the War Department, will be limited to one each year, instead of several as in the past, and will be held on the 1st day of May at a largely increased number of military posts in all parts of the country, designated with a view of reducing to a minimum the expenses of candidates in appearing. It is believed this single entrance examination will be productive of much good and that it will result in the improvement in the class of candidates selected and who present themselves for examination; for experience has shown that with two or three examinations permitted each year, many candidates appear at the first who have no prospect and little hope of passing, but with the intention, upon failure, of returning and trying a second or third time for admission. With but one examination it is believed that greater discrimination will be shown in selecting candidates and fuller preparation will be made upon the part of the candidates.

The adoption by the War Department of the further rule by which

in future Senators and Representatives are to be requested in nominating candidates to the War Department, to name a principal and two alternates, will be productive of much good. Under these changes there will be fewer vacancies at the Academy and another result will be a somewhat better prepared class of candidates. All will enter the institution at the same time and receive precisely the same military instruction in the summer encampment, which instruction is almost essential in order that the new classes may receive the proper elementary military training and become imbued with the proper spirit of subordination. Where candidates report at other times than that indicated above, they are at a considerable disadvantage, and there is necessitated a considerable number of drillmasters and instructors from the upper classes who are, to their great detriment, deprived of their own military instruction, which they are unable subsequently to obtain.

The single examination will also diminish the great labor connected with more numerous examinations to the evident advantage of the regular academic work of nearly all the departments of instruction. The method proposed of naming one principal and two alternates for each vacancy, if followed by Senators and Representatives, will involve both the principle of selection and competition, and, it is confidently thought, will produce better results than any system heretofore followed in filling vacancies. In connection with the entrance examination a project is under consideration, and will be submitted to the War Department, for the admission of candidates without further mental examination who have matriculated at incorporated colleges, or who at a bona fide competitive examination have passed a satisfactory examination.

To further improve and broaden the education given at the Military Academy, I beg to renew my recommendation of last year for a small appropriation for the purpose of establishing a course of lectures on timely topics by capable speakers from civil life. It is believed such a course of lectures by carefully selected and capable speakers, during recreation evenings in winter, will tend to make the education of cadets broader and more liberal than it now is, and will give results fully justifying the small additional expense that would be incurred.

The instruction of the several classes and the degree of proficiency attained during the past year have been highly satisfactory. The unremitting labors of the heads of the departments of instruction have elevated the work done in the class rooms, and it is believed this work was never more efficient.

In the line of improvement: In the department of drawing more attention and time have been given to field reconnoissance and military sketching, and a still further increase in this direction is in contemplation during the coming term; in the department of modern languages a new text-book on the Spanish verb and on Spanish pronunciation has been added; and in the department of mathematics, C. Smith's Treatise on Algebra has been substituted for Davies's Bourdon's Algebra. In the latter department other important changes have also been made. In the fourth-class course geometry was taken up in September, and lessons in that subject were made to alternate daily with lessons in algebra until the course in geometry was completed. Algebra was then made to alternate daily with lessons in trigonometry during the remainder of the course, and so that the courses in both these subjects terminated simultaneously about April 16, when examinations in both

were held. In a similar manner in the third-class course lessons in conic sections were made to alternate daily with lessons in descriptive geometry, and like alterations in lessons were adopted for the calculus and solid analytical geometry. It is believed these changes have been of marked benefit to the students.

Another most important and wise change has been made in the department of mathematics. At the semiannual examinations of both the third and fourth classes, at the intermediate examination of the fourth class, and at the annual examination of the third class, those members of each who had shown proficiency in the series of written papers required of them during the general review of the subjects studied were not required to take these examinations. In other words, those cadets who had shown their proficiency in a series of searching daily written tests covering the entire course of study for the term were considered as requiring no further examination. Those cadets, however, who failed in the above tests were required to take the examination, and thus were given a final opportunity to establish their proficiency. This plan has worked with complete satisfaction. Under its application all the members of a class, with the exception at times of those in the higher section, are given the same test varied from day to day. Any given question is marked by the same instructor on the same scale from the top to the bottom of the class, thus eliminating from the mark the personal equation of the instructor; and as general review marks are of double weight, the class is graded practically by the work done during these daily tests. It is believed that no single examination covering the entire course and compressed within the limits of three or four hours can throw much additional light upon the question of proficiency or deficiency of the student, while it certainly does inject an element of chance which should not be allowed to enter where the relative standing of students is of such material importance as is the case at the Military Academy.

#### THE MILITARY ACADEMY LIBRARY.

The commodious and excellent library building has been completed and is now ready for occupancy. This fact calls for consideration of the library itself, and the War Department's interest and approval of the following project is requested in the belief that its accomplishment will add immeasurably to the value of the education of cadets, and will also greatly enhance the usefulness of the Academy to the country at large in the spread of military knowledge. The project will require the appointment of a librarian who should be well informed in general, scientific, and military literature, together with a somewhat larger appropriation for several years to supply military literature that is needed.

To properly meet its end, the library of the Military Academy should bear relations to (1) all the different departments of instruction at the Academy; (2) to the cadets; (3) to the officers on duty at the Academy; (4) to the library of the War Department and other national libraries; (5) to the post libraries of the Army; (6) to other libraries of the United States; (7) to foreign libraries.

It is desirable that the library should present the actual state of knowledge in all the branches at the Military Academy and in the related branches. The whole profession of the soldier should be covered by

its books, and it should offer every facility to cadets for general culture by reading.

In addition to exhibiting the complex profession of the soldier in its various ramifications in the arts and sciences, it should also do what the college library does for the college student. The military art grows and changes as rapidly as any other, and it requires constant effort to keep informed as to these changes and to obtain and keep the best and latest books on military subjects on the shelves of the library. The librarian here, accordingly, should be charged with important responsibilities that do not generally appertain to other libraries.

The list of books now in the library needs to be carefully examined and all important missing volumes on scientific and military subjects should be secured, if possible. The list of military periodicals should be made as complete as practicable, and also the histories of all branches of our service, so far as they have been published. Important books on all wars, modern and ancient, should be procured if missing, together with the fullest possible histories of our own wars. The library should be overhauled for duplicates of all kinds, and these should be systematically exchanged for desirable works from both American and European libraries.

Special bibliographies, to be accessible to everyone whether in or out of the military service, should be prepared of all matter relating to each of our wars, to every part of our army organization, to the service of military information, and to military maps. Everything relating to the history of the Academy and of the Army (albums, prints, drawings, etc.) should be put in the most available form for use and reference. In short, the library should be a museum of printed information readily accessible. Cadets should be taught by occasional lectures how to use libraries and how to search for information by means of bibliographies and indexes, and to extract and prepare in the most serviceable form the information when found.

The present library is far from fulfilling to the greatest degree the requirements demanded of it. Many of these requirements have been at different times partially attempted, but never systematically carried out.

The library, now containing nearly 45,000 volumes of books and 6,000 to 8,000 pamphlets, needs to be overhauled, rearranged, and readjusted by a competent man of both scientific and general attainments, one with knowledge of and acquaintance with other libraries; he should also possess military information and knowledge of military aims and methods. These very desirable ends can not be brought about so long as the method that has been previously pursued at the Military Academy is continued.

It is also felt that with a properly organized library and a competent librarian—one who could devote his whole time to the work, one capable of making the library an important department of the Academy, as it is at other important institutions—it would be possible to inaugurate certain Academy publications, perhaps a quarterly journal of the Academy's work, which would be a great stimulus both to officers in the service and cadets at the Academy. Such publications would place the Academy into closer relations with other institutions of learning and with the country generally; it would be the basis, also, of a large number of exchanges with military schools throughout the world.

The librarian, to fill his office properly, should be sufficiently informed

about and in touch with the departments of instruction at the Academy, so that he can at all times keep laid out for reference the most recent books relating to the subjects of study and other works which might be beneficially consulted by cadets in connection therewith. All periodical literature, especially of a scientific or military nature, should be mapped and indexed and made readily available for the use of cadets and others. Literature relating to important events of the world should also be so exposed as to bring it to the attention of cadets.

The works enumerated above would require able attention and a large amount of time, and to insure their accomplishment it is necessary to adopt a system totally different from that heretofore pursued at the Academy. The library should be given a responsible head, whose sole duty is to do library work and who is capable of bringing it to a modern state of perfection in the general directions suggested.

The library is now under the general supervision of one of the professors of the Academy, who is able, of course, to give little of his time to it, as he has his regular academic work, which is heavy at all times. There is also an assistant librarian, a civilian, who is assisted by two enlisted men detailed for the purpose. In order to attain the ends desired and above outlined the librarian should be able to devote his whole time to the work, for which he should be specially fitted. It is hoped the project will appeal to the War Department and have its support, for it is believed no step can be taken of greater value to instruction at the Military Academy or that will do more to enhance the usefulness of the institution to our country in the spread of military knowledge.

#### PRACTICAL INSTRUCTION.

This instruction has been continued throughout the year along the lines mentioned in my last annual report. The amount given is only limited by the time that is available for it, but as far as possible every endeavor is made to perfect the military training of cadets in the elements of all the arms of the service and in surveying, topography, reconnoissance, and field engineering. In the department of tactics increased attention is being given to the general subject of the horsemanship of cadets, and a marked improvement in the knowledge of riding and the handling of horses, which is so essential in the equipment of our army officers, can be expected. As an aid to this end a number of ponies and flat saddles have been obtained, and as cadets individually become proficient in riding the playing of polo will be encouraged among them. For the details of this particular work and for the other practical instruction that has been given attention is invited to the appended reports of the commandant of cadets and the instructor of practical military engineering.

On August 14 the battalion of cadets, numbering 353, and consisting of the first, third, and fourth classes (the second class being absent on furlough), was taken to the Pan-American Exposition at Buffalo and remained in camp there for two weeks, during which time the regular routine of instruction was prosecuted as far as was practicable. The benefit to cadets of this experience in its broadening influences is obvious, as is also the benefit to the Academy in the opportunity afforded to diffuse through the public a better knowledge of the work it does.

## EQUIPMENT FOR PRACTICAL INSTRUCTION.

The principal thing that is needed to complete the armament and equipment is a model seacoast battery. It is hoped Congress will supply it, and thus enable this most important instruction to be made more complete and useful than has been the case for some years in the past.

## PAY OF CADETS.

I beg to again renew my recommendation of last year that the military cadet be placed upon an equal pay status with his brother cadet of the Naval Academy, and to invite attention to the excellent grounds justifying the recommendations which were set forth in my last report. The increase asked for is small, being but \$69.50 a year. It will, however, relieve a situation which is frequently a difficult and embarrassing one both for cadets and the authorities.

## SUPPLY AND SUBSISTENCE DEPARTMENTS.

Attention is invited to the appended report of the quartermaster, commissary, and treasurer of cadets for the considerable work that is done in these departments. The quality of food furnished has been excellent, the quantity abundant, and endeavor has been made to have its variety pleasing as well as one conducive to health. The cost per cadet per day for messing, which includes the preparation and service of food, has averaged 55.5 cents, an increase over that of last year, but one satisfactorily accounted for by exceptional circumstances. The larger number of cadets provided for during the last year has taxed the mess hall and kitchen beyond their capacity, but this inconvenience will be remedied soon, as the work of enlarging both is now in progress, and when completed will afford ample room, and each will have an excellent equipment. Considerable improvement has also been made in the cadet laundry, and with the acquisition of some additional machinery, which has been asked for in the estimates, it will have an excellent plant.

## CADET ACCOMMODATIONS.

The existing plant of the Military Academy is not adequate for its present needs. Cadet barracks are greatly overcrowded, and it is imperative that additional barrack room for cadets be provided in order to meet the demands of study and to give to each the air space health requires. Other buildings also necessary for their training must be enlarged, in order that the most efficient military instruction may be given. The matter was made the subject of a separate report last year, showing in careful detail the necessity existing in each case. It is hoped the War Department will again this year call the subject to the attention of Congress and recommend the expediency of so providing that any additions to or modifications of the present plant be undertaken on broad lines, so as to provide not only for present needs, but such as will permit of extension in case of any future increase in the number of cadets.

The adoption of this policy will avoid past makeshifts and inadequate construction, which is the most extravagant in the long run. The

development of the plant as an architectural whole not only will work for efficiency and economy, but it is demanded by the natural beauty of West Point, its great historic importance, and the dignity of a national institution.

#### DETACHMENTS OF TROOPS.

These, including Company "M," Third Battalion of Engineers, have performed their multifarious duties in a very satisfactory manner. It is recommended, however, that a small increase in the authorized strength of the army service detachment and the light artillery battery be made, namely, 25 and 10 men, respectively.

To the army service detachment falls the greater part of the labor of repairs on buildings and grounds and the policing of the reservation. It accomplishes this work at a much less cost to the Government than would be the cost if civilian labor was employed for the purpose. The extension of the line of quarters to the south has increased considerably the work of policing and keeping the grounds in proper condition. The greater strength of the corps of cadets also has increased the work in the public buildings, and the amount of repairs required by the many old buildings of the post is constantly increasing. The above makes it necessary that the organization on which this work falls should be increased in strength to meet the new demands and conditions.

The strength of the light artillery detachment is now 43 men. It cares for 78 horses and is required, in addition to its drills, to furnish its proportion of men for post guard duty. With the casualties that are constantly occurring through sickness, etc., it is found that the detachment is unable at times to furnish sufficient men for light-battery instruction for cadets, and this it is most important it should always be able to do. The addition of 10 men to its strength will enable the detachment to meet every demand on it.

#### BUILDINGS AND GROUNDS.

The means which have been generously provided by Congress in the past few years have greatly improved material conditions at the Academy. The appended reports of the quartermaster and the instructor of practical military engineering will show the details of improvements accomplished during the past year. The other works provided for, but not yet completed, are under way and are progressing as rapidly as the work can be done to the best advantage.

#### WATER SUPPLY.

Owing to the unusual and copious rains of the past summer the serious deficiency of water which occurred last fall, and which was the subject of a special report at the time, will not be repeated this year. This fact, however, does not lessen the importance of the water-supply question, nor should it prevent the taking of immediate steps to increase the sources of supply. The problem has been most carefully considered, and its most logical and economical solution lies in the acquisition of Long Pond and its watershed, which will insure for the Academy and post an abundant supply of good water for all eventualities.

Outside of cadet accommodations, the most urgent existing necessity is a sufficient appropriation for providing promptly additional quarters for officers. The provision Congress made for increasing the number of cadets has necessitated a proportional increase in the number of officers doing duty as instructors. These officers are here, but all are not suitably or properly quartered. Three temporary sets of quarters have been improvised out of the old Kinsley House, a building that before this should have been torn down to make its site available for proper quarters. Four officers' families are living in quarters intended for two, and four others occupy the quarters of enlisted men and civilian employees. Officers thus situated, it is obvious, work under a serious disadvantage, and it is hoped Congress will promptly provide the remedy. Another most urgent improvement is the construction of a carriage road from the South dock to the south end of the reservation. Such a road is practicable and will be an economy for the Government in hauling, as there must necessarily be much building in that portion of the reservation. It will also divert much of the traffic that now necessarily passes through the post, and it will also be a great convenience to the considerable population living to the south of West Point who are obliged to come here for railroad and boat transportation.

#### THE WEST POINT HOTEL.

Attention is again called to this building, with the recommendation that Congress be urged to appropriate sufficient funds to renovate it, so that it may possess ordinary comforts for its guests. The comparative isolation of West Point makes a hotel necessary for the accommodation of the yearly boards of visitors, other Government officials, and for the parents and guardians of cadets. The present building was erected many years ago from funds procured from the sale of timber on the reservation, and Congress has never appropriated funds for it. The Government has, however, had the benefit of its yearly rental. The increased rental to be derived from it if renovated will certainly afford a good interest on the money expended for the purpose. If Congress is unwilling to appropriate for this purpose, it is recommended that the right to renovate and reconstruct the building be given to civilians on terms which will be of advantage both to the Government and them.

#### ESTIMATES.

The estimates for the next fiscal year are forwarded with this report. They embrace essentially the same requests as in the past, the principal exceptions being items to provide sufficient quarters for the officers now on duty at the Academy, for the purchase of Long Pond and its watershed, and for the construction of a road from the South dock to the southern part of the reservation. The necessity for each new item in the estimates is explained in the remarks following it. It is hoped all will meet with favorable consideration.

#### CONCLUSION.

In conclusion, I have the honor to record the deep gratitude I feel I owe to the professors and other officers of the Academy for the loyal

support and aid they have given me throughout the year. All are harmonious and zealous in working to attain the highest end in instruction and discipline. I have also to express to the honorable Secretary of War and the Adjutant-General of the Army the Academy's deep appreciation for their cordial and firm support of the measures submitted to them, without which the gratifying progress made throughout the year in discipline, instruction, and material growth and provision for future development would have been impossible.

Very respectfully, your obedient servant,

A. L. MILLS,

*Colonel, U. S. Army, Superintendent.*

The ADJUTANT-GENERAL UNITED STATES ARMY,

*Washington, D. C.*

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APPENDICES.

1. Roster.
2. Report of commandant of cadets.
3. Report of instructor of practical military engineering.
4. Report of quartermaster and commissary of cadets.
5. Report of surgeon.
6. Report of quartermaster.
7. Report of ordnance officer.
8. Report of librarian.
9. Type examination questions.

## A.—ROSTER OF OFFICERS AND TROOPS.

### SUPERINTENDENT.

Col. Albert L. Mills, captain, First Cavalry.

### MILITARY STAFF.

Capt. William C. Rivers, First Cavalry, adjutant of the Military Academy and of the post; recruiting officer.

Maj. Charles B. Hall, Second Infantry, treasurer of the Military Academy, and quartermaster and commissary of cadets.

Maj. John B. Bellinger, Q. M., U. S. Army, quartermaster of the Military Academy and of the post; disbursing officer.

Capt. Malvern-Hill Barnum, Eighth Cavalry, assistant to quartermaster and officer of police; commissary, and in charge of post exchange.

First Lieut. William Kelly, jr., Fourth Cavalry, assistant to quartermaster.

Maj. John M. Banister, surgeon, U. S. A., surgeon.

First Lieut. Franklin M. Kemp, assistant surgeon, U. S. A.

First Lieut. George H. R. Gosman, assistant surgeon, U. S. A.

### ACADEMIC STAFF.

Professors whose service at the Academy as professor exceeds 10 years, have the pay and allowances of colonel, and all other professors the pay and allowances of lieutenant-colonel.

### DEPARTMENT OF TACTICS.

Lieut. Col. Charles G. Treat, captain, Artillery Corps, commandant of cadets and instructor of tactics. (June 15, 1901.)

Capt. George H. Sands, Sixth Cavalry, senior instructor of cavalry tactics.

Capt. James K. Thompson, Fifteenth Infantry, senior instructor of infantry tactics; commanding company of cadets.

Capt. Edwin St. J. Greble, Artillery Corps, senior instructor of artillery tactics.

Capt. Fred W. Sladen, Fourteenth Infantry, assistant instructor of tactics; commanding company of cadets.

Capt. Edmund M. Blake, Artillery Corps, assistant instructor of tactics; commanding company of cadets.

Capt. Edward Anderson, Seventh Cavalry, assistant instructor of tactics; commanding company of cadets.

First Lieut. Robert C. Davis, Seventeenth Infantry, assistant instructor of tactics; commanding company of cadets.

First Lieut. George T. Summerlin, Fourth Cavalry, assistant instructor of cavalry tactics; commanding company of cadets.

First Lieut. Leon B. Kromer, Eleventh Cavalry, assistant instructor of tactics and gymnastics.

First Lieut. Herman J. Koehler, U. S. Army, instructor of military gymnastics and physical culture.

### DEPARTMENT OF CIVIL AND MILITARY ENGINEERING.

Gustav J. Fiebeger, professor. (May 4, 1896.)

Capt. James P. Jervey, Corps of Engineers, assistant professor.

First Lieut. Edwin R. Stuart, Corps of Engineers, instructor.

First Lieut. John C. Oakes, Corps of Engineers, instructor.

## DEPARTMENT OF NATURAL AND EXPERIMENTAL PHILOSOPHY.

William B. Gordon, professor. (March 27, 1901.)  
 Capt. Cornélis DeW. Willcox, Artillery Corps, assistant professor.  
 Capt. Richard L. Livermore, Tenth Cavalry; Capt. Johnson Hagood, Artillery Corps; First Lieut. Monroe C. Kerth, Twenty-third Infantry, instructors.  
 Capt. William G. Sills, First Cavalry, in charge of observatory and astronomical observations.

## DEPARTMENT OF MATHEMATICS.

Wright P. Edgerton, professor. (October 7, 1898.)  
 Charles P. Echols, associate professor.<sup>1</sup> (October 7, 1898.)  
 Capt. George F. Hamilton, Tenth Cavalry, assistant professor.  
 Capt. Frank W. Coe, Artillery Corps; Capt. Mortimer O. Bigelow, Ninth Cavalry; Capt. Alston Hamilton, Artillery Corps; Capt. Robert E. Callan, Artillery Corps; Capt. Clarence H. McNeil, Artillery Corps; Capt. James W. Hinkley, jr., Artillery Corps; Capt. Edwin O. Sarratt, Artillery Corps; First Lieut. John B. Christian, Ninth Cavalry; First Lieut. John E. Stevens, Artillery Corps; First Lieut. Francis H. Pope, Second Cavalry; First Lieut. George E. Mitchell, Seventh Cavalry, instructors.

## DEPARTMENT OF CHEMISTRY, MINERALOGY, AND GEOLOGY.

Samuel E. Tillman, professor. (December 21, 1880.)  
 Capt. Richmond P. Davis, Artillery Corps, assistant professor.  
 Capt. Samuel G. Jones, Eleventh Cavalry; Capt. John McA. Palmer, Fifteenth Infantry; Capt. Paul B. Malone, Twenty-seventh Infantry; Capt. Robert S. Abernethy, Artillery Corps; Capt. Albert J. Bowley, Artillery Corps, instructors.

## DEPARTMENT OF DRAWING.

Charles W. Larned, professor. (July 25, 1876.)  
 Capt. Horace M. Reeve, Third Infantry, assistant professor.  
 Capt. Andrew Hero, jr., Artillery Corps; Captain Frederick W. Lewis, ——— Infantry; First Lieut. Chauncey B. Humphrey, Third Infantry; First Lieut. Henry C. Smither, First Cavalry, instructors.

## DEPARTMENT OF MODERN LANGUAGES.

Edward E. Wood, professor. (October 1, 1892.)  
 Capt. J. F. Reynolds Landis, First Cavalry, assistant professor of the Spanish language.  
 Capt. Thomas G. Hanson, Nineteenth Infantry, assistant professor of the French language.  
 Capt. Wirt Robinson, Artillery Corps; Capt. John M. Jenkins, Fifth Cavalry; Capt. Albert E. Saxton, Eighth Cavalry; Capt. Girard Sturtevant, Fifth Infantry; Capt. Frank Parker, Fifteenth Cavalry; Capt. William S. Guignard, Artillery Corps; Capt. Bertram C. Gilbert, Artillery Corps; First Lieut. William Kelly, jr., Fourth Cavalry; First Lieut. Thomas A. Roberts, Tenth Cavalry; First Lieut. Frank C. Jewell, Artillery Corps, instructors.

## DEPARTMENT OF LAW AND HISTORY.

Edgar S. Dudley, lieutenant-colonel and judge-advocate, U. S. A., professor. (July 31, 1901.) (By assignment under act June 6, 1874.)  
 Capt. Nathan K. Averill, Seventh Cavalry, assistant professor.  
 Capt. Dennis E. Nolan, Thirteenth Infantry; First Lieut. Daniel G. Berry, First Infantry; First Lieut. Pierce A. Murphy, Seventh Cavalry, instructors.

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

Capt. Joseph E. Kuhn, Corps of Engineers, instructor. (August 22, 1900.)  
 First Lieut. William B. Ladue, Corps of Engineers, senior assistant instructor.

## DEPARTMENT OF ORDNANCE AND GUNNERY.

Capt. Frank E. Hobbs, Ordnance Department, instructor. (August 15, 1900.)  
 Capt. Charles C. Jamieson, Ordnance Department, senior assistant instructor.  
 Capt. Gordon G. Heiner, Artillery Corps, assistant instructor.

<sup>1</sup>Associate professor, with the pay and allowances of captain.

## CHAPLAIN.

Rev. Herbert Shipman (reappointed April 22, 1900). (April 22, 1896.)

## TEACHER OF MUSIC.

George Essigke. (October 15, 1895.)

## TROOPS.

## BATTALION OF CADETS.

Lieut. Col. Charles G. Treat, Artillery Corps, commanding.  
 Company A, Capt. James K. Thompson, Fifteenth Infantry, commanding.  
 Company B, Capt. Edward Anderson, Seventh Cavalry, commanding.  
 Company C, Capt. Edmund M. Blake, Artillery Corps, commanding.  
 Company D, First Lieut. George T. Summerlin, Fourth Cavalry, commanding.  
 Company E, First Lieut. Robert C. Davis, Seventeenth Infantry, commanding.  
 Company F, Capt. Fred W. Sladen, Fourteenth Infantry, commanding.

## DETACHMENT OF HOSPITAL CORPS.

Maj. John M. Banister, surgeon, U. S. A., commanding.  
 First Lieut. Franklin M. Kemp, assistant surgeon, U. S. A.  
 First Lieut. George H. R. Gosman, assistant surgeon, U. S. A.

## UNITED STATES MILITARY ACADEMY DETACHMENT OF ARMY SERVICE MEN.

Maj. John B. Bellinger, quartermaster, U. S. A., commanding.  
 Capt. Malvern-Hill Barnum, Eighth Cavalry.

## COMPANY M, THIRD BATTALION, ENGINEERS.

Capt. Joseph E. Kuhn, Corps of Engineers, commanding.  
 First Lieut. William B. Ladue, Corps of Engineers.

## UNITED STATES MILITARY ACADEMY DETACHMENT OF ORDNANCE.

Capt. Frank E. Hobbs, Ordnance Department, commanding.  
 Capt. Charles C. Jamieson, Ordnance Department.

## UNITED STATES MILITARY ACADEMY DETACHMENT OF CAVALRY.

Capt. George H. Sands, Sixth Cavalry, commanding.  
 First Lieut. George T. Summerlin, Fourth Cavalry.

## UNITED STATES MILITARY ACADEMY DETACHMENT OF ARTILLERY.

Capt. Edwin St. J. Greble, Artillery Corps, commanding.

## UNITED STATES MILITARY ACADEMY BAND AND DETACHMENT OF FIELD MUSIC.

Capt. William C. Rivers, First Cavalry, commanding.

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

Names.	Corps or regiment.	On duty at Academy since—
<b>SUPERINTENDENT.</b>		
Col. Albert L. Mills.....	Captain, First Cavalry.....	Sept. 20, 1898
<b>PROFESSORS.</b>		
Larned, Charles W.....	Professor (July 25, 1876).....	Aug. 28, 1874
Tillman, Samuel E.....	Professor (Dec. 21, 1880).....	Aug. 28, 1879
Wood, Edward E.....	Professor (Oct. 1, 1892).....	Aug. 28, 1889
Fieberger, Gustav J.....	Professor (May 4, 1896).....	May 30, 1896
Edgerton, Wright P.....	Professor (Oct. 7, 1898).....	Jan. 28, 1889
Gordon, William B.....	Professor (Mar. 27, 1901).....	May 2, 1901
<b>LIEUTENANT-COLONELS.</b>		
<i>Lieutenant-colonel and judge-advocate.</i>		
Dudley, Edgar S.....	Professor (July 31, 1901).....	July 31, 1901
<i>Commandant of cadets.</i>		
Treat, Charles G.....	Captain, Artillery Corps (June 15, 1901).....	Aug. 31, 1900
<b>MAJORS.</b>		
Banister, John M.....	Surgeon.....	Oct. 27, 1898
Hall, Charles B.....	Second Infantry.....	May 5, 1898
Bellinger, John B.....	Quartermaster.....	June 5, 1900
<b>CHAPLAIN.</b>		
Shipman, Rev. Herbert.....	Chaplain.....	Apr. 25, 1896
<b>ASSOCIATE PROFESSOR.</b>		
Echols, Charles P.....	Associate professor (Oct. 7, 1898).....	Dec. 27, 1898
<b>CAPTAINS.</b>		
Hobbs, Frank E.....	Ordnance Department.....	Aug. 15, 1900
Kuhn, Joseph E.....	Corps of Engineers.....	Aug. 22, 1900
Sands, George H.....	Sixth Cavalry.....	Aug. 21, 1899
Landis, J. F. Reynolds.....	First Cavalry.....	Aug. 21, 1900
Thompson, James K.....	Fifteenth Infantry.....	July 8, 1900
Greble, Edwin St. J.....	Artillery Corps.....	June 15, 1901
Hanson, Thomas G.....	Nineteenth Infantry.....	Aug. 20, 1901
Sladen, Fred W.....	Fourteenth Infantry.....	Aug. 28, 1900
Willcox, Cornélie De W.....	Artillery Corps.....	Aug. 21, 1900
Davis, Richmond P.....	do.....	Aug. 29, 1898
Barnum, Malvern-Hill.....	Eighth Cavalry.....	Dec. 19, 1898
Robinson, Wirt.....	Artillery Corps.....	Aug. 21, 1899
Jenkins, John M.....	Fifth Cavalry.....	Aug. 21, 1900
Rivers, William C.....	First Cavalry.....	Aug. 14, 1899
Blake, Edmund M.....	Artillery Corps.....	Aug. 21, 1899
Anderson, Edward.....	Seventh Cavalry.....	Aug. 25, 1898
Jones, Samuel G.....	Eleventh Cavalry.....	Aug. 31, 1899
Livermore, Richard L.....	Tenth Cavalry.....	Nov. 2, 1899
Palmer, John McA.....	Fifteenth Infantry.....	Aug. 27, 1901
Reeve, Horace M.....	Third Infantry.....	Aug. 20, 1901
Malone, Paul B.....	Twenty-seventh Infantry.....	Aug. 4, 1901
Jamieson, Charles C.....	Ordnance Department.....	Aug. 21, 1900
Hamilton, George F.....	Tenth Cavalry.....	Jan. 7, 1899
Saxton, Albert E.....	Eighth Cavalry.....	Aug. 21, 1900
Sturtevant, Girard.....	Fifth Infantry.....	Aug. 29, 1898
Parker, Frank.....	Fifteenth Cavalry.....	Aug. 21, 1900
Jervey, James P.....	Corps of Engineers.....	Jan. 4, 1899
Hero, Andrew, jr.....	Artillery Corps.....	Aug. 21, 1899
Coe, Frank W.....	do.....	Sept. 1, 1898
Averill, Nathan K.....	Seventh Cavalry.....	Aug. 21, 1899
Bigelow, Mortimer O.....	Ninth Cavalry.....	Aug. 20, 1901
Lewis, Frederick W.....	— Infantry.....	Aug. 29, 1898
Heiner, Gordon G.....	Artillery Corps.....	Aug. 21, 1900
Hamilton, Alston.....	do.....	Aug. 6, 1900
Sills, William G.....	First Cavalry.....	Aug. 21, 1900
Nolan, Dennis E.....	Thirteenth Infantry.....	Aug. 28, 1901
Callan, Robert E.....	Artillery Corps.....	Apr. 20, 1899
Guignard, William S.....	do.....	Jan. 7, 1901
McNeil, Clarence H.....	do.....	Aug. 21, 1899
Hinkley, James W., jr.....	do.....	Aug. 30, 1898
Hagood, Johnson.....	do.....	Aug. 20, 1901
Abernethy, Robert S.....	do.....	Do.

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

Names.	Corps of regiment.	On duty at Academy since—
<b>CAPTAINS—continued.</b>		
Sarratt, Edwin O.....	Artillery Corps.....	Sept. 24, 1900
Bowley, Albert J.....	do.....	Aug. 20, 1901
Gilbert, Bertram C.....	do.....	Aug. 21, 1900
<b>FIRST LIEUTENANTS.</b>		
Kemp, Franklin M.....	Assistant surgeon.....	Sept. 7, 1899
Ladue, William B.....	Corps of Engineers.....	June 17, 1901
Stuart, Edwin R.....	do.....	Aug. 21, 1899
Oakes, John C.....	do.....	Aug. 20, 1901
Berry, Daniel G.....	First Infantry.....	Aug. 29, 1900
Davis, Robert C.....	Seventeenth Infantry.....	Aug. 10, 1901
Humphrey, Chauncey B.....	Third Infantry.....	(1)
Christian, John B.....	Ninth Cavalry.....	Aug. 30, 1899
Stephens, John E.....	Artillery Corps.....	Aug. 21, 1900
Kelly, William, jr.....	Fourth Cavalry.....	Oct. 19, 1898
Summerlin, George T.....	do.....	Aug. 3, 1900
Pope, Francis H.....	Second Cavalry.....	Aug. 21, 1899
Mitchell, George E.....	Seventh Cavalry.....	Aug. 31, 1899
Murphy, Pierce A.....	do.....	Aug. 21, 1900
Smither, Henry C.....	First Cavalry.....	Do.
Roberts, Thomas A.....	Tenth Cavalry.....	(1)
Kromer, Leon B.....	Eleventh Cavalry.....	Oct. 1, 1900
Koehler, Herman J.....	Instructor of military gymnastics and physical culture.....	Feb. 1, 1885
Jewell, Frank C.....	Artillery Corps.....	Aug. 20, 1901
Gosman, George H. R.....	Assistant surgeon.....	July 19, 1901

<sup>1</sup> Not yet reported.

HEADQUARTERS UNITED STATES MILITARY ACADEMY,

*West Point, N. Y., September 1, 1901.*

W. C. RIVERS,

*Captain, First Cavalry, Adjutant.*



## B.—REPORT OF THE COMMANDANT OF CADETS.

HEADQUARTERS UNITED STATES CORPS OF CADETS,  
*West Point, N. Y., August 30, 1901.*

SIR: The undersigned assumed command as commandant of cadets June 15, 1901, as per paragraph 19, Special Orders, No. 45, current series, Headquarters of the Army, and paragraph 5, Special Orders, No. 113, current series, Headquarters United States Military Academy. Up to that time the regular drill schedule, as set forth in the annual report of the commandant of cadets for 1900, had been carried out.

The new camp site being in process of repair it was not practicable to go into camp until July 5, 1901, up to which time the battalion remained in barracks. The regular drill season began June 15. A practice march to Lake Mohegan was made June 17, 1901. The command was divided as follows: A battalion of infantry (4 companies) and troop of cavalry, cadets of the first class; light battery of artillery, cadets of the first and third classes; pack train and mountain battery, cadets of the first class; wagon train, field music, 14 enlisted men. The command began crossing the ferry at Garrison at 5.45 a. m., in the following order: First, infantry, pack train and mountain battery, wagons, light battery, cavalry and headquarters. Two columns were organized at Garrison, one infantry, with pack train and mountain battery, to take the shorter route over the mountain; the other cavalry, light artillery, and the wagon train, to go by main road toward Peekskill. It was a march of concentration on the Peekskill waterworks, where contact was made with the Seventh Regiment, National Guard, State of New York, en route to Lake Mohegan. The command returned the following day. All duties were performed by cadets, including grooming, watering, and feeding the animals. Very satisfactory road sketches were made, and all details of advance and rear guard and other requirements for security and information were strictly carried out.

Schedules for drills during the summer season in camp are hereto appended.

*Cavalry.*—The quality of horsemanship and class of riding shown is good, though not entirely satisfactory. Efforts are being made to improve the biting and gaiting of the horses by using the four-rein bridle, and either a bit and bridoon or the regulation curb bit with second-rein ring at mouthpiece. This is producing a marked improvement in the gaits of the horses, their tractability, and manners, the injury and pain caused by the heavy, inexperienced, and numerous different hands on the curb alone being somewhat abated by the almost exclusive use of the snaffle rein. The Quartermaster-General has furnished 32 ponies that have been carefully trained and schooled and will be used in conjunction with cavalry and riding instruction to teach cadets how to ride the pad saddle, ride cross country, and those showing superiority will be given practice and instruction in polo. The Ordnance Department has furnished 20 new and first-class pad saddles, with bridles, cavassons, and breast straps complete. These, with the 10 others already on hand, make 30 complete outfits. To school new horses in taking obstacles and perfect old ones a jumping chute—an oval 150 feet by 75 feet, 12-foot track, fences 6 feet high, with a stone wall, water jump, hedge, post and rail as obstacles—was constructed and has been in successful operation during the summer. The horses are first turned in without a bridle or rider and sent around as many times and as many days as necessary to have them jump easily, gracefully, and without hesitation. Cadets are then put in the saddle and instructed as to proper position of the body in jumping, and are encouraged to hold on by the saddle, mane, or straps around the horse's neck—anything to make them feel secure and increase their confidence. The horses, still without bridles, are then turned loose and sent over the obstacles. In this way the horse jumps naturally, the cadet can not punish the horse by supporting himself on the reins, and he is gradually taught to ride with his legs alone and only to guide and steady by the reins. Both kinds of saddles are used in this instruction, with and without stirrups, and also bareback. The principle governing this instruction is, first, to teach the horse to jump; then let the horse be free to teach the man, taking every precaution to maintain and increase the rider's confidence. On the flat north of the post a simple steeple-chase course has been laid out, containing the following obstacles: Virginia

rail fence, hedge, stone wall, in and out jump, board fence, post and rail, and water jump. The course is about half a mile long, and the turns are short enough to make it necessary to ride with the horse well in hand and avoid forming the habit of rushing at obstacles. To grow a good turf and raise this bottom high enough to be well drained and to make it a proper rifle range, riding course, and polo field, we should have from 10 to 12 inches of good, fertile earth spread over the ground. For this purpose an appropriation of \$10,000 should be asked for from Congress. Feeling that an opportunity to straighten the track north of the post would be of so great importance or advantage to the West Shore Railroad that in return they would gladly furnish us with the required fertile earth to cover the flat, correspondence was entered into with the officials of the West Shore Railroad and the matter is now under consideration of their chief engineer. The straightening of the track and the filling of the flat being so mutually advantageous to both the Government and railroad, it possibly may be accomplished without appropriation.

The summer course in equitation included instruction in the use of the longe and the proper application of the aids. This instruction was given to members of the first and third classes left over after providing for all details at the other drills taking place at the same hour—7 to 8.30 a. m. By this means 8 to 10 first-class men and 16 to 20 third-class men were given daily instruction. This was particularly advantageous in the latter case, affording an opportunity to somewhat accustom third class men to the horse before getting into the riding hall. The class is so large that the hall will scarcely accommodate one-half of them, as is customary, and the time allowed to each man will be diminished one-third and possibly one-half. This is a serious question and it is hoped that a new division of time may be made to somewhat remedy the condition.

The mounts furnished the cavalry detachment have not been entirely satisfactory, some being nervous and flighty, too tall, and with not sufficient substance. Where so many different hands are used on the same animal as here, a different type of horse than might prove satisfactory for the constant use of one trooper is necessary. I desire a level-headed, light-weight, well-muscled horse of the Morgan type; a good square trotter with lasting qualities. It is believed that these can be found at present prices, and they certainly will be more useful and give several years longer average service.

*Artillery.*—Drills and progress in light-artillery instruction have been fair, though not entirely satisfactory for lack of proper country to maneuver over and lack of proper conditions for target practice. The new horses authorized have been in service about a year; 35 out of the 50 authorized have been supplied. These horses, although purchased at an increased price, are not first class, nor in any way typical artillery horses. What is needed is a stockily-built, strong, even-gaited, level-headed horse weighing about 1,150 pounds; no distinction being made between leaders and wheelers, horses that can be made to trot at the rate of 10 to 12 miles an hour without breaking. In this connection I desire to call attention to the advisability of having sent here, for the instruction of cadets, a sample gun of all types used in the field or mountain artillery. It is also desirable that models or samples of artillery harness and artillery material generally of other first-class and progressive nations be supplied for instruction and experiment.

*Infantry.*—Instruction has been made the most practical possible. The squad, the company, the battalion in close order, and the company and battalion in extended order. Members of the first class commanded in turn by roster. The duties of adjutant and quartermaster were also performed by roster. The instruction has been satisfactory.

*The mountain artillery drill* has been thorough and satisfactory, the mules carrying the guns and ammunition, together with a pack train, having been exercised over the steepest mountain trails in the vicinity. Practice and instruction were also had in machine gun drill—10-barrel Gatling. Instruction in coast artillery has been confined to actual loading and manipulation of the 8-inch breech-loading rifle on a barrette carriage, and 12-inch breech-loading rifle and mortar. This instruction was augmented by practice in measuring horizontal angles by the use of the position finder. It is earnestly desired that eventually a complete coast-artillery plant may be available for actual and practical instruction.

*Target practice* with small arms is being carried on to the greatest extent possible with the time available—range 100 to 600 yards. The scores do not indicate great general merit. It is recommended that cadets be rated as "marksman" and "sharp-shooter" where their score warrants it, as a sort of incentive to increase interest.

*Instruction in tent pitching and field intrenching* has been carried out thoroughly and practically; in the latter the selection of position being given prominence.

*In pack-train service* instruction has been thorough, and it is believed will be of

great value. Packs of all sizes and shapes have been used to illustrate the advantage of different hitches. Chief Packer Daly, United States Army, is on duty here and is giving excellent service and valuable assistance in instruction.

*Instruction in gymnastics* has been very thorough and is considered very satisfactory. The following tables, taken from the report of the senior instructor in athletics, show the comparative improvement:

	Pull up.	Dip.	Right forearm.	Left forearm.	Lung capacity.	Back.	Legs.	Chest.
Class 1904:								
October, 1900.....	7.11	4.95	122.93	110.44	239.79	347.66	478.83	110.24
May, 1901.....	11.40	10.44	138.62	123.29	256.13	427.41	620.32	130.38
Gain.....	4.29	5.49	15.69	12.85	16.34	79.75	141.49	20.14

A comparison of the gains made by the classes of 1903 and 1904 follows:

Gains made by—	Pull up.	Dip.	Right forearm.	Left forearm.	Lung capacity.	Back.	Legs.	Chest.
Class of 1903.....	4.78	6.42	14.34	11.24	20.01	71.77	114.05	18.19
Class of 1904.....	4.29	5.49	15.69	12.85	16.34	79.75	141.09	20.14

In the following table the May averages of the last three classes trained under the old method are compared to those of the class of 1904:

	Pull up.	Dip.	Right forearm.	Left forearm.	Lung capacity.	Back.	Legs.	Chest.
Class of 1904.....	11.40	10.44	138.62	123.29	256.13	427.41	620.32	130.38
Three classes.....	10.11	9.14	133.61	124.96	244.63	401.12	591.09	134.45
Gain or loss <sup>1</sup> ....	+ 1.29	+ 1.30	+ 5.01	- 1.67	+ 1.50	+ 26.29	+ 28.23	- 4.07

<sup>1</sup> +, gain; -, loss.

It is desired that instruction in athletics be continued on through the course with the second and first classes also. The available time necessary is difficult to arrange, but the great benefit derived from such exercise warrants serious endeavor to make the necessary apportionments. It is desired to increase the amount of instruction in fencing. The extra amount of money called for for repairs in the gymnasium will enable a number of fencing boards to be placed on two of the old bowling alleys without interfering with their use as such. Owing to the increased size of the classes now coming to the Academy for instruction, it is absolutely necessary to enlarge the gymnasium. Only 36 feet can be added on the south end now and not disturb the present cadet store. This would be a considerable expense with but a trifling remedy. I recommend that in case the present gymnasium is enlarged, the cadet store be removed entirely and placed somewhere in rear of the mess hall, or that the gymnasium be doubled in size to the westward. When such change is made in the gymnasium I earnestly recommend that the rooms in the upper stories be made large, pleasant, and commodious for use in entertainment purposes of the cadets as a sort of clubhouse; proper reading room, billiard and pool tables, shuffleboards, chess, checkers, and other similar games for healthful and proper amusement and diversion.

A regular course of lectures, covering practical duties in the several arms of the service, has been arranged for and given. Lectures also covering the subjects of military administration, customs of the service, and military etiquette, military efficiency, instruction of recruits and new cadets, together with all other practical and theoretical subjects, have been discussed and lectured on by the various officers on duty in the department of tactics. The subject of discipline, military conduct, and general department has been presented to all cadets by discussions and lectures by the commandant of cadets in person.

*Discipline.*—The establishment of the various conduct grades, with award of privileges under each, has been very efficacious. The discipline for the corps of cadets as a military body is good. Three hundred and fifty-three cadets were taken to the

Pan-American Exposition in Buffalo, where they remained in camp for two weeks. The most liberal privileges as to limits were given; the regulations of the Academy were all in force, excepting that spending money was allowed. The principle under which they were expected to comport themselves was that of cheerful and willing obedience to orders, rather than a fear of detection and punishment for a violation of them. It, of course, was impossible for the officers on duty to, in a small degree, oversee or direct all their actions and general deportment when absent, and if questionable and ungentlemanly acts were committed, it was understood and expected that other and older cadets more circumspect would correct and report the delinquency. The few cases where the lack of proper deportment and gentlemanly conduct was raised were reported to the authorities by cadets themselves. On the return to West Point the following memorandum was published in appreciation of their excellent conduct and spirit:

HEADQUARTERS UNITED STATES CORPS OF CADETS,  
West Point, N. Y., September 1, 1901.

## MEMORANDUM.

During the encampment of the corps of cadets at Buffalo and since their return, expressions of commendation and complimentary letters have been received from the Lieutenant-General Commanding the Army, the major-general commanding the department, the president and director-general of the exposition, the mayor of the city, high officials of many industries, and the press, speaking in highest terms of the universal gentlemanly conduct and excellent military bearing, deportment, and efficiency of the corps of cadets.

In a military organization of this character and nature it is not only impossible but undesirable that all questionable acts could be observed and should be reported by commissioned officers alone.

The high moral tone that it is endeavored to inculcate here makes it incumbent on all to keep free from stain the highest standard of honor and gentlemanly conduct.

As a member of so conspicuous a class and profession, every man is to a degree the keeper of the reputation of all. The few acts of questionable conduct committed were reported to the authorities by cadets themselves, and investigation indicates that these were mainly due to a lack of appreciation of the importance of extreme circumspection owing to their short length of service and association with the corps.

The commandant expresses his appreciation of the united support and willing assistance given him. By order of Lieutenant-Colonel Treat:

(Signed)

LAWRANCE V. FRAZIER,  
Cadet Lieutenant and Adjutant.

Investigations have periodically been held in accordance with the regulations governing hazing, the results of which show that the corps of cadets appreciate their duty as soldiers and their responsibility for the carrying out of all orders willingly and loyally. The investigations disclosed a very commendable spirit to exist and the efforts of authorities to attain the highest order of discipline have been loyally and unflinchingly seconded by the members of the corps of cadets.

I desire to express my appreciation of the cheerful, willing, and able help always rendered by all the officers on duty with me in the department of tactics.

Very respectfully,

CHAS. G. TREAT,  
Lieutenant-Colonel, U. S. Army, Commandant of Cadets.

The ADJUTANT UNITED STATES MILITARY ACADEMY.

HEADQUARTERS UNITED STATES MILITARY ACADEMY,  
West Point, N. Y., August 29, 1901.

SIR: I have the honor to submit the following report:

The command, consisting of 353 cadets, 12 officers, 102 enlisted men, 13 civilians; 12 mules, 50 public horses, 17 polo ponies, government, and 1 private horse—80 animals in all—left West Point August 14 pursuant to instructions from the honorable Secretary of War, dated July 5, 1901. The command was transported over the West Shore Railroad, leaving West Point about 4 p. m., August 14, arriving at the Pan-American Exposition grounds about 6 a. m., August 15. The baggage was unloaded, camp pitched (the canvas having been taken from West Point, 218 tents), and the command was under cover by noon. The arrangements for subsistence had been made at a neighboring hotel; the cadets and officers at the rate of 75 cents per day, the enlisted men at 50 cents per day. The service and food were satisfactory.

While in camp the corps made numerous excursions; one to the Village Farm, East Aurora, N. Y., at the invitation of Mr. Harry Hamlin, where 400 and odd of the finest bred horses in the world are located. As a token of esteem, a 2-year-old colt, now in the American Stock Register as Hamlin Cadet, No. 34815, sired by Membrino King out of an Almont mare, valued at \$5,000, 2 years old August 31,

1901, was presented to the corps of cadets. This horse is a perfect type for confirmation and quality. He was accepted by the commandant, permission having been received from the Lieutenant-General of the Army who was present on that day. Another excursion was made to the power houses of the Niagara Power Company, Niagara Falls, where the operation of the turbines and dynamos by which 45,000 horsepower in electricity is generated was thrown open to and explained to all the cadets. The West Shore Railroad gave the whole command free transportation to Niagara Falls and return; the Pennsylvania Railroad to the Village Farm and return; the International Navigation Company gave a moonlight excursion on one of their ships over the Niagara River; the Buffalo Street Car Company gave free transportation to the corps on these excursions.

The command was in camp two weeks on the grounds, and paraded daily and gave drills in the stadium, consisting of battalion drill, third and fourth classes; pack train, first class; tent pitching, third class; cavalry, troop, and bareback riding, first class; extended-order drill, third class; gymnastics and setting-up drill, fourth class; exhibition in riding, use of polo ponies, and riding over obstacles, first class. These drills occupied from an hour to an hour and a half and were attended sometimes by 20,000 people.

The Lieutenant-General Commanding the Army and the major-general commanding the department, the president of the Pan-American Exposition, the director-general, the mayor of the city of Buffalo, and all prominent officials and civilians in and about Buffalo each expressed his great pleasure and satisfaction with the conduct and appearance and the excellent military display made by the corps of cadets.

Liberal treatment as to privileges was accorded, but a strict compliance with the regulations was exacted, the principle governing each and every man in his conduct being that regulations and orders were to govern from a cheerful and willing spirit of obedience rather than fear of detection and punishment for violations of them.

The command left with seven men in the hospital, which gradually diminished to none present in the hospital on the tenth day. On the last day, owing to the arduous duties of packing, two young men were slightly overcome by the heat and returned to West Point in charge of the surgeon. They rapidly convalesced during the night and will probably be ready for duty to-day.

The command left Buffalo by the West Shore Railroad at 7 p. m. August 28, arriving at West Point at 8.30 a. m. August 29.

Very respectfully,

CHAS. G. TREAT,  
*Lieutenant-Colonel, U. S. Army,*  
*Commandant of Cadets.*

THE ADJUTANT UNITED STATES MILITARY ACADEMY.



## C.—REPORT OF THE ENGINEER OFFICER.

UNITED STATES MILITARY ACADEMY,  
*West Point, N. Y., July 25, 1901.*

SIR: I have the honor to submit the following report on the various branches of work assigned to me for the year July 1, 1900, to June 30, 1901.

### PRACTICAL MILITARY ENGINEERING.

The summer course of instruction covered the period from July 5 to August 11, 1900, and was in charge of Maj. G. W. Goethals, Corps of Engineers, assisted by First Lieut. J. P. Jervey, Corps of Engineers, and First Lieut. G. F. Hamilton, Tenth Cavalry. The class of 1901 received instruction in the fabrication of siege material, obstacles, spar and ponton-bridge construction, and military signaling. The class of 1903 received instruction in the practical use of surveying instruments, chiefly the level and the transit.

On August 22, 1900, the undersigned was placed in charge of this work. During the month of September, 1900, the class of 1901 was instructed in the construction of the progressive infantry trench and in ponton-bridge building. At the same time the class of 1902 received instruction in military signaling and in the use of surveying instruments.

From April 15 to May 15, 1901, the class of 1902 received instruction in ponton bridge building. The class of 1901, having been graduated February 18, 1901, missed its last month of instruction in practical military engineering.

The course of instruction was arranged with a view to securing the best results with large classes, a limited number of instructors, and a limited period of time. But three months in each year are available for instruction, two classes being handled all the time. With but two engineer officers in the department and with the large classes now prevailing, a thorough covering of the whole subject of practical military engineering is out of the question. Only the more important subjects can be touched upon and an effort made to impart a fair working knowledge of them. The results, so far as they go, are satisfactory and valuable, but a larger number of instructors, especially during the summer months, is much to be desired. An additional engineer officer is much needed, both for this purpose and also for the proper instruction of the engineer company, which has a maximum enlisted strength of 104.

### THE ENGINEER COMPANY.

On July 24, 1900, Company E, Battalion of Engineers, which had been stationed at the post for many years, rendering valuable service both to the post and to the Military Academy, was ordered to the Philippines for duty. It was replaced by an engineer detachment of 39 men from Companies C and D at Willets Point, N. Y., under command of First Lieut. J. P. Jervey, Corps of Engineers, until August 22, 1900, when the undersigned assumed command, Lieutenant Jervey remaining on duty with the detachment. Subsequently authority was granted to increase the detachment to 50 men by local recruiting. On March 2, 1901, Company M, Third Battalion, was organized, with station at West Point, N. Y., the engineer detachment serving as a nucleus for the new company. On June 30, 1901, the enlisted strength of the company was 85 out of a maximum of 104.

The engineer command is required to furnish the larger part of the post guard, and, in addition, must furnish details to assist in the instruction of the cadets. The instruction of Company M was pushed as rapidly as possible after organization, with a view to fulfilling the above requirements. Considering the large number of recruits in the company, its progress to date has been most satisfactory.

### WATER SUPPLY.

During the year a new water house for the storage of filtered water was commenced and entirely completed. Its capacity is 500,000 gallons. The slopes of the

new filter beds were trimmed and sodded, and 400 yards of fine washed filter sand placed on the beds. The parapet wall of the dam at Lusk Reservoir was completed; also the laying of the 8-inch pipe line to Crow Nest Basin. The watchman's house, commenced during the previous year, was entirely completed, and has been occupied some months by the keeper of the waterworks.

All necessary elements of the new water-supply system having been completed, the system was put in operation during the month of April, 1901, and has served the post regularly with an abundance of pure and potable water since that time. The system has not been in service sufficiently long to afford data as to the efficiency of the filters, their operation, and other details. These matters are being studied with a view to making any needed improvements and to systematize the working of the beds.

The necessary features of the waterworks system having been completed, attention was turned to improving the roads and surroundings of the reservoir; filter beds, water house, and watchman's house. The road to the north and west of the reservoir was left with such grades that the wash from its surface found its way into the reservoir. This was corrected by constructing on the water side of the road a breast-high wall of rubble, capped with bluestone. The completed length of this wall is 1,000 feet, with about 250 feet more built, but not capped. This wall is designed not only for the protection of the reservoir against contamination, but also as a measure of security for traffic. The wall should be extended as soon as possible along the entire western side of the reservoir clear to the dam.

Considerable labor was applied to clearing out the valley immediately below the dam and to starting a growth of grass. Material needed for road filling on the north and west sides was obtained in part by trimming the slopes of the adjacent road and in part by starting a roadway along the east side of the reservoir extending from the dam northward. It is proposed to carry this road along the entire eastern front of the reservoir and to connect it with the road now running along the western front, thus providing a continuous driveway entirely around the reservoir.

Three shallow areas on the east side of the reservoir were cut off by dry rubble walls, and the loam and peaty matter excavated from the bottom as far as the low water would permit.

The results of the season's operations have greatly improved the appearance of the surroundings, but considerable work still remains to be done before the new waterworks system can be called completed. A roadway, mentioned above, should be completed around the reservoir and all roads given a good surfacing of macadam to render them permanent. Rough and ragged slopes must be trimmed and a growth of grass started to hold them; and, finally, all weeds, brush, and undergrowth in the immediate vicinity of the works should be cleared out. To carry out all these objects an additional appropriation of \$10,000 will be needed.

A desirable feature for the new works not yet provided for is an inlet tower to enable water to be drawn from near the surface of the reservoir regardless of the stage of the water. Such a structure, with a footbridge to the shore, will cost about \$5,000, and should be built without delay. As matters now stand, the only outlet from the reservoir draws water from a depth of 30 feet below the surface when the reservoir is full. At this depth stored water is almost certain to develop odor and taste after a very short time, due to lack of aeration. An inlet tower will afford the means of drawing water from a number of points below the surface, thus insuring a supply from near the surface, where the water is under the influence of the oxygen of the air and free from the odor and taste developed during the summer months in stored water at depths below 10 feet.

Careful preliminary measurements at the new water house indicate that the daily consumption of water is now in excess of 600,000 gallons, or about 400 gallons per capita. This is about double the consumption as calculated eight years ago. A portion of the increase is attributable to the increased pressure due to the greater elevation of the new water house, a portion to the increase in the population of the post, and a portion to the freer use of water, as noted in all communities having supplies. Notwithstanding the increased storage capacity obtained by the completion of Lusk Reservoir, about 92,000,000 gallons, the water supply of the post reached an alarming condition during the long-continued drought of last fall. It became necessary to issue cautionary orders regarding the waste of water and to curtail its use in certain directions.

As the history of all communities shows an increasing consumption of water per capita, and as the expansion of the Military Academy plant is now in progress, I give it as my opinion that the present available supply is insufficient for the future needs of the post. The question of how this can best be remedied has been carefully considered by my immediate predecessors, and a careful review of their opinions con-

vinces me that the only logical and economical solution of the problem lies in the acquisition of Long Pond and its watershed of about 700 acres. This pond has a natural storage capacity of 200,000,000 gallons and is susceptible of a large increase by the construction of inexpensive works.

## LIBRARY BUILDING.

Work has progressed steadily on this building during the year, and on June 30, 1901, contracts covering all items of construction had either been completed or were in force. An additional appropriation of \$15,000 was granted by Congress in the deficiency bill to cover the cost of the interior hard-wood trim, the furniture, and the book stacks.

At the close of the year the hard-wood trim was being erected and the contract for the book stacks made. The completion of the building, so far as construction work is concerned, is set for about September 1, 1901. The only item not yet definitely settled is the furniture, which was under consideration at the close of the year.

The principal items of work accomplished during the year were as follows:

- Completion of combination slate, glass, and copper roof.
- Completion of steam heating, ventilating, and plumbing.
- Completion of plastering and ceiling lights.
- Completion of new window sashes throughout the building.
- Completion of gas and electric light fixtures.
- Completion of wall and ceiling decorations.

Very respectfully,

JOSEPH E. KUHN,  
*Captain of Engineers.*

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



D.—REPORT OF THE TREASURER UNITED STATES MILITARY ACADEMY AND QUARTERMASTER AND COMMISSARY OF CADETS.

OFFICE OF THE TREASURER AND  
QUARTERMASTER AND COMMISSARY OF CADETS,  
West Point, N. Y., August 1, 1901.

SIR: In compliance with instructions contained in Circular No. 27, current series, Headquarters United States Military Academy, I have the honor to make the following report of the work done in the departments under my charge during the fiscal year ending June 30, 1901:

TREASURER UNITED STATES MILITARY ACADEMY.

The treasurer of the Academy is "charged with all matters relating to the pay and accounts of the cadets." To perform this duty satisfactorily it is not only necessary to open an individual debit and credit account with each cadet, but also to keep 28 different accounts under the following-named heads given in statement No. 1, which also shows the disbursements and receipts under each account during the fiscal year:

Statement No. 1.

	Dr.	Cr.
Assistant treasurer.....	\$209, 723. 11	\$202, 582. 79
Athletic association.....	1, 356. 50	1, 356. 50
Balances paid.....	18, 503. 54	18, 502. 28
Barber.....	827. 30	828. 10
Cadet cash.....	16, 414. 86	16, 571. 36
Cadet hospital.....	2, 813. 80	2, 653. 10
Cadet laundry.....	15, 679. 09	15, 122. 51
Cadet store.....	107, 024. 76	105, 372. 74
Cadet mess.....	82, 417. 98	80, 411. 48
Confectioner.....	89. 20	89. 20
Corps of cadets.....	256, 914. 46	255, 362. 05
Damages, ordnance.....	58. 26	58. 19
Dancing.....	519. 69	519. 69
Dentist.....	728. 00	728. 00
Deposits.....	33, 362. 06	35, 850. 69
Dialectic society.....	200. 40	421. 78
Equipment fund.....	16, 040. 00	17, 174. 00
Expressage.....	23. 37	23. 37
Gas fund.....	1, 303. 65	1, 550. 40
Hops and german.....	1, 796. 89	2, 171. 63
Miscellaneous fund.....	. 58	17. 85
Miscellaneous items.....	275. 55	275. 55
Oath (notary public).....	53. 25	53. 25
Paymaster.....	209, 723. 11	209, 723. 11
Periodicals.....	33. 89	33. 89
Photographer.....	106. 00	85. 50
Policing barracks, etc.....	6, 067. 43	6, 067. 43
Young Men's Christian Association.....	311. 76	423. 78
Washstand, etc., fund.....		365. 90

The accounts of the treasurer are inspected every two months by an officer of the Academy detailed by the Superintendent for the purpose, to whom the result of the

inspection is reported, together with a statement of all debits and credits on different accounts. The last inspection was made July 27, 1901, and reported as follows:

Assets.		Liabilities.	
Assistant treasurer.....	\$14,010.61	Balances paid.....	\$113.75
Barber.....	.20	Cadet laundry.....	694.38
Cadet cash.....	228.00	Corps of cadets.....	1,507.62
Cadet store.....	2,650.80	Deposits.....	3,509.22
Cadet mess.....	319.23	Equipment fund.....	25,590.00
Dialectic society.....	42.46	Gas fund.....	456.20
Reserve fund.....	10,000.00	Hops and german.....	375.04
Washstand, etc., fund.....	786.78	Miscellaneous fund.....	28.68
Cash on hand.....	4,260.69	Y. M. C. A.....	23.88
	32,298.77		32,298.77

In July and August, 1900, 86 new cadets were admitted to the Academy, and deposited with the treasurer the sum of \$9,452.44, an average of \$109.85, the smallest individual deposit being \$5.75 and the largest \$155.13.

Seventy-two members of the first class were graduated on February 18, and were paid by the treasurer \$14,033.27 on settlement of their accounts, the highest amount paid to any one cadet being \$528.91 and the lowest \$49.61. Two members of the first class were not graduated until June 1, and were paid \$173.42 and \$402.89, respectively.

One hundred and twenty-eight new cadets were admitted in June, 1901, and deposited with the treasurer the sum of \$12,662.53, the greatest individual deposit being \$247.55 and the lowest zero.

In June, 1901, 87 members of the furlough class were paid, prior to departure, the sum of \$7,568, an average of \$87 each.

I beg to renew my recommendation of the last two years that it be made compulsory on cadets to deposit \$100 on admission. The great advantage resulting to the cadet, if this deposit is made, is more apparent to me as time passes.

I also urge that my recommendations made in 1899 and 1900 be adopted, and an appropriation be asked for from which can be purchased many of the articles now paid for by cadets, such as books, instruments, gas, room furniture and labor caring for baths, shoeblacking, and policing of barracks and quarters.

On account of the large sum of money it is frequently necessary to keep on hand in the office of the treasurer, a new, larger, and more secure safe is necessary. The present one is old-style, and an attempt has been made to break into it.

A record room provided with metallic cases is necessary for the proper preservation of the many valuable records of this office. Estimates will be made at once for these.

#### QUARTERMASTER OF CADETS.

The increased number of cadets in the corps makes it necessary to keep a very much larger supply of goods in the cadet store, and the need of a larger storehouse and issue room becomes more apparent. The upper story of the building is now occupied for a tailor shop, but it is too small for the number of workmen now required. Being close up under a flat tin roof it is intensely hot in summer. During the past year I have introduced electric fans in this room, which has made the place more comfortable, but it will be necessary to build a suitable shop for the use of the tailors. When it is considered that all the articles of uniform worn by cadets are made here, and all shoes and clothing repaired, the necessity for more room will be evident. Estimates for these buildings will be made this year.

One chief clerk, two assistant clerks, one porter, one chief cutter, and one assistant cutter are employed at the cadet store and are paid regular salaries. The money for this purpose comes from the cadets and is obtained by charging a profit of not more than 5 per cent on the original cost of all goods sold. I believe that these employees should be paid from an appropriation and the cadets charged only the actual cost of goods delivered here.

The following list shows the number of articles made and repaired at the cadet store during the year:

Articles.	Manufactured.	Repaired.
Dress coats.....	414	542
Overcoats.....	219	436
Fatigue coats.....	685	844
Trousers, gray.....	668	1,248
Trousers, white.....	1,749	1,741
Trousers, flannel.....	349	.....
Trousers, riding.....	108	.....
Trousers, line officers.....	81	148
Officers' dress coats.....	1	1
Officers' overcoats.....	6	4
Officers' blouses.....	72	60
Officers' riding pants.....	1	.....
Waiver jackets.....	72	.....
Civilian trousers.....	1	.....
White trousers, serge.....	12	.....
Chevrois on.....	.....	416
Service stripes on.....	.....	377
Socks tagged.....	.....	5,680
Socks repaired.....	.....	5,076
Shoes.....	.....	2,288

CADET LAUNDRY.

The increase in the number of cadets creates a greater demand on the laundry, and during the past year has taxed it to the utmost. The additions to the laundry asked for last year are now being constructed, and will when finished be of great advantage.

A new Duplex mangle has been installed; also a new collar and cuff starcher and a new 40-inch collar and cuff ironer.

The Bundy trap system for returning exhaust steam back to the boiler is now being installed, and will be a great saving in both time and money when completed. Two additional drying rooms will be installed as soon as new additions are completed.

A new boiler and engine house is required; also a new and larger engine and an additional boiler. Estimates will be made for these at once. It will be seen from the following statement that 145,307 more pieces have been laundered for cadets during this fiscal year than in the year 1899-1900 and 123 less pieces for the hospital.

*For cadets.*

Bathing suits.....	10	Sheets.....	30,054
Belts, shoulder.....	38,200	Shirts, white.....	25,572
Belts, sword.....	2,931	Shirts, under.....	48,108
Belts, waist.....	21,522	Shirts, night.....	17,235
Blankets, single.....	174	Socks, pairs.....	48,866
Coats, fatigue.....	15	Towels.....	77,496
Clothes bags.....	3,215	Trousers, gray.....	60
Collars.....	134,474	Trousers, white.....	37,040
Cuffs, pairs.....	102,826	Total.....	794,885
Comfortables.....	109	Total pieces 1899-1900.....	653,578
Drawers.....	44,376	Increase over last year.....	141,307
Gloves, pairs.....	56,804		
Handkerchiefs.....	88,333		
Pillowcases.....	17,465		

*For cadet hospital.*

Bandages.....	5	Shirts, hospital.....	758
Bedspreads.....	234	Tablecloths.....	244
Blankets, single.....	23	Towels.....	4,299
Mattress covers.....	2	Total.....	14,470
Napkins.....	3,782	Decrease during year.....	123
Pillow cases.....	2,213		
Sheets.....	2,910		

## COMMISSARY OF CADETS.

The additional number of cadets this year has greatly increased the work at the cadet mess, and has shown the necessity for additional room in the mess hall and that a new kitchen, storerooms, etc., are absolutely necessary. It has been possible to care for the cadets only at the cost of much discomfort to the employees, extra hours of work, and the crowding of cadets at tables. As the large mess hall will seat only 340, it was necessary to find a place to seat the balance of the cadets, some 100, and "Schofield Hall," situated under the same general roof as the cadet mess, was made available for the purpose by making entrances to it from the cadet kitchens and rear. This has proved to be neither a desirable nor convenient place.

Through the untiring efforts of the Superintendent of the Academy before the committee of the House at the last session of Congress, he was able to impress upon the committee the necessity for a new mess hall and the tearing down and rebuilding of the old and unsightly kitchens that have stood without change for over forty years. So great was his success that he was able to obtain an appropriation for over \$70,000, made immediately available for the purpose. Most satisfactory plans for the rebuilding have been completed and work is now going on. It is hoped that by fall a most complete and model mess hall and kitchen, pantries, etc., modern in every respect, will stand as a credit to the institution and the country.

Last fall there occurred an event in this department that threatened then, as it may again, to temporarily paralyze the life of this great institution—a strike by the civilian waiters in the mess hall. One hour before the time for dinner the waiters struck for an increase of wages and threatened to walk out at once if their demands were not agreed to. This has convinced me of the necessity of having a force of enlisted men to serve as waiters at the cadet mess. The enlisted men could be attached to and form a part of the general army service, and I earnestly urge that steps be taken to secure the necessary legislation to this end.

The following table shows the quantity of the principal articles of food consumed at the mess during the year:

Meat.....pounds..	212,350	Potatoes.....pounds..	209,100
Fish.....do....	6,811	Butter.....do....	27,404
Poultry.....do....	23,563	Eggs.....dozen..	11,082
Flour.....do....	101,136	Coffee.....pounds..	5,437
Milk.....gallons..	39,888	Sugar.....do....	63,543

The cost of subsistence at the mess during the last year has been 55.5 cents per cadet per day, as against 50.13 cents for last year. This increase is accounted for by the increased value of some of the articles consumed, the extra cost of training tables for the foot and base ball teams, and the trip of the cadets to Washington to attend the inauguration ceremonies.

Very respectfully,

CHAS. B. HALL,  
Major, Second Infantry,  
*Treasurer, and Quartermaster and Commissary of Cadets.*

The ADJUTANT.

## E.—REPORT OF THE SURGEON.

CADET HOSPITAL,  
West Point, N. Y., July 18, 1901.

SIR: In compliance with instructions contained in circular No. 27, dated headquarters United States Military Academy, West Point, N. Y., July 15, 1901, I have the honor to submit the following report of the work done by the medical department at this post during the fiscal year ending June 30, 1901:

Cases treated as patients in the cadet hospital .....	654
Cases treated at soldiers' hospital (in hospital and quarters).....	577
Civilians treated (members of officers' and soldiers' families and servants)....	1, 558
Number of prescriptions filled at the cadet hospital .....	9, 287
Number of prescriptions filled at the soldiers' hospital and subdispensary ....	5, 617
Number of recruits examined .....	120

There has been no mortality among the officers, cadets, and enlisted men with the exception of Col. Peter S. Michie, who died from pneumonia affecting the entire left lung.

During the last fiscal year the surgeon of the post has been a member of the examining board for graduates of the Academy and for candidates for admission, this work being in addition to the requirements of his regular duties.

There continues to be a demand for skilled surgical work at West Point, the following official surgical operations having been performed from July 1, 1900, to June 30, 1901:

	Cases.
Operations for appendicitis (1 officer, 4 cadets, 1 soldier), performed by Maj. J. M. Banister .....	6
Operations for hernia (2 cadets, 1 soldier's child), performed by Maj. J. M. Banister .....	3
Excision of cartilaginous tumor of finger (1 cadet), performed by Maj. J. M. Banister .....	1
Operations on ocular muscles for strabismus (2 cadets), performed by Maj. J. M. Banister .....	2
Operation for chalazion (1 cadet), performed by Maj. J. M. Banister .....	1
Excision of cyst of conjunctiva (1 cadet), performed by Maj. J. M. Banister....	1
Radical operation for traumatic aneurism of anterior temporal artery (1 cadet), performed by Maj. J. M. Banister .....	1
Removal of fatty tumor from surface of abdomen (1 cadet), performed by Maj. J. M. Banister .....	1
Circumcision (1 cadet, 2 officer's children), performed by Maj. J. M. Banister..	3
Excision of suppurating inguinal glands (1 cadet), performed by Contract Surg. J. C. Reifsnnyder .....	1
Removal of ingrowing toe nails (9 cadets), performed by Maj. J. M. Banister...	9
Operation for tubercular abscess (necrosis of sternum) (1 soldier), performed by Asst. Surg. F. M. Kemp .....	1
Removal of fragment of cartridge shell from cheek (1 soldier), performed by Contract Surg. T. W. Jackson .....	1
Removal of ganglion of finger (1 soldier), performed by Contract Surg. T. W. Jackson .....	1
Evulsion of great toe nail (1 soldier), performed by Asst. Surg. F. M. Kemp....	1
Operation for perineal abscess (1 soldier), performed by Contract Surg. T. W. Jackson .....	1
Amputation of fifth metacarpal bone and finger (1 soldier), performed by Asst. Surg. F. M. Kemp .....	1
Operation for deep abscess of lumbar region (1 soldier), performed by Asst. Surg. F. M. Kemp .....	1

	Cases.
Amputation of left arm, upper third (1 soldier), performed by Asst. Surg. F. M. Kemp .....	1
Operation for repair of extensive laceration of external ear (1 soldier), performed by Asst. Surg. F. M. Kemp .....	1

All cases operated upon at West Point during my service have recovered.

During the past year cadets have been troubled to some extent by eye strain. In my capacity as an ophthalmologist I have corrected the refraction in these cases, prescribing the proper lenses. From July 1, 1900, to June 30, 1901, I have examined, measured, and corrected the refraction in the following number of official cases:

Officers .....	22
Cadets .....	60
Enlisted men .....	9
Members of families of officers and enlisted men .....	20

One of the wards in the cadet hospital has been transformed into a handsome tiled surgical ward, an appropriation having been secured from Congress for this purpose. An appropriation for the construction of a new south wing to the cadet hospital was granted by the last Congress, and this money is now available for this much-needed improvement. There is still need of a detached building for the isolation and treatment of cases of infectious diseases, which is a most important matter at an institution of the character of the United States Military Academy. Estimates for such a building will be submitted in my yearly estimates. The new operating room at the soldiers' hospital will soon be finished, which will provide modern operating facilities for that hospital.

Electric lighting is greatly needed at the cadet hospital, as well as in the cadet barracks, and an electric-light plant is now almost a necessity at West Point. The present gas plant is now taxed to its utmost capacity and will prove insufficient when the buildings at the post in course of construction and provided for by recent appropriations shall be ready for occupation.

Very respectfully,

J. M. BANISTER,  
*Major and Surgeon, U. S. A.*

ADJUTANT UNITED STATES MILITARY ACADEMY.

## F.—REPORT OF THE QUARTERMASTER AND DISBURSING OFFICER.

OFFICE OF THE QUARTERMASTER AND DISBURSING OFFICER,  
*West Point, N. Y., September 12, 1901.*

SIR: In compliance with instructions from your office, per circular No. 27, dated July 15, current year, I have the honor to submit herewith the following report in triplicate of the operations in the quartermaster's department, United States Military Academy, Quartermaster's Department, United States Army, and as director of the gas works, United States Military Academy, for the year ending June 30, 1901.

QUARTERMASTER'S DEPARTMENT, UNITED STATES MILITARY ACADEMY.

My duties in this branch are defined in paragraph 15 of the United States Military Academy Regulations.

Contracts entered into during the year and remaining in force in part or for the whole or more of the year to which this relates are as follows:

No.	Contractor.	Date.	Purpose.
1	Dickson & Eddy.....	May 10, 1900	4,900 tons anthracite coal.
2	John W. Peale.....	May 11, 1900	2,000 tons gas coal.
3	Cyrus Borger.....	May 25, 1900	Floor bench.
4	R. McCartney.....	July 19, 1900	2 sets officers' quarters.
5	Richey, Browne & Donald..	Aug. 17, 1900	Window guards, library.
6	Duryea & Potter.....	Sept. 1, 1900	Ceiling, etc., library.
7	.....do.....	Sept. 3, 1900	Sash, library.
8	The Schilling Co.....	Sept. 7, 1900	Tiling, library.
9	Cassidy & Son Mfg. Co.....	Sept. 20, 1900	Gas fixtures, library.
10	Duryea & Potter.....	Sept. 27, 1900	Plastering, library.
11	Henry W. Otis.....	Oct. 4, 1900	Sea wall.
12	Eastern Bridge and Structural Co.	Nov. 2, 1900	Roof covering, water house,
13	H. R. Gillingham.....	Nov. 30, 1900	Stable for engineer and officers' horses.
14	N. J. Steel & Iron Co.....	Dec. 29, 1900	Girders, beams, etc., library.
15	Jackson & Sharpe Co.....	Apr. 2, 1901	Doors, etc., library.
16	J. A. Toscani & Co.....	May 3, 1901	Tiling ward, cadet hospital.
17	Richey, Browne & Donald..	May 10, 1901	Book stacks, library.
18	American Bridge Co.....	May 14, 1901	Structural steel, cadet mess.
19	Whalen-Matthews Contracting Co.	May 24, 1901	Rebuilding wall, south dock.
20	H. C. Swain & Son.....	June 8, 1901	Tables and clothespresses.
21	Truscott Boat Mfg. Co.....	June 10, 1901	2 barges.
22	Richey, Browne & Donald..	June 27, 1901	Ironwork, porch, cavalry stables.

All of the above contracts, with the exception of those enumerated in Nos. 17 to 22, inclusive, have been completed.

The following improvements have been made by special appropriations or from appropriations proper for such purpose:

Painted 58 sets of officers' quarters.

Painted 36 sets of enlisted men's quarters.

Built granolithic sidewalk, graded and built new macadamized road in front of chapel and library from academic building to top of dock road.

Renovated four sections of cadet barracks.

Placed steam heat in quarters Nos. 21, 23, 33, 35, and 41.

Remodeled old Kinsley house into three sets of quarters for married officers and placed modern plumbing, heating, and lighting, with sewer and gas pipes to the post mains.

New retaining wall on road to south dock in progress of completion.

Built 1,145 linear feet of sea wall at river front.

Tiled ward in cadet hospital.

Put in steel ceilings in cadet mess hall.

Constructed new operating room in soldiers' hospital.  
 Built ordnance storehouse for small shell, etc.  
 Leveled parapets, filled ditches, etc., of old Fort Clinton, thereby greatly enlarging cadet camp.  
 Built new stable for engineer and officers' horses, and changed walled ditch near site of same.  
 Built new stable for artillery horses.  
 Work in progress under contract for porch around the cavalry barracks.  
 New porches built at quarters Nos. 25, 35, 37, 39, and 41.  
 Built new addition to quarters No. 5.  
 Wards, halls, lavatories, etc., cadet hospital, painted.  
 New slate roof and copper gutters and leaders at cadet mess hall.  
 Put in steam heat north ward of soldiers' hospital.  
 Put in new duplex mangle in cadet laundry.  
 Repaired cadet laundry and put in new cement floor in same.  
 Repaired porches, steps, and floors of enlisted men's quarters.  
 Enlarged dining room and made reception hall with new stairs, quarters No. 35.  
 Work begun upon road from south dock to south end of post.  
 Began construction of retaining wall in front of new double officers' quarters.  
 Began to straighten main road from south gate guardhouse to form site for single officers' quarters.  
 Remodeled cadet administration building.  
 Built addition to hospital steward's quarters, soldiers' hospital.  
 Repaired roads and paths in post cemetery, etc.

I desire to call particular attention to two matters of urgent necessity at this post:

1. That of more quarters for the married officers. The increase of the number of officers on duty at this post, due to the large increase in the corps of cadets, necessitated the improvising of quarters for the officers. Three temporary sets of quarters were made of the old Kinsley mansion. This house should have been pulled down long ago and the site used for building suitable officers' quarters, but under the stress of circumstances it became necessary to expend considerable money and labor in placing it in a habitable condition for the use of officers. Besides this, families were doubled up in houses which were not suitable for the purpose and were never intended to be occupied except by a single family.

The present detail arriving here in August of this year necessitated a still further effort to be made to house the officers, and it became necessary as a last resort, after doubling every house that could possibly be utilized for the purpose, to prepare a set of quarters built for the post heretofore occupied by noncommissioned officers for the use of two officers' families. This matter should receive prompt attention and ample and suitable quarters for officers on duty at the post should be supplied at as early a date as possible.

2. That a road should be constructed leading from the south dock in a southerly direction and connecting with the main road of the post about the south gate guardhouse. The necessity for this road, both to save time and expense in hauling and divide the traffic which is now all going over one road, is an essential requisite of the post.

I caused a survey to be made and a prospective road laid out early last spring, and did such work on it as could be done with the labor of the post, but since the weather permitted for general work of the post to begin, it was necessary to stop work on this road. An appropriation is necessary to do this work, and an item covering it will be introduced in the Military Academy bill for the fiscal year 1903.

QUARTERMASTER'S DEPARTMENT, UNITED STATES ARMY.

The duties pertaining to this department are enumerated in paragraph 1076, Army Regulations, 1901.

The following contracts were entered into or in force during the year:

No.	Contractor.	Date.	Purpose.
1	Clark & Wilkins.....	Apr. 21, 1900	100 cords soft-pine wood.
2	Dickson & Eddy.....	.....do.....	2,464,000 pounds anthracite coal.
3	John W. Peale.....	.....do.....	896,000 pounds anthracite coal.
4	Eastern Commission Co.....	Aug. 24, 1900	25 tons middlings and 1,225,000 pounds hay.
5	Chas. L. Rickerson.....	Aug. 27, 1900	930,000 pounds oats; 50,000 pounds bran, and 300,000 pounds straw.
6	H. Allan Cameron.....	Sept. 26, 1900	3 double sets officers' quarters.
7	Hewitt & Warden.....	June 17, 1901	Electric conduits for 3 double sets officers' quarters

All of the above contracts, except that for officers' quarters and for electric conduits for same have been completed.

The amounts received, disbursed, etc., under the various heads, are shown in accompanying statement marked "B."

The following improvements have been made by special appropriations or from appropriations proper for such purpose:

Placed new and improved machinery in quartermaster shops.

Refloored granary.

Crematory.

Repaired post cemetery.

Renovated artillery barracks and placed modern plumbing and steam heat in same.

Renovated post quartermaster-sergeant's quarters and placed steam heat and modern plumbing in same.

Renovated post commissary-sergeant's quarters and placed steam heat and modern plumbing in same.

Road built upon slope at the north end of the parade plateau leading from coal shed to back road in rear of professors' quarters.

#### GAS WORKS, UNITED STATES MILITARY ACADEMY.

As director of the gas works, I am charged with providing the necessary illuminating gas for the needs of the post.

The revenue derived from the sale of gas, coke, and tar is applied to payment of civilian employees at the gas works and for miscellaneous expenses not provided for by annual appropriations of Congress.

Gas is charged for at 75 cents per 1,000 cubic feet for all persons using it for personal use and for lighting public buildings properly chargeable to the United States Quartermaster's Department, except cadets, who pay 35 cents per month.

Coke is sold at \$1.17 per 18 bushels, and tar under contract, good for one year, if proposals are received for it after advertising by this office. During the past year the price received for this product has varied from 1½ to 4½ cents per gallon.

During the year 18,633,900 cubic feet gas were manufactured; 4,065,000 pounds gas coal and 6,806 gallons oil were used for this purpose.

The receipts and disbursements are shown in statement of special contingent fund, marked "C."

In this connection I desire to call attention to the fact that the demand on the gas works has been more than doubled in the past seven or eight years, and it is necessary to increase the present plant, which will be but a temporary expedient, or to remove it to another location and build a much larger plant.

#### SPECIAL CONTINGENT FUND, UNITED STATES MILITARY ACADEMY.

This fund is derived from the rent of hotel, stable, restaurant, post-office, and from miscellaneous receipts, such as junk, etc.

Expenditures for the repair of the buildings which pay rent are made under the direction of the Superintendent out of funds derived from the rentals.

During the year the following expenditures were made to buildings which pay rent:

Hotel, material, \$178.65; labor, \$799.03; total, \$977.68.

Store and restaurant, material, \$4.03.

In addition to the above this fund may be used, under the direction of the Superintendent, for subscription to periodicals and for incidentals not otherwise provided for.

Statement of the receipts and disbursements under this head are included in statement marked "C."

Very respectfully,

J. B. BELLINGER,

*Major and Quartermaster, U. S. Army,*

*Quartermaster Military Academy, Post Quartermaster, and Director of Gas Works.*

The ADJUTANT UNITED STATES MILITARY ACADEMY.

A.—Statement showing receipts and disbursements, etc., of funds pertaining to the appropriations for the support of the United States Military Academy during the fiscal year ending June 30, 1901.

	Date.	Current and extra-ordinary expenses.	Miscellaneous items and incidental expenses.	Buildings and grounds.	Memorial Hall.	Total.
CR.						
Balance on hand fiscal year—						
1897 .....	July 1, 1900			\$7, 713. 20		\$7, 713. 20
1899 .....	do	\$2, 411. 31	\$121. 97	145. 00		2, 678. 28
1899-1900 .....	do	9. 05	. 02	1. 05		10. 12
1900 .....	do	6, 192. 28	1, 908. 98	39, 480. 47		47, 581. 73
Balance on hand, Memorial Hall .....	do				\$4, 052. 42	4, 052. 42
Received since fiscal year 1900 .....	June 30, 1901			35, 688. 50		35, 688. 50
Deficiency June 30—						
1901 .....	do	20, 800. 00	2, 000. 00	26, 000. 00		48, 800. 00
1901 .....	do	79, 122. 01	20, 879. 95	128, 183. 00		228, 184. 96
Total .....		108, 534. 65	24, 910. 92	237, 211. 22	4, 052. 42	374, 709. 21
DR.						
Deposited fiscal year—						
1899 .....	June 30, 1901	2, 202. 15	121. 97	145. 00		2, 469. 12
1899-1900 .....	do	9. 05	. 02	1. 05		10. 12
1900 .....	do		23. 00			23. 00
Disbursed fiscal year—						
1897 .....	do			7, 713. 20		7, 713. 20
1899 .....	do	173. 16				173. 16
1900 .....	do	4, 201. 88	1, 815. 29	71, 629. 29		77, 646. 46
Deficiency June 30—						
1901 .....	do	17, 486. 75	1, 343. 40	12, 385. 22		31, 215. 37
1901 .....	do	74, 416. 81	18, 609. 74	94, 967. 68		187, 994. 23
Disbursed, Memorial Hall .....	do				51. 87	51. 87
Balance on hand fiscal year—						
1899 .....	do	36. 00				36. 00
1900 .....	do	1, 990. 40	70. 69	3, 539. 68		5, 600. 77
Balance on hand, deficiency						
June 30, 1901 .....	do	3, 313. 25	656. 60	13, 614. 78		17, 584. 63
Do .....	do	4, 705. 20	2, 290. 21	33, 215. 32		40, 190. 73
Balance on hand, Memorial Hall .....	do				4, 000. 55	4, 000. 55
Total .....		108, 534. 65	24, 910. 92	237, 211. 22	4, 052. 42	374, 709. 21

J. B. BELLINGER,  
Major and Quartermaster, U. S. Army,  
Disbursing Officer, U. S. M. A.

WEST POINT, N. Y., September 12, 1891.

## B.—Statement of funds pertaining to the Quartermaster's Department, United States Army, received and disbursed during the fiscal year ending June 30, 1901.

	Regular supplies.	Incidental expenses.	Transportation of the Army.	Barracks and quarters.	Clothing and equipage.	Miscellaneous receipts.	Total.
CR.							
June 30, 1901—							
Balance on hand fiscal year 1900.....	\$654.48	\$24.32	\$1.13		\$2.00		\$681.93
Received since.....	43,794.60	12,939.57	7,713.06	\$39,787.70	137.00		104,371.93
Sales to officers.....	4,535.14		6.93		227.25		4,769.32
Sales at auction.....						\$1,087.40	1,087.40
	48,984.22	12,963.89	7,721.12	39,787.70	366.25	1,087.40	110,910.58
DR.							
Expended.....	27,807.30	12,663.55	7,246.27	29,474.60	139.00		77,330.72
Deposited.....	4,852.09	.02	7.36		227.25	1,087.40	6,174.12
Balance on hand June 30, 1901.....	16,324.83	300.32	467.49	10,313.10			27,405.74
	48,984.22	12,963.89	7,721.12	39,787.70	366.25	1,087.40	110,910.58

J. B. BELLINGER,

Major and Quartermaster, U. S. Army.

WEST POINT, N. Y., September 12, 1901.

## C.—Statement of receipts and expenditures pertaining to the special contingent fund, United States Military Academy, from July 1, 1900, to June 30, 1901.

	Gas works.	Rents, etc.	Total.
Balance on hand July 1, 1900.....	\$1,489.06	\$41.64	\$1,530.70
Received since:			
By rent of—			
West Point Hotel.....	2,000.00		
Post-office.....	150.00		
Stables.....	300.00		
Store.....	250.00		
			2,700.00
By sale of—			
Gas.....	4,876.68		
Coke.....	501.97		
Coal tar.....	1,171.85		
			6,550.50
Miscellaneous.....			84.31
Total to be accounted for.....			10,865.51
Disbursed.....			8,454.56
On hand June 30, 1901.....			2,410.95

J. B. BELLINGER,

Major and Quartermaster, U. S. Army.

Treasurer, Special Contingent Fund, U. S. Military Academy.

WEST POINT, N. Y., September 12, 1901.



## G.—REPORT OF ORDNANCE OFFICER.

WEST POINT, N. Y., *July 5, 1901.*

SIR: In compliance with instructions, I have the honor to submit the following report of the principal operations in the department of ordnance and gunnery at the United States Military Academy during the fiscal year ending June 30, 1901:

### LABORATORY.

The routine work at the laboratory by the ordnance detachment includes the care and preservation of two light batteries, the seacoast battery and Battery Knox, the siege and mortar batteries, mountain and Gatling gun batteries, and rapid-fire and machine guns; the preparation of ammunition for gallery practice and targets for cadet target practice; repairs to cadet arms and equipments; the care and preservation of the trophy guns; preparation of cartridges for salutes, drill, and morning and evening gun, and such other work connected with guns, carriages, small arms, ammunition, and other ordnance supplies as may be necessary in the practical instruction of cadets in their various duties.

In addition, the detachment is required to attend at all artillery drills and at target practice. During the year it has also been necessary to make details from the detachment as acting noncommissioned officer of the post guard.

With the increase in number of cadets at the Academy the work required of the detachment has correspondingly increased, the number of details for drill is greater, and for this work the detachment is now too small. The Chief of Ordnance has been requested to transfer three men for duty here, and it is hoped the transfer will be made at an early day.

On account of the enlargement of the cadet encampment, which takes in a part of old Fort Clinton, the four heavy guns kept mounted in that fort for the instruction of cadets in mechanical maneuvers and the trophy and other guns stored there are being moved out of the way. As time is available these guns will be properly skidded about Kosciusko's monument, along the parapet of the fort, or on Trophy Point.

The woodwork about the laboratory buildings has been painted during the year; the steam heating arrangements in the workshops have been altered and extended; the flooring in the machine shop has been completed, and a new grate has been put in the boiler.

### MUSEUM.

A complete model rifling machine, one-sixteenth size, made at the laboratory, has been placed in the museum, and a model 10-inch breech mechanism, such as is used on the latest type seacoast guns, is now in a well-advanced stage of completion. These, with other model machines, are used in cadet instruction, but are habitually kept in the museum on convenient stands protected by glass tops. Seven other large cases are also in the course of construction for the museum, to contain smaller trophies, which can thus be kept and exhibited without risk of loss or breakage.

The officers of the army in Cuba, Porto Rico, Manila, and on the China relief expedition have contributed to the museum a large and varied collection of small arms, swords, bolos, bows and arrows, shields, armor, Chinese and Boxer uniforms, and other minor curios. These have been properly arranged and labeled to show their character and by whom presented. They form an exceedingly interesting addition to the articles already on hand.

The museum is very much crowded, and to provide space for the proper care and exhibition of late additions it has been necessary to remove and store many older and less interesting exhibits. Many of these are valuable historically and interesting as showing progress in implements of warfare, and the time will soon come when more space will be required for this museum.

All models and trophies have been kept in good order and repair during the year.

## NEW ORDNANCE MATERIAL.

During the year the Ordnance Department has furnished the following material for the practical instruction of cadets:

Six 7-inch mortars, latest model.

Two Gatling guns, caliber .30, model 1897, with shields, carriages; and limbers complete.

One Colt automatic gun, caliber .30, with carriage and tripod.

Two azimuth instruments, with pier mounts and tripods.

One plotting board, with metal scale arm and trestles.

One depressing range finder, type B; and all required stores, such as powder, small-arms ammunition, ball and blank, shrapnel, shell, targets, material for repairs, etc.

Respectfully,

F. E. HOBBS,

*Captain, Ordnance Department, U. S. Army,*

*Instructor Ordnance and Gunnery.*

The ADJUTANT UNITED STATES MILITARY ACADEMY.

## H.—REPORT OF LIBRARIAN.

LIBRARY UNITED STATES MILITARY ACADEMY,  
*West Point, N. Y., September 12, 1901.*

SIR: I have the honor to submit the following report upon the library for the past year, in accordance with circular No. 27, Headquarters of the Academy.

The number of books in the library on July 1, 1900, was 44,873 volumes; the number of pamphlets was 7,581. To these were added up to July 1, 1901, 946 volumes by purchase, 181 by binding; 711 volumes and 447 pamphlets were presented. This gives the total in the library on July 1, 1901, 46,711 volumes and 8,028 pamphlets.

The remodeling of the library is now nearly finished and the books are being returned to it. The completed building will afford more space and far greater facilities for developing the library in all desired directions than has ever before existed. For this reason a moderate increase in the estimate of funds has been made for next year. The immediate purpose of the increase is to complete all incomplete series of desired books and all sets of scientific and other periodicals, and for supplying deficiencies in military maps and charts, and for providing the necessary arrangements for the proper display and preservation of these latter additions, maps and charts.

Very respectfully,

S. E. TILLMAN,  
*Professor and Librarian.*

The ADJUTANT UNITED STATES MILITARY ACADEMY.



# I.—TYPE ENTRANCE EXAMINATION QUESTIONS.

## ADMISSION OF CADETS.

Candidates selected for appointment shall appear for mental and physical examination before boards of army officers to be convened at such places as the War Department may select on the 1st day of May, annually, except when that day comes on Sunday, in which case the examination shall commence on the following Tuesday. Candidates who pass successfully will be admitted to the Academy without further examination, upon reporting in person to the Superintendent at West Point before 12 o'clock noon on the 15th day of June of the same year.

No candidate shall be examined at any other time unless prevented from presenting himself at the May examination by sickness or other unavoidable cause, in which case he shall report to the Superintendent at West Point before 12 o'clock noon on the 12th day of June of the same year.

Each candidate before he shall be admitted to the Academy as a cadet shall be shown, by the examination provided for in the preceding paragraph, to be well versed in the following-prescribed subjects, viz: reading, writing, spelling, English grammar, English composition, English literature, arithmetic, algebra through quadratic equations, plane geometry, descriptive geography, and the elements of physical geography, especially the geography of the United States, United States history, the outlines of general history, and the general principles of physiology and hygiene.

Candidates may be examined either orally or in writing, and no rejected candidate may be reexamined except upon the recommendation of the academic board.

## EXAMINATION PAPERS.

*Reading.*—In reading, candidates must be able to read understandingly and with proper accent and emphasis. They will be required, if called upon, to define intelligently the leading words of the text read.

*Writing and spelling.*—In writing and spelling they must be able, from dictation, to write legibly, neatly, rapidly, and correctly sentences from standard pieces of English literature, both prose and poetry, sufficient in number to test their qualifications both in handwriting and in spelling. In punctuation and capitals they must be familiar with the rules for punctuation and for the use of capitals. In order to test their knowledge, sentences will be given for correction, or for this purpose a theme may be required of the candidate.

The following specimens are from a recent examination in this subject:

There was no pursuit, though the sun was still high in the Heaven when William crossed the Gette. The conquerors were so much exhausted by marching and fighting that they could scarcely move; and the horses were in even worse condition than the men. Their general thought it necessary to allow some time for rest and refreshment. The French nobles unloaded their sumpter horses, supped gaily, and pledged one another in champagne amidst the heaps of dead; and, when night fell, whole brigades gladly lay down to sleep in their ranks on the field of battle. The inactivity of Luxemburg did not escape censure. None could deny that he had in the action shown great skill and energy. But some complained that he wanted patience and perseverance. Others whispered that he had no wish to bring to an end a war which made him necessary to a Court where he had never, in time of peace, found favor or even justice. Lewis, who on this occasion was perhaps not altogether free from some emotions of jealousy, contrived, it was reported, to mingle with the praise which he bestowed on his lieutenant blame which, though delicately expressed, was perfectly intelligible.

And what is home and where, but with the loving?

Happy thou art, that so canst gaze on thine!

My spirit feels but, in its weary roving,

That with the dead, where'er they be, is mine.

Go to thy home, rejoicing son and brother!

Bear in fresh gladness to the household scene!

For me, too, watch the sister and the mother,

I will believe—but dark seas roll between.

- |                   |                 |                 |                   |
|-------------------|-----------------|-----------------|-------------------|
| 1. Abdicate.      | 7. Bachelor.    | 13. Imperative. | 19. Presbyterian. |
| 2. Abutted.       | 8. Compass.     | 14. Kerosene.   | 20. Raisin.       |
| 3. Accessibility. | 9. Derelict.    | 15. Mnemonics.  | 21. Salad.        |
| 4. Acclivity.     | 10. Despondent. | 16. Neuter.     | 22. Tidiness.     |
| 5. Accosted.      | 11. Disperse.   | 17. Orally.     | 23. Triple.       |
| 6. Acme.          | 12. Erase.      | 18. Preference. | 24. Villain.      |

*Arithmetic.*—Candidates must possess such a complete knowledge of arithmetic as will enable them to pursue the study of such branches of mathematics as are taught at the United States Military Academy. They will be subject to examination only in that part of arithmetic which relates to denominate numbers, the processes of common and decimal fractions, the greatest common divisor of numbers, and the least common multiple of numbers.

The following are typical questions:

Reduce  $5\frac{1}{2} + \frac{7\frac{1}{2}}{0.5} - 0.725$   
 $\frac{4 + 3.45}{2\frac{1}{2}}$  to an equivalent decimal.

Multiply .0578 by .4.

Change .013 to an equivalent fraction whose denominator is 135.

Deduce a method for finding the greatest common divisor of any two integers which can not readily be factored.

Find the greatest common divisor of  $26\frac{1}{2}$ ,  $28\frac{3}{4}$ , and  $29\frac{1}{2}$ .

How many men would be required to cultivate a field of  $2\frac{3}{4}$  acres in  $5\frac{1}{2}$  days of 10 hours each, if each man completed 77 square yards in 9 hours?

Five cubic feet of gold weigh 98.20 times as much as a cubic foot of water; and 2 cubic feet of copper weigh 18 times as much as a cubic foot of water. How many cubic inches of copper will weigh as much as  $\frac{1}{4}$  of a cubic inch of gold?

English shillings are coined from a metal which contains 37 parts of silver to 3 parts of alloy; one pound of this metal is coined into 66 shillings. The United States silver dollar weighs 412.5 grains, and consists of 9 parts silver to 1 part of alloy. What fraction of the U. S. dollar will contain the same amount of silver as 1 English shilling?

What is the difference in grains between  $42\frac{1}{2}$  lbs. Av. and 42.375 lbs. T.?

*Algebra.*—Candidates will be required to pass a satisfactory examination in that portion of algebra which includes the following range of subjects: Definitions and notation; the fundamental laws; the fundamental operations, viz: addition, subtraction, multiplication, and division; factoring; highest common factor; lowest common multiple; fractions, simple and complex; simple or linear equations, with one unknown quantity; simultaneous simple, or linear, equations, with two or more unknown quantities; involution, including the formation of the squares and cubes of the polynomials; evolution, including the extraction of the square and cube roots of polynomials and of numbers; theory of exponents; radicals, including reduction and fundamental operations, rationalization, square roots of binomial surds, equations involving radicals, and imaginary quantities; quadratic equations; equations of quadratic form; simultaneous quadratic equations; ratio and proportion; arithmetical and geometrical progressions. Candidates will be required to solve problems involving any of the principles or methods contained in the above subjects.

The following are typical questions:

Enunciate the commutative law, the distributive law, the associative law.

What is a homogenous algebraic expression? Give example.

Remove brackets from  $a - \left[ 5b - \left\{ a - (3c - 3b) + 2c - (a - 2b - 2c) \right\} \right]$ .

Find *L. C. M.* of  $6(a^2 - b^2)(a - b)^2$ ,  $9(a^2 - b^2)(a - b)^2$  and  $12(a^2 - b^2)^2$ .

Deduce the condition that the roots of the quadratic equation  $ax^2 + bx + c = 0$  shall be equal, equal numerically with opposite signs, real, imaginary, rational.

A hare is eighty of her own leaps before a greyhound; she takes three leaps for every two that he takes, but he covers as much ground in one leap as she does in two. How many leaps will the hare have taken before she is caught?

A and B run a race, their rates of running being as 17 to 18. A runs  $2\frac{1}{2}$  miles in 16 minutes 48 seconds, and B runs the entire distance in 34 minutes. What was the entire distance?

A and B can do a piece of work in 4 hours, A and C in  $3\frac{3}{4}$  hours, B and C in  $5\frac{1}{2}$  hours. In what time can A do it alone?

A gun is fired 36 times before a second gun begins, after which the first is fired 8 times while the second is fired 7 times; but the second requires the same amount of powder for 3 shots that the first requires for 4. When both guns have used up the same amount of powder, how many shots have been fired from each?

A, B, C, and D, working one at a time, do a certain work in 130 days. A gets 42 cents, B gets 45 cents, C gets 48 cents, and D gets 50 cents for each day's work. Each received the same amount. How many days did each work?

Having 300 barrels of flour worth \$7.50 per barrel, and 800 barrels worth \$7.80 per barrel, and 400 barrels worth \$7.65 per barrel, how many more barrels of flour at \$8.00 and \$8.50 per barrel will make 2,000 barrels worth \$7.85 a barrel?

Solve  $\left. \begin{array}{l} x + \frac{3}{y} = \frac{7}{2} \\ 3x - \frac{2}{y} = \frac{26}{3} \end{array} \right\}$

There is a number which consists of two digits, such that if we divide the number by the product of its digits we obtain a quotient 5 and a remainder 2, but if we invert the order of the digits and divide the resulting number by the product of its digits we obtain a quotient 2 and remainder 5. Required the number.

Solve  $\left. \begin{array}{l} 2y^2 - 4xy + 3x^2 = 17 \\ y^2 - x^2 = 16 \end{array} \right\}$

Simplify  $\frac{(3 + \sqrt{3})(3 + \sqrt{5})(\sqrt{5} - 2)}{(5 - \sqrt{5})(1 + \sqrt{3})}$

Solve  $\sqrt{2x+7} + \sqrt{3x-18} = \sqrt{7x+1}$

Find the geometrical progression whose sum to infinity is  $4\frac{1}{2}$  and whose second term is  $-2$ .

*Plane geometry.*—Candidates will be required to give accurate definitions of the terms used in plane geometry, to demonstrate any proposition of plane geometry as given in the ordinary text-books, and to solve simple geometrical problems either by a construction or by an application of algebra.

The following are typical questions:

Name and define the different kinds of triangles; of quadrilaterals.

Prove that if a perpendicular is drawn to a given straight line at its middle point: 1st. Any point of the perpendicular is equally distant from the extremities of the line; 2d. Any point without the perpendicular, is unequally distant from the extremities.

Show that if through the middle point of one of the sides of a triangle a line be drawn parallel to the base, it will bisect the second side and the part intercepted will be equal to one-half the base.

What number of sides has the polygon the sum of whose angles is twenty-six right angles?

To draw a common tangent to two given circles.

Find the locus of the middle points of all chords of a circle equal in length to a given line.

Find the locus of the middle points of all chords of a circle passing through a given point within the circle.

Prove that through three points not in the same straight line one circumference may always be made to pass, and but one.

Prove that the square described on the hypotenuse of a right-angled triangle is equivalent to the sum of the squares described on the other two sides.

Given the side of an equilateral triangle equal to 10 feet; find its area.

Define "limit of a variable." Illustrate by an example.

Prove that the area of a circle is equal to the product of its circumference by half the radius.

Angles at the centres of equal circles are proportional to what? Angles at the centres of unequal circles are proportional to what? Define the unit angle or radian.

The regular inscribed hexagon is double the equilateral triangle inscribed in the same circle, and one-half of the circumscribed equilateral triangle.

*English grammar.*—Candidates must have a good knowledge of English grammar. They must be able to define the terms used therein; to define the parts of speech; to give inflections, including declension, conjugation, and comparison; to give the corresponding masculine and feminine gender nouns; to give and apply the ordinary rules of syntax.

They must be able to parse correctly any ordinary sentence, giving the subject of each verb, the governing word of each objective case, the word for which each pronoun stands or to which it refers, the words between which each preposition shows the relation, precisely what each conjunction and each relative pronoun connects, what each adjective and adverb qualifies or limits, the construction of each infinitive, and generally to show a good knowledge of the function of each word in the sentence.

They must be able to correct in sentences or extracts any ordinary grammatical errors.

It is not required that any particular text-book shall be followed, but the definitions, parsing, and corrections must be in accordance with good usage and common sense.

The following questions were used at a recent examination:

I. Give the principal parts (present tense, past tense, and past participle) of the following verbs: 1. choose; 2. crow; 3. freeze; 4. slay; 5. stick; 6. fly; 7. sit; 8. burst.

II. Write the plurals of the following words: 1. motto; 2. fairy; 3. money; 4. belief; 5. axis; 6. synopsis; 7. man-of-war; 8. Norman; 9. M.

III. Write the feminine forms of the following words: 1. hero; 2. mankind; 3. murderer; 4. testator; 5. priest; 6. ambassador; 7. Englishman; 8. poet; 9. emperor.

IV. Write the possessive case of the following words: 1. men; 2. I; 3. it; 4. boys; 5. they; 6. prince; 7. King John; 8. King of Italy; 9. Henry the Fourth.

Define the following: 1. Personal pronoun. 2. Preposition.

Parse the words in italics in the following sentence:

Other things being equal, it is obvious that the writer who has most words to choose from is most likely to find in his assortment just the word which he needs at a given moment.

Correct all the errors in the following sentences:

1. It was not her that did it.

2. Who do you take him to be?

3. He surely don't expect me to do it.

4. Neither by you nor he was it considered necessary.

5. Each have their own faults.

6. How do you know when its coming?

7. I should not have asked like you did for twice the the money.

8. Are either of these places marked on the map?

9. Two fatal errors underlaid his theory.

10. Except you go with me, I shall stay at home.

11. You or he is in the wrong.

12. Here comes Smith and two other men.

*In English composition and English literature.*—Candidates must have a fair knowledge of the general principles and leading rules of composition. Their knowledge will be tested by the correction of errors in the selection and right use of words, of errors in the construction of sentences, by their proficiency in variety of expression, and by their ability to write a letter in the correct form.

They must have a fair knowledge of the names of the most prominent American and English authors and the names of their principal works.

Questions similar to the following are likely to be used:

Indicate the errors in the selection and use of words in the following sentences by underscoring the errors and writing the correct word above the incorrect:

1. He had exceptional opportunities for learning the language.
2. A century transpired before it was revisited.
3. King Edward VII. replaced Queen Victoria on the throne of England.
4. I was continually aggravated by his conduct.
5. There were not less than twenty persons present.

Correct the following errors in construction of sentences:

1. The teacher should repress the practice of throwing stones, as far as possible.
2. The French having nearly lost 5000 men, became discouraged.
3. The picture of the king hung on the wall behind the door, covered with a cloth.
4. He made no petition, though he did not like the new representative quite as well as his colleagues.
5. He did not pretend to abolish French music but only to cultivate it.

For variety, change the following sentences into another correct form and still keep the same meaning:

1. If that be granted the rest is easily proved.
2. We hope we shall have the pleasure of seeing you.
3. A man that has little sense is seldom aware of the fact.
4. He was the first that entered.
5. His disease was one that cannot be cured.

Write the following letter in proper form to Charles Smith at 2121 Mount Vernon Avenue, Baltimore, Maryland, giving proper address and complimentary conclusion:

March 2 1900 philadelphia pa 8131 Eighth street

by this mail I send you two copies of the book ordered by you the 13th ultimo hoping they will prove satisfactory  
hamlin and Co.

What author wrote? 1. Gulliver's Travels. 2. Macbeth. 3. Pilgrim's Progress. 4. Childe Harold. Name one work of each of the following authors: 1. Tennyson. 2. Hawthorne. 3. Milton. 4. Spencer.

*Geography.*—Candidates will be required to pass a satisfactory examination in descriptive geography and the elements of physical geography. A preponderance of weight is attached to a knowledge of the geography of the United States.

In descriptive geography of the United States, candidates should be thoroughly informed as to its general features and boundaries (both with respect to neighboring countries, and latitude and longitude); its adjacent oceans, seas, bays, gulfs, sounds, straits, and islands; its lakes, the location and extent of its mountain ranges; the sources, directions, and terminations of the important rivers, the names of their principal tributaries, and at what points, if any, these rivers break through highlands on their way to the ocean; the water routes of communication from one part of the country to another; the location and termination of important railroad lines; the boundaries of the several States and Territories and their order along the coasts, frontiers, and principal rivers; the locations and boundaries of the island possessions; and the names and locations of the capitals and other important cities of the several States, Territories and island possessions.

In short, the knowledge should be so complete that a clear mental picture of the whole of the United States is impressed on the mind of the candidate.

In descriptive geography of other countries, candidates should be familiar with the continental areas and grand divisions of the water of the earth's surface; the large bodies of water which in part or wholly surround the grand divisions of the land; the capes, from what parts they project and into what waters, the principal peninsulas, location, and by what waters embraced; the parts connected by an isthmus; the principal islands, location and surrounding waters; the seas, gulfs, and bays, the coasts they indent, and the waters to which they are subordinate; the straits, the lands they separate, and the waters they connect; the location of the principal lakes; the locations, boundaries, capitals, and principal cities of the political divisions of the world.

In physical geography, candidates should be familiar with the relief of the earth's surface; the principal mountain systems, the river systems and watersheds, the coastal and lake plains, and the influence of climate, soil, mineral deposits, and other physical features on the resources, industries, commercial relations, and development of a country and its people, especially of the United States.

The following questions were used at a recent examination:

1. Name the bodies of water surrounding Europe.
2. Where is 1. Cape St. Vincent; 2. Cape Corrientes; 3. Cape Matapan; 4. Cape Lopez; 5. Cape Comorin; 6. Cape York?
3. Name in order the political divisions of South America which border on the Pacific Ocean, and the capital of each.
4. Locate definitely the following islands: 1. Mauritius. 2. Tasmania. 3. Formosa. 4. New Zealand. 5. Madeira. 6. Falkland. To what country does each belong?
5. Where are the gulfs of 1. Bothnia. 2. Guinea. 3. Paria. 4. Salonica. 5. Pechili?
6. What lands are separated and what waters are connected by 1. Torres Strait. 2. Hudson Strait. 3. Strait of Malacca?
7. Bound Italy; name its capital, largest river, and principal mountain range.
8. Locate definitely the following cities: 1. Vienna. 2. Nankin. 3. Cork. 4. Tunis. 5. Montevideo. 6. Batavia. 7. Suez. 8. Pretoria.

9. Name in order the waters traversed in sailing from Liverpool, England, to Hongkong, China.
10. A considerable portion of the boundary line of the United States is along what parallel?
11. Locate definitely the following: 1. Flatland Lake. 2. Sabine Pass. 3. Black Hills. 4. Sebago Lake. 5. Cape Lookout. 6. Montauk Point. 7. Wichita Mountains. 8. Lingayen Bay.
12. The meridian of Minneapolis passes through what States?
13. Name the principal rivers that drain Pennsylvania; where do they rise; at what points do they leave the State, and at what points, if any, do they break through highlands?
14. Name all the waters traversed in going by the two commercial water routes from Duluth to the Atlantic Ocean.
15. Name the principal ranges of mountains crossed in going by rail from New York to San Francisco. State the rail route assumed to be travelled.
16. Bound precisely the following States and Territories: 1. Montana. 2. Arizona. 3. Arkansas. 4. Wisconsin. 5. Pennsylvania. 6. Georgia. (In bounding all contiguous States must be mentioned as well as rivers, mountain ranges, etc.)
17. Name the States west of the Mississippi River drained wholly or in part by it or its tributaries, and give the capital of each.
18. Locate accurately the following cities: 1. Austin. 2. Pensacola. 3. Asheville. 4. Winchester. 5. Allegheny. 6. Iloilo. 7. Oswego. 8. Pasadena. 9. Guthrie. 10. Detroit.
19. Going by water from New Orleans, La., to Pittsburg, Pa., what States would you pass on the left?
20. How many large islands are there in the Hawaiian group? Which is the largest? Which is the most important?
21. Going westward on the 35th parallel of north latitude from near Newbern, N. C., what States and large rivers would be crossed?
22. Describe the chief mountain system of the Eastern Hemisphere and state what island chains of Asia abound in volcanoes.
23. What are the great river systems of South America? Where are the principal coastal plains?
24. What are the qualifications of a good harbor? Name three of the best harbors on the Atlantic coast; one on the Pacific coast.
25. What has made the Middle Atlantic States the principal commercial section of the United States?

*History.*—The candidate will be required to be familiar with so much of the history of the United States and the outlines of general history as is contained in the ordinary school histories.

In history of the United States, the examination will include questions concerning early discoveries and settlements; the forms of government in the colonies; the causes, leading events, and results of wars; and prominent events in the history of our Government since its foundation.

In general history, candidates must have a fair knowledge of the general outlines of the history of the following nations: Egyptian, Assyrian, Babylonian, Persian, Grecian, and Roman; and of the mediæval and modern history of the European nations.

The following questions show the character of the examination in United States history and general history:

1. What explorations or discoveries did each of the following-named persons make? Give the date in each case. *a.* De Narvaez. *b.* Coronado. *c.* Marquette. *d.* La Salle.
2. Name three colonies that were founded for religious reasons and give the sect or denomination by which each was colonized.
3. Who were the Pilgrims?
4. When and under what circumstances was Delaware separated from Pennsylvania?
5. Give an account of Bacon's Rebellion.
6. When and where did each of the following events occur? *a.* Meeting of the first Colonial Congress. *b.* Burgoyne's surrender. *c.* Arnold's treason.
7. Name some important results of each of the following battles of the Revolutionary war: *a.* Long Island. *b.* Trenton. *c.* Brandywine.
8. Name four additions to the territory of the United States since the Revolutionary war, and give the way each has been acquired.
9. Bound the territory of the United States at the close of the Revolutionary war.
10. What was the "Massacre of Wyoming?"
11. When, where, and for what purpose did the constitutional convention meet? What resulted from its deliberations?
12. What was the "Whisky Insurrection?"
13. What were the "Alien and Sedition" laws? What was their effect?
14. When and where was the last battle of the war of 1812 fought? Name the commanders on each side.
15. What were the two principal political parties in 1860? Their candidates for the Presidency? Their leading doctrines on the slavery question? Parties. Candidates. Principles.
16. With what foreign nations had the United States unfriendly relations during and at the close of the civil war? Give the cause in each case.
17. Name, with date, three important military events of 1865.
18. What Vice-Presidents have become President? Name the predecessor in each case.
19. Give an account of the "Virginian affair."
20. In what war were the following battles fought? What were the opposing forces? Which side won? *a.* Ticonderoga. *b.* Monterey. *c.* Saratoga. *d.* Stony Point. *e.* Spotsylvania. *f.* Lundy's Lane.
1. Into what general periods is the history of Egypt divided?
2. Into what classes was Egyptian society divided?
3. Name one of the great kings of Assyria.
4. In what region did the Assyrian Kingdom lie?
5. Name the greatest Babylonian king and describe some of his achievements.
6. Who was the founder of the Persian Empire?
7. State the principal events of the reign of Darius I.
8. Into what three general parts was ancient Greece divided, and what was the name of the principal State in each?
9. What was the character of the Spartan people and the nature of their government?

10. What was the character of the Athenian people, and the nature of their government after the expulsion of the tyrants?
11. Name four great battles of the Græco-Persian war, and give the date of any one of them.
12. What was the name of the great war between the Grecian States, and what States were the leaders in it?
13. Give an outline of the conquests of Alexander the Great. In what century did they occur?
14. What was the nature of the early government of Rome?
15. Give the title of the principal officers of the Roman Republic, and describe their functions.
16. What were the Punic wars? How many in number? Name two great Carthaginian and two great Roman generals.
17. Who was Augustus Cæsar? State briefly the principal events of his career.
18. What was the feudal system, and how did it originate?
19. What is meant by the Renaissance?
20. Who was the leader of the Reformation? Describe briefly its nature and principal events.
21. Who was Oliver Cromwell, and what did he establish?
22. What was the cause of the French Revolution, and what did it effect?
23. Under what two forms of government did Napoleon rule France, and what was the "Code Napoleon?"
24. When and under what circumstances was the new German Empire founded?
25. Name some of the more important events of Queen Victoria's reign.

*Physiology and Hygiene.*—Candidates must be able to pass a satisfactory examination in the general principles of physiology and hygiene with special reference to the nature and the effects of alcoholic drinks and other narcotics upon the human system.

They must be able to state the general effects of alcohol upon the cells and tissues of the body and upon the processes of digestion; its effects on the liver, lungs, and heart; on the blood, blood vessels, and on the nervous system; on the moral powers and the capacity for physical endurance; its hereditary effects; the origin and nature of alcoholic beverages; the general effects of tobacco on the cells and tissues of the young and on the digestive organs; its effects on the throat, on the heart, on the blood, on the nervous system; the effects of opium on the stomach and on the nervous system; the influence of tea and coffee on the system.

Questions similar to the following are likely to be used:

1. What are the two important offices of the bones? Describe the internal minute structure of the bone.
2. Name in order the different parts of the alimentary canal.
3. Indicate by diagram the shape of the human stomach; mark the left side when in position.
4. What is the mucous membrane—its structure; the serous membrane—its use?
5. What in general is the effect of alcohol and tobacco on the living cells; what is the only absolute safeguard against the narcotic appetite?
6. What chronic effect is often produced on the stomach by the habitual use of alcohol?
7. Name in order all the channels through which the air passes in respiration; in what part of the circuit does it aerate the blood?
8. What is the average amount of air taken in at one inspiration; what changes are observed in the expired air?
9. What is the usual effect on the stomach of the habitual use of alcohol?
10. Name two well-determined effects of alcohol upon the liver.
11. What is meant by the general circulation of the blood?
12. What are the two systems of channels for the circulation of the blood? Describe the structure of each.
13. Starting with the blood in the right auricle, describe its course through the body until it returns to the same receptacle.
14. What are the three agencies instrumental in returning the blood from the different parts of the system to the heart?
15. What are the effects of alcohol on the blood; of tobacco?
16. What are the effects of alcohol on the heart; what is the explanation of the fact that alcohol sometimes increases the rapidity of heart-beats?
17. What is the effect of tobacco that produces the disease known as the "tobacco heart?"
18. Describe the structure of the skin; what are the functions of the skin?
19. What is the explanation of the disease "aneurism" when due to alcohol?
20. Under what two heads may we in general class the changes produced by alcohol on the structures of the organs—which of these is due to the stronger beverages?