

ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

UNITED STATES MILITARY ACADEMY.

1902.

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HEADQUARTERS UNITED STATES MILITARY ACADEMY,
West Point, N. Y., September 15, 1902.

SIR: I have the honor to submit the following report for the Military Academy for the year ending August 31, 1902:

I have performed the duties of Superintendent throughout the year, except during a leave of absence from August 1 to 13, and for other short periods of time when absent in connection with Academy affairs.

PERSONNEL.

The number of officers and instructors assigned to duty here, September 1, 1902, was 7 professors, 1 associate professor, 72 commissioned officers, 1 librarian, 1 chaplain, 1 contract dental surgeon, 1 teacher of music—a total of 84. The total for duty September 1, 1902, was 82. The net increase is the librarian, an office heretofore filled by one of the professors in addition to his regular duties, and one instructor. The only other change to be noted is in the status of the professors, who by act of Congress now have the actual rank formerly assigned them by assimilation, with command limited to the respective academic departments. The change removes a military incongruity of long standing, and is one productive of good. The appended roster gives the names of all officers and shows the particular duties they perform.

THE CORPS OF CADETS.

The maximum number of cadets is 492. The academic year opens with 471 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, 94; second class, 129; third class, 130; fourth class, 118. Of this number 2 are foreigners, receiving instruction at their own expense under special authority of Congress, 1 being from Costa Rica and 1 from Venezuela. September 1, 1901, there were 464 cadets, including 1 foreigner.

The following changes occurred during the year: Discharged for deficiency in studies, 39; dismissed, 1; resigned, 12; graduated, 54.

According to the new regulations on the subject, the regular examination of candidates for admission was held for the first time this year on May 1 at 16 army posts, selected with a view of reducing to

a minimum the expenses of candidates in attending. A special examination was also held at West Point on July 25, in order to fill many vacancies as practicable and make the new class as strong possible; otherwise, on account of this year's small graduating class it would have been considerably less in numbers than has been the case in the past three years.

For the examinations in May and July there were appointed 20 candidates, including principals and alternates; 59 failed to report; were rejected, both mentally and physically; and 54 were disqualified mentally. Of those qualified mentally, 88 were accepted upon certificates from high schools, colleges or universities, and competitive examinations; 54 passed the regular examination, and 3 former cadets were examined physically only. Of the 145 candidates qualified mentally, 13 were rejected by medical boards. No vacancies existed for 26 alternates who qualified mentally and physically. As a result of the two examinations, 106 candidates were admitted, including 1 alternates, and these, with 5 former cadets, reappointed with the approval of the academic board, and 7 turned back at the June examination, gave the incoming class a strength of 118.

In connection with entrance examinations the continued enforcement of the rule that candidates are to be examined at the army post nearest their homes is recommended in order to reduce to a minimum the illness following attendance at preparatory schools adjacent to the Academy.

HEALTH.

The health of cadets and the command generally has been good throughout the year. Some apprehension was expressed over the crowded condition of barracks in which, during the past year, it was necessary for cadets of the third and fourth classes to live three in rooms sufficient for but two. This condition can not be avoided until additional barracks are provided. The exercise of due care in compelling proper ventilation and sanitation of the rooms should prevent sickness, but the discomfort of cadets so crowded is considerable. The highest number of admissions to the sick report has been from malarial diseases; injuries and bronchial affections being, respectively, second and third in number. The report of the post surgeon is hereto appended, marked "E," and attention is invited to it.

Successful practical efforts looking to a reduction in the amount of malaria were made during the past summer. In the cadet encampment the floors of tents were permanently raised to permit the free circulation of air below them, and especial attention was given to perfecting the drainage of the camp. The disease has existed at West Point for a long time, though to a less extent the past year than during many former years. The subject of combating it was made the special object of a board of medical officers convened in June last. The report of this board showed the existence in pools, marshes, and seepage spots, and in water barrels, of large numbers of the larvæ of the anopheles mosquito, which is known to transmit malaria, and the board expressed the opinion that the prevalence of the disease was largely due to this mosquito. It is of interest to note that the reservoir and large ponds containing fish were entirely free of the larvæ.

As immediate measures to reduce the pest of mosquitoes all pools and marshy places were frequently oiled during the summer with

petroleum, and the keeping of water in open barrels was prohibited. Also all marshes wherever practicable were drained and the use of mosquito nets by cadets was ordered, and the barracks of enlisted men were screened. Efforts will be continued to secure the permanent eradication of mosquitoes by draining and filling all ponds and marshes in the vicinity and by conveying water running from springs and reservoirs away underground. Wherever it is found impracticable to do this, oil will be regularly applied. The supervision of the work has been placed in the charge of an officer of the medical department and every assistance will be given him, so that steady and persistent work may be done.

PAY AND SUPPLIES OF CADETS.

Two important changes in the pay and allowances of cadets are to be noted. In accordance with recommendations, Congress has placed the military cadet upon an equal pay status with his fellows of the Naval Academy, thus giving the former a welcome annual increase in his pay of \$69.50. This change will go far toward relieving what had become a difficult and embarrassing situation. Of the increase, \$48 has been set aside for the cadet's graduation equipment fund which is thus doubled, and the remainder will be made to cover the necessary expenses attending his social amusements, athletic games, and literary societies. The other change is the Congressional provision that the actual necessary traveling expenses of candidates from their homes to the Military Academy shall be credited to them after admission as cadets. The effect of this is to place cadets from all parts of the country upon an equal footing as regards the expense of entering the Academy, a wise and just policy, and one that is followed in similar matters in the military service.

The food furnished cadets is abundant in quantity, of good quality and variety. In its preparation and serving considerable inconvenience and discomfort are at present entailed by the necessity of using a temporary kitchen, with poor and inadequate facilities, while a new kitchen—a part of the mess hall improvements—is being erected. The cost of messing has increased markedly this year, having averaged 59.3 cents per day per cadet as against 55.5 cents per day the previous year. The cause has been the increased cost of food supplies, especially meat, which since January last has advanced in price from 35 to 50 per cent.

The supplies of clothing and other articles provided in the cadet store are ample and of good quality. Cadets are required to exercise greater economy in their purchases from the store by a new rule requiring the officers commanding companies to carefully supervise the requisitions of all cadets.

For the details of the operations of the cadet supply departments attention is invited to the appended report, marked "D," of the treasurer and the quartermaster and commissary of cadets.

DISCIPLINE.

The discipline of the corps of cadets has been satisfactory throughout the year. The soldierly appearance of the battalion and its perfection at drill and in military exercises were the subject of much praise and comment on the part of the many distinguished military

and other visitors, from our own and foreign countries, who attended the centennial exercises in June. The excellent effect of the regulation put in force in 1900 by which the members of each class are divided monthly, according to their demerits for the preceding calendar month, into three conduct grades which determine their privileges for the ensuing month, is shown by the record of the second year's application of the regulation—45 per cent of all cadets were in the first grade, 28 per cent in the second, and 27 per cent in the third.

During the year there has been no relaxation of proper efforts to make permanent the reforms already accomplished bearing on the treatment accorded new cadets by their older comrades. The regulations governing the subject have been carefully enforced, and, with but a single exception that is worthy of note, cadets have shown a soldierly regard for their obligations in the matter. The exception referred to—the first under the new regulations—is that of a cadet who, without authority, made a fourth-class man assume a constrained position and used threatening and abusive language to him. For this offense the cadet was brought to trial by a court-martial, and, being found guilty, was dismissed. No one conversant with the progress new cadets now make apprehends any ill effect in training from the passing of hazing.

PRACTICAL INSTRUCTION.

For the scope of this training during the year and its details, attention is invited to the appended reports of the commandant of cadets and the instructor of practical military engineering. An important change has been made in transferring the instruction of the third class in surveying from the department of mathematics to that of practical military engineering. A portion of forty drill days of the past encampment was devoted to the work which is entirely practical. The change has given the most satisfactory results and the members of the class have attained a much better, practical, working knowledge of surveying instruments and of surveying than has been the case in the past.

Owing to the size of the present third class, together with the limited time available for riding instruction during the academic year and the limited size of the present riding hall, spare time during the encampment was utilized again this year to give preliminary instruction in riding to the class. I believe the Academy should now have the services of a civilian instructor in riding and equitation. The desirability of maintaining a high standard in this instruction makes additional assistance necessary, and it is thought more uniform results can be obtained by employing by contract a riding master than by detailing an additional officer from the Army for the duty. The employment of a civilian fencing master is also recommended. This desirable and important instruction, in which cadets are taking great interest, has been given to the present time by the instructor of gymnastics, but the number of cadets is now so great it is impossible for him to give the necessary attention to individual cadets.

I again renew my former recommendation for the installation of a model seacoast battery. In this important instruction the training of cadets is not satisfactory. The only other way it can be given is to take cadets to a nearby seacoast fort, but this is not practicable without breaking in on other important duties.

ACADEMIC MATTERS—IMPORTANT CHANGES.

A number of subjects claim attention under this head. In the department of modern languages the importance of giving graduates as great a knowledge of the Spanish language as possible is recognized by a provision giving the cadets of the first class additional instruction in the language until the new curriculum, which commences with the present fourth class, becomes fully effective. In the department of engineering a notable change is one instituted by the honorable Secretary of War, which supplements the instruction the first class receives in the operations of war by permitting it to visit one of the great battlefields of the civil war. In April, the first class, after a previous study of the Gettysburg campaign, spent two days in practical study on that battlefield with much resulting good, as shown in the attached report of the professor of engineering, to which attention is asked. This policy of supplementing the theoretical and historical study of the art of war by a practical study of its principles on one of our famous battlefields is of such incalculable importance in the training of our young officers that I trust it is permanently incorporated into the Military Academy's curriculum.

Consequent upon the action of Congress in freeing the Academy from the long-existing restraint of an entrance examination rigidly fixed by statute, a much desired revision of the curriculum has been made. The new curriculum will be referred to later, and attention here is called only to the principal changes, which consist in increasing the courses of Spanish and English, the introduction of a course of lectures on military hygiene, and the transfer of the course in surveying from the department of mathematics to the department of practical military engineering. These changes have been effected principally by diminishing the time devoted to the subjects of mathematics and French. The theoretical course in philosophy has also been somewhat diminished by transferring part of its time to chemistry and electricity, and by transferring to the academic year the practical instruction in astronomy heretofore given during the summer encampment. In the changes endeavor has been made to assure full and excellent courses in the subjects of Spanish, English, and military hygiene.

AN ASSOCIATE PROFESSOR OF LANGUAGES.

The new programme of study entails much additional labor upon the department of modern languages, which under present conditions is already overburdened. In 1882 the department of modern languages was organized, to include a chair of French, one of Spanish, and one of English, with a single professor to fill them all. Prior to that date the chairs of Spanish and French had been filled by different professors. From considerations of administration and of the relation of these courses to the others, and of the necessary correlation between the courses themselves, the present organization of the department is, I believe, much superior to the old—an opinion which is concurred in by all the members of the academic board. It is also the opinion that the relief needed can best be afforded by giving the head of the department a skilled assistant of rank and experience who can take charge of one of the classes and supervise its instruction. As I believe a permanent appointment would not operate for the best interests of the

Academy, I therefore recommend that the War Department give its approval to a provision in the next Military Academy bill for an associate professor of modern languages, to be regularly detailed from the Army, and to have while so serving the pay and allowances of a major.

The increased pay recommended should be given in order to make the position an attractive one, and because the officer selected for it would fill a higher position than the assistant professors in the department, who under the law have the pay of captains mounted. The proper administration of the department of modern languages, together with personal supervision in the matter of two foreign tongues, is certainly beyond the power of one man, and should not be exacted of him. The assistant recommended would in no way affect the present organization of the academic board, and would only give the personnel necessary to the efficient interior administration of the department. The following changes would be accomplished by the proposed addition: (1) The administrative head of the department would have to give personal attention to instruction in only one foreign tongue, and yet there would be the necessary correlation between the different subjects of the department by virtue of their being under one head; (2) the associate professor could be of great assistance in carrying out details within the department, and would supervise the instruction of cadets in one foreign tongue.

ADMISSION OF CANDIDATES ON CERTIFICATE.

The acceptance of certificates of mental preparedness marks a new policy at the Military Academy in connection with the admission of candidates to cadetships. The following is the regulation under which the academic board may accept such certificates in lieu of the regular mental entrance examination:

First. The properly attested examination papers of a candidate who receives his appointment through a public competitive written examination covering the range of subjects prescribed for admission.

Second. The properly attested certificate of graduation from a public high school or a State normal school in which the course of study, together with the requirements for entrance, shall cover the range of prescribed subjects.

Third. A properly attested certificate that the candidate is a regular student of any incorporated college or university, without condition as to any prescribed subject.

The principal object of this regulation is to permit those candidates who at the time of appointment, generally a year prior to date of admission, have satisfactorily covered the subjects required for admission to continue their regular course of study and the proper gradual development of their minds instead of putting them in position where they feel compelled to go back and review elementary work, with consequent expense, loss of time, and, as usually occurs, attendance at some coaching school, with resulting deadening of the reasoning faculties.

Under this provision of regulations there were received from candidates (principals and alternates) for entrance to the present fourth class 114 certificates, of which 51 were from high schools or normal schools, 42 were from colleges, 9 were from both high schools and colleges, 3 were from competitive examinations, and 9 were from private schools or academies (not within the scope of the regulations).

Of the candidates presenting certificates, 88 were considered satisfactory by the academic board, and 62 of these entered the class; 26

were considered unsatisfactory, and 6 of these entered the class on passing the regular mental entrance examination.

These statistics are tabulated below:

Kind of school.	Certificates considered.	Accepted as satisfactory.	Holders of satisfactory certificates entered.	Considered unsatisfactory and not accepted.	Candidates having unsatisfactory certificates who passed regular examinations.
High and normal school	51	42	29	9	.....
College	42	35	24	7	2
High school and college	9	9	8	.....	.....
Competitive examination	3	2	1	1	.....
Private school and academy	9	.....	.....	9	4
Total	114	88	62	26	6

There seemed to be a general effort on the part of principals of schools and presidents of colleges to submit exact facts as to the work and standing of the candidates as required by the forms of certificates adopted, and in only a few instances was there any apparent effort on the part of candidates themselves to secure admission on an insufficient certificate.

Since this method of admission is an entirely new departure, the certificates were examined with great care and the career of those young men who have been admitted on certificates will be carefully watched, with a view to determining as nearly as possible whether satisfactory material is obtained in this way. It is the intention also, in case any cadet so admitted is found deficient in the first six months of his course, to invite the attention of the school or college official to the fact, in the hope that such action will result in a closer touch between the Academy and the general school system of the country, and a certification of only such young men as are preeminently qualified to master the curriculum and become officers of our Army. In this way the Academy will become a greater factor in the educational system of the country than has been the case in the past.

THE NEW CURRICULUM.

The present curriculum of the Academy is embraced under ten departments. Each department includes several kindred subjects, so that there are 41 or 42 distinct but related subjects of instruction. The departments and subjects embraced are indicated below:

Departments.	Subjects embraced.
1. Mathematics	Algebra, geometry, trigonometry, analytical geometry, descriptive geometry, differential and integral calculus, method of least squares.
2. Natural and experimental philosophy.	Analytical mechanics (solids and fluids), wave motion (acoustics and optics), astronomy (general and practical).
3. Drawing	Geometrical, topographical, reconnaissance (field and office work), freehand drawing, technical (architectural, mechanical, professional-military).
4. Chemistry, mineralogy, and geology.	Heat, chemistry, physiology and hygiene, electricity and magnetism, mineralogy, geology.
5. Tactics	Drill regulations (theoretical, infantry, artillery, cavalry), practical drills (all arms of service), tactical problems, with field exercises, service of security and information, company and staff administration, guard duty, military and camp police, stable management and care of animals, requirements of field service, customs of service, encampment, army transportation, packing, etc.

Departments.	Subjects embraced.
6. Modern languages.....	English, French, Spanish.
7. History and law	Elementary law, constitutional law, military law, international law, general history (ancient, mediæval, and modern), historic geography.
8. Military and civil engineering.	Civil engineering, military engineering (field and permanent fortifications), art of war, campaigns, etc.
9. Practical military engineering.	Including military signaling, surveying, bridge construction, and over forty different operations.
10. Ordnance and gunnery.....	A general survey of all that science pertaining to military service with especial consideration to our own service.
11. Course in military hygiene..	

It is seen that each department extends over a wide range, and the grouping of subjects as to departments does not always appear to be that of their natural relations. This has resulted from the necessity, first, of having the time of each department throughout the year fully occupied, so that the course of each department should run throughout the entire year; second, of having the amounts of the different subjects which are taught limited or extended to the best advantage; third, under these two conditions, having the subjects placed in their best relations.

The curriculum of the Academy can not be properly viewed or judged by comparison with other college courses of study, but must be considered in connection with the objects of the Academy and of the conditions under which it operates, which are entirely different from civil institutions and very largely so from other military institutions. The object of the Military Academy is to make officers of the Army, and, of course, to produce as high a type of officer as is possible under the conditions. In the conception of this type it has been assumed that the profession of the officer in this country is likely at any time to be full of responsible work and to need men of power and strong character.

The Academy has accordingly lived and grown and its methods been established under the conviction that the development and training, both of character and mind, in the greatest degree in the cadet should be its object, not less than providing special fitness for the technical and the various practical routine duties of his profession, and of thoroughly inculcating the spirit of subordination and discipline. This end has been sought under the belief that to use the rational faculties to the best advantage is the highest result of youthful education, far higher than the acquisition of information; that mental power is likely to be more useful than simple knowledge; that such power is best acquired by mental effort and in the overcoming of difficulties; that honest application, unhesitating readiness to work, are the only means through which the majority can attain success, and that these should be made familiar habits to every graduate; that training, mental and physical, should accomplish absolute subordination of inclination to effort, and that every specialty, even if purely mechanical, is sooner and better mastered by him who has had the training of hard, concentrated mental effort.

These views have profoundly influenced the methods and curriculum of the Academy, and have shaped the courses to a thorough study of principles, rather than to the attempt at greatest facility in the application of these principles without their thorough study and comprehension. The Military Academy differs widely from other scien-

tific schools, and especially in that its pupils are not being prepared to earn a livelihood from the direct or immediate application of any of the special sciences taught. The Government provides this; but the graduate is expected to acquire a knowledge of the principles of these sciences to which he may add by individual effort, as occasion requires, and be prepared to meet the demands that may be made upon a professional soldier. This education to meet the higher needs of the service should not only instill truths, but should draw out, exercise, and develop the minds, faculties, and forces, and to do this in a manner that inculcates confidence in one's powers and reliance on individual and honest effort, and thus develop character as well as mind; and those students endowed with the requisite aptitude should be so equipped that by proper self-effort they may become originators and developers, and not mere craftsmen in their scientific work and profession.

The records of the graduates of the Academy prove that this theory of teaching has not been deficient in producing character, mental power, and scientific and professional accomplishments. While the potential value of the proper training has always been prominent in the minds of the academic authorities, the ever-recurring necessity and suggestion for present practical professional knowledge, both scientific and strictly military, have not been ignored. This important and necessary function of a young officer's equipment has of late years received far greater consideration than formerly, and every effort has been made to combine to the fullest extent, under the conditions, illustrations and applications of the principles taught along with the study of the principles themselves. In other words, while aiming to retain the highest benefits of the studies as factors in general education, mental development, and character building, a full appreciation is now had of the immense advantage of practical knowledge, and earnest endeavor is made to secure as wide familiarity as possible with the technical and practical bearing of all subjects studied. This idea of making the knowledge itself practical permeates all the departments and is second only to the aim of securing the best training and development.

It will be seen from the list of subjects of study that the instruction given by the departments of tactics and practical military engineering is all military and mainly practical, only a small portion being academic. The instruction of the important department of tactics, which deals most directly with discipline and exerts the greatest influence in implanting in cadets the qualities of officers, is distributed over the entire course of four years, that of the department of practical military engineering over the last three. The instruction of the department of ordnance and gunnery is entirely professional, of the department of military and civil engineering it is mainly so, and of the department of history and law to the greater extent. The work of these three departments is almost entirely academic and confined to the last or fourth year.

The departments of mathematics; natural and experimental philosophy; drawing; chemistry, mineralogy, and geology, and modern languages occupy by far the greater proportion of the academic hours of the cadets during the first three years. The instruction in the department of drawing is in part general, but more largely professional. The department of modern languages may be considered as both general and professional. The department of chemistry, mineralogy, and geology includes some professional study, but it, with the depart-

ments of mathematics and natural and experimental philosophy, may be said to include general scientific instruction, strictly professional only, in the sense that it afterwards becomes the basis of the high professional work and is of the greatest disciplinary value.

From this outline it will be observed that while the practical military instruction is given during each year of the course, and a small amount of theoretical also, by far the greater proportion of the professional information and that portion requiring serious mental effort to acquire are taken during the fourth year. During the first three years the academic instruction is mainly of a general scientific nature rather than specially professional. The advantage and necessity for this arrangement are due to two facts: (1) The Academy was called upon to educate the great majority of its pupils both generally and professionally, for the requirements for admission have always been very moderate; (2) the Academy has always attempted what no other school has—to educate scientific soldiers for all branches of the service. It is not probable that either of these requirements can ever be in any large part dispensed with, for the requirements for admission are not likely to be made greatly more stringent and the necessity for preparing the graduates for all branches of the service is ever greater now than ever before owing to the method of filling appointments to the staff corps by detail from the line.

The first two years of academic work are mainly devoted to the studies of the departments of mathematics, modern languages, and drawing; the third year to those of the departments of natural and experimental philosophy, chemistry, mineralogy, and geology, and drawing. In these years (first, second, and third) it is the aim to carry the mathematical sciences no further than necessary to insure that all our graduates shall receive a thorough grounding in the principles of the sciences taught, and so that it shall be practicable for all to accomplish such scientific work of the Army as may fall to them, and so that any to whom it may become necessary shall be able by individual effort to add to his knowledge of the subjects without being under the necessity of reconstructing his foundations. In the department of natural and experimental philosophy there are included the elementary principles of mechanics and their applications, together with that general knowledge of light, sound, and astronomy which are deemed essential in all general scientific education.

The method of teaching in both departments is the analytical and is based upon the ideas already set forth, that, in inculcating knowledge, mental training and development of character should be constantly kept in view. Neither of these subjects should be carried any further than absolutely necessary for proper preparation to meet the more technical work of the Army, and under our system some of such work may fall to any graduate. While a certain proportion of the graduates may not readily grasp or thoroughly understand all that is gone over in these departments and may never make practical application of all the formulæ studied, the method of instruction and the requirements demanded accomplish many of the benefits and aims alluded to in stating the objects of our curriculum, and all will have had their reasoning faculties strongly exercised and disciplined and a system and habit of thought acquired which are invaluable in the pursuit of any profession and equally desirable in all officers. Facts can readily be acquired at any time, but discipline and system are acquired

infinitely better at an early age only, and nowhere can they be so well acquired by officers as when they are cadets.

The excellent results of this theory of teaching in ultimately developing and producing distinguished scientific men has produced the impression that the courses of study are unduly extended in these mathematical branches. This impression will be modified by comparing the extent of our curriculum with those of professional schools of to-day most nearly related to the Academy. The impression referred to is a compliment to the method of teaching and not an indication of the extent of the curriculum.

In the department of drawing the entire course is eminently practical and based upon the idea that every graduate should have sufficient knowledge of the graphic art to use it as a vehicle of plan, design, and representation, and be able to read and interpret from the art as exercised by others. In this, as in all other departments, much consideration is given to the possible educational element that may be made to accompany the work, and the faculties of perception (mental and visual), judgment, and memory receive valuable training. By an examination of the detailed programme of this department its important usefulness is readily seen, and that little of it could be judiciously omitted.

In the department of chemistry, mineralogy, and geology the subjects taught, except electricity (which is included in this department), come mainly under the head of elements of general education. Under the divisions of heat and chemistry are given the more fundamental principles of these subjects, together with a great amount of elementary natural science which belongs to all professions and which all men must eventually acquire either by study, observation, or experience. There is also embraced much of that technical information essential to cultured men, which enables them to comprehend most of the ordinary natural phenomena as well as to understand the more important applications of these branches of science in the industrial arts, which are so frequently met with and of which they are often expected or required to know something. The electricity taught is of the highest professional value as well as an element of the general education of the day. The course of mineralogy is entirely practical and of great interest to most of the students, and the knowledge of minerals acquired in this course has given a pleasurable resource to many officers in service.

The short geological course gives a general knowledge of a branch of science most expanding in its influence, and one whose revelations have been so important and astonishing that no general education can be considered complete which ignores it. The mineralogy and geology are the only examples of nonphysical natural science in the entire curriculum and especially valuable for its methods as well as results. It is unnecessary to specify the importance of the study of physiology and hygiene.

The French and Spanish courses embrace, respectively, 200 and 160 section-room periods. The importance of familiarity with these languages, which has greatly increased in the case of Spanish since 1898, has led the academic board to give them the greatest possible extension which seemed consistent with a just regard to the other educational interests of the cadets. The arrangement permits the acquisition of a good translating knowledge of the languages, a good vocabulary and a fair pronunciation, also ability to understand the spoken language to a limited extent.

It is believed that when thoroughly organized under the present arrangement the Spanish course will result in ability to converse in that language in short, simple sentences, and certainly put it in the power of the student to soon acquire this facility to a greater extent by a little additional study and experience. There can be no doubt however, that the knowledge the graduate has of Spanish would be very greatly increased were this language taught in the first class, or final year, and further efforts should be made to so arrange the different studies as to permit this and to avoid one of the criticisms now made of the curriculum by graduates; that the course in Spanish is completed two years before the graduate is to use his knowledge in practical affairs.

A conversational knowledge of French is more difficult to acquire, and fluency in this accomplishment is seldom, if ever, acquired in a class room. The instruction in French is, however, shaped with the view of giving the pupils the best preparation for further future advancement of their knowledge both in reading or writing and conversation. The attention and amount of time given to these courses, it will be observed, compare very favorably with that allowed by other scientific institutions to the same branches, and in this respect comparison with these institutions can properly be made.

The ability of the graduate to acquire a good speaking knowledge of these languages after leaving the Academy would be increased if the instructors and cadets heard them spoken more in the class room instead of confining the instruction quite so much to blackboard work. With this object in view it is requested that the Secretary of War recommend that Congress make provision for the employment of three assistant instructors in the department of modern languages, to be civilians, natives of the countries where the above languages are spoken—two for the Spanish and one for the French language.

In the department of ordnance and gunnery the instruction is entirely devoted to professional subjects. The course is intended to supply an intelligent general knowledge of the important ordnance developments of the world with especial attention to our own systems and to such details of ordnance material and construction as officers are likely to find useful. The course has 94 section-room periods with from 5 to 12 periods of practical work and experimentation.

The department of engineering is devoted almost entirely to professional subjects, all of which are essential to an officer's equipment; such subjects as are not strictly professional are of such nature that knowledge of them is essential to some, and likely to be so to all graduates. The course has 220 section-room periods.

In the department of law and history the matter relating to the first subject may be considered as entirely professional, though like much other professional material, is a part of a liberal education. The history is taken simultaneously with the law course, and while being itself a most useful part of our curriculum as an element of general education, it is a most valuable accompaniment of the law, showing the origin, civilization, and territorial development of the great States of the world, whose rules of action within their own limits and between themselves constitute national and international law. The course has 184 section-room periods—123 for law, 61 for history.

The departments of tactics and practical military engineering are

entirely professional and concerned with purely military matters. In the latter department all exercises are practical, and in the former much the larger proportion are so. The practical and theoretical instruction in the department of tactics extends over the four years; that of the department of practical military engineering over the last three. The academic work of the department of tactics is partly by oral recitation and partly by lecture and written recitation. The recently established course of lectures, twenty-five in number, in military hygiene are to be given during the second class year by an officer of the medical department of the Army. The time selected is that at which the class is principally occupied with practical work in the departments of philosophy and chemistry. The cadets at this period of their course have been admirably grounded in the mathematical, chemical, and general physical knowledge necessary to readily become good sanitary engineers, besides having had considerable instruction as to the general conditions for healthy living. It is thought and hoped that these lectures will supplement this knowledge with much valuable practical information.

The above statement with regard to the curriculum has reference to it as it now stands, after the latest revision, and as it goes into effect September 1. This last revision reduced the mathematical course by 40 of its periods, transferring the same to the department of modern languages, thereby establishing that department on the basis above given. In the revision the department of philosophy yielded about 6 per cent of the time which has belonged to it for over sixty-five years to the department of chemistry. The new course of lectures on military hygiene is introduced for the first time.

The relative employment of the entire time of a cadet while at the Academy, under the supervision of the heads of the different departments as to the time devoted to their respective subjects outside of the section room, is given below:

Department.	Relative amount of time occupied.	Department.	Relative amount of time occupied.
Tactics.....	a 28.5	Practical engineering.....	1
Mathematics.....	18	Military hygiene.....	.25
Modern languages.....	14	Sleep.....	110
Engineering.....	10	Recreation.....	90.25
Philosophy.....	9.5	Meals.....	27.75
Chemistry.....	6.5	Furloughs.....	18.5
Law and history.....	5.5	Chapel.....	2.5
Drawing.....	4.75		
Ordnance and gunnery.....	3	Total.....	350

a 6.5 theoretical; 22 practical.

These numbers multiplied by 100 give very approximately the total number of hours occupied by each department during the four years.

In this connection it is pertinent to remark that the length of the academic year at West Point, together with the small number of holidays, makes the course of four years almost as long in actual working time as five years of the ordinary college course of thirty weeks—the academic year at the sister academy at Annapolis is also several weeks shorter than ours.

ASTRONOMICAL OBSERVATORY.

I ask attention to the following: The Academy has as a part of its equipment an excellent astronomical observatory fitted with valuable scientific instruments sufficient for much scientific research, and consisting of 1 equatorial, 1 transit circle, 1 photographic telescope, prime vertical instrument, and 1 spectrometer, all large instruments and well mounted. The observatory is under the immediate supervision of the professor of natural and experimental philosophy, and at the present time he has had to assist him in its management a lieutenant officer of the Army detailed for this special purpose. This policy has worked only fairly well in the instruction of cadets, as the assistant referred to is not permanently detailed, and the policy is one which has necessarily failed to give the return to science and to the Academy that should be had from such a powerful and valuable equipment.

In the opinion of the professor of philosophy, in which I concur, the permanent detail of an Army officer at the observatory is not desirable and the only way in which the observatory can give the return to science that should be expected from it is by the permanent employment of an astronomer. I recommend that this be done. A competent person can be secured at a reasonable salary and he would be of much assistance to the professor in the course of practical astronomy which cadets are required to take. In addition to this work he would be required to take up a series of astronomical observations in some field of pure science, and in their prosecution secure valuable data for a regular series of publications from the observatory. In this way only can this valuable equipment be made to give here the return to be expected from it. I believe the return to be had would justify the additional expense.

THE ACADEMY'S LIBRARY.

Sincere pleasure is felt at the success attending the efforts made to give this adjunct of instruction an organization commensurate with its importance. Housed in a commodious and well-appointed building, its work directed by an able head whose entire time is devoted to the duty, and with an appropriation sufficient to insure the acquisition of lacking books on military science, history, and other technical subjects, the library is in a condition to do the work so fully set forth in the appended report of the former librarian, to which attention is asked.

DETACHMENT OF TROOPS.

A further increase of 7 men in the strength of the light artillery detachment is recommended. This detachment has now an enlisted strength of 53 men, but the year's experience shows that this is not sufficient to enable it to properly meet the necessary demands on it. The transfer to Fort Leavenworth of the company of engineers so long stationed at West Point and the substitution for it of a detachment of engineers of less strength has necessarily increased the duties of the other detachments and makes the increase recommended for the artillery detachment especially necessary.

BUILDINGS AND GROUNDS.

The appended reports of the quartermaster and the instructors of practical military engineering and ordnance and gunnery give in detail

the buildings completed and the large amount of work and the many improvements accomplished during the year. The buildings under way are the south wing of the cadet hospital, the kitchen of the cadet mess, and the officers' mess and quarters. The progress made on the first two has hardly been satisfactory, but steps have been instituted to cause the contractors to push this work with more rapidity and it is expected the kitchen and mess buildings at least will be under cover before winter and permit their completion early next summer.

The appropriation made by Congress at its last session insures for the Military Academy an adequate plant for continuing its work. It is a matter of regret that Congress should have seen fit to reduce by over one-sixth the amount estimated as required to properly rebuild the institution. The sum asked for was arrived at only after the whole subject had been carefully considered by competent judges and the estimates submitted were as close as it was practicable to make them. The reduced appropriation has made necessary a revision of the whole project. The work of now determining just what buildings and other necessary improvements can be secured is being prosecuted by a board of officers. The report of this board will be the basis upon which will be prepared the complete plans to be approved by the Secretary of War before building operations are commenced. The personal care the Secretary of War is giving the matter of the selection of the architect insures plans which will preserve all of the old that is worthy, and make it, with the new, an architectural whole befitting the history of the institution and conforming to its superb natural location. It is hardly to be expected that actual building operations can be begun before the coming summer.

CENTENNIAL ANNIVERSARY.

This year has marked the completion of the first century in the life of the Military Academy which was established March 16 and was formally opened July 4, 1802. The close of the academic year was decided upon as the most suitable time for commemorating the anniversary and the occasion was celebrated with appropriate ceremonies on the 9th, 10th, and 11th days of June. Appended hereto is a programme of the exercises. (A feature of the review in honor of the President of the United States on June 11, not in the programme, was the bestowal by him of a medal of honor upon Cadet Calvin P. Titus, of the fourth class, for "gallantry at Pekin, China, August 14, 1900, while a soldier of the Fourteenth United States Infantry." This is the first medal of honor, as far as known to me, to be bestowed upon an undergraduate of the Military Academy and the only one personally presented by the Commander in Chief of the Army and Navy of the United States. Graduation day, June 12, fittingly terminated the exercises.) The diplomas of the graduating class were bestowed by the President; the members of the class were addressed by the Hon. Charles Dick, member of Congress, on behalf of the Board of Visitors, and were welcomed into the Army by the honorable Secretary of War and the Lieutenant-General Commanding.

The anniversary excited universal interest among graduates, who spared no effort to make it successful. Invitations to it were extended to the limit of securable accommodations at and near West Point, and it was a matter of great regret to all concerned that our means in this

respect were not more ample, for the fact denied the Academy the pleasure of receiving and caring for many more of its friends and well-wishers. A large proportion of the invited guests were present to take part in the ceremonies, and cordial letters of congratulation and good will were received from those whose engagements prevented their attendance.

It is not too much to say that the exercises were marked from first to last by cordiality and good will on every part. The addresses of the President and all the speakers gave unstinted appreciation to the record the Academy has made during one hundred eventful years of war and peace. It is also most gratifying to remark the great interest with which the whole country joined in the celebration, as is abundantly shown in the reports of the proceedings by the newspaper press. This is especially pleasing, for the cadets impartially represent every portion of the United States. Their records are bound up with the history of the whole country, and the celebration here was but the focus of rays collected from every region of our broad land.

Preparations are being made to issue a full account of the exercises. It is planned to have the volume include all the addresses delivered and also to contain chapters giving the history of West Point and covering other matters of permanent interest. The Board of Visitors has recommended that a large edition of this work be printed for distribution, and it is hoped their recommendation will meet approval.

If the impressive words of the honorable Secretary of War at the centennial anniversary are accepted, that "The Military Academy is more necessary now than one hundred years ago," general satisfaction should be felt with the institution's prospects in entering upon the second century of its work. The school has for its object the training of cadets for the military service of our country. It is a school for the whole Army—not for any special arm. Its scholastic work covers a range of subjects connected with the many duties the educated American officer is expected and must be prepared to perform, and the ideal of its practical work is the graduation yearly of well-grounded young soldiers loyal to their duty and their country and trained to at once take up all the work of subaltern officers.

Recent Congressional action will provide the school with an equipment for work as perfect in its essential requirements as experience can provide. While many thoughtful people believe the number of cadets could, with advantage to the country, be larger, their number is such as to continue to insure the maintenance of high standards of duty and efficiency in the Army.

Finally, the school's faculty and instructors are composed of earnest, progressive officers, devoted to their work, and in full sympathy with the sentiments expressed by the president of the Association of Graduates in unveiling the tablet commemorating the first century in the Academy's life: "Let us all pledge ourselves to our country that the best efforts of our lives shall be to make the record of the second century even more memorable than that of the first."

Very respectfully,

A. L. MILLS,
Colonel, U. S. Army, Superintendent.

The ADJUTANT-GENERAL UNITED STATES ARMY,
Washington, D. C.

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. John B. Bellinger, quartermaster, quartermaster of the Military Academy and of the post, disbursing officer.

Capt. John M. Jenkins, Fifth Cavalry, commissary and in charge of post exchange.

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

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

Maj. James D. Glennan, surgeon.

Capt. Alexander N. Stark, assistant surgeon.

First Lieut. Albert E. Truby, assistant surgeon.

ACADEMIC STAFF.

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

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.

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

Capt. Godfrey H. Macdonald, Tenth Cavalry, assistant instructor of tactics.

Capt. Fred W. Sladen, Fourteenth Infantry, assistant instructor of tactics.

Capt. Edmund M. Blake, Artillery Corps, assistant instructor of tactics.

First Lieut. Robert C. Davis, Seventeenth Infantry, assistant instructor of tactics.

First Lieut. George T. Summerlin, Fourth Cavalry, assistant instructor of cavalry tactics.

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

Second Lieut. Herman Glade, Fourth Infantry, assistant instructor of tactics and gymnastics.

DEPARTMENT OF CIVIL AND MILITARY ENGINEERING.

Gustav J. Fiebeger, lieutenant-colonel, U. S. Army, 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.

First Lieut. Frederick W. Altstaetter, Corps of Engineers, instructor.

20 REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY.

DEPARTMENT OF NATURAL AND EXPERIMENTAL PHILOSOPHY.

William B. Gordon, lieutenant-colonel, U. S. Army, professor. (March 27, 1901)
Capt. Cornélis DeW. Willcox, Artillery Corps, assistant professor.
Capt. Palmer E. Pierce, Thirteenth Infantry, instructor.
Capt. Richard L. Livermore, Tenth Cavalry, instructor.
Capt. Johnson Hagood, Artillery Corps, instructor.
Capt. William G. Sills, First Cavalry, in charge of observatory and astronomic observations.

DEPARTMENT OF MATHEMATICS.

Wright P. Edgerton, lieutenant-colonel, U. S. Army, professor. (October 7, 1898)
Charles P. Echols, captain, U. S. Army, associate professor. (October 7, 1898.)
Capt. George F. Hamilton, Ninth Cavalry, assistant professor.
Capt. Mortimer O. Bigelow, Eighth Cavalry, instructor.
Capt. Alston Hamilton, Artillery Corps, instructor.
Capt. Robert E. Callan, Artillery Corps, instructor.
Capt. Clarence H. McNeil, Artillery Corps, instructor.
Capt. John E. Stephens, Artillery Corps, instructor.
Capt. John B. Christian, Ninth Cavalry, instructor.
Capt. John K. Moore, Fifteenth Infantry, instructor.
Capt. Claude H. Miller, Twenty-fourth Infantry, instructor.
First Lieut. Francis H. Pope, Second Cavalry, instructor.

DEPARTMENT OF CHEMISTRY, MINERALOGY, AND GEOLOGY.

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

DEPARTMENT OF DRAWING.

Charles W. Larned, colonel, U. S. Army, professor. (July 25, 1876.)
Capt. Charles B. Hagadorn, Twenty-third Infantry, assistant professor.
First Lieut. Harold Hammond, Ninth Infantry, instructor.
First Lieut. Chauncey B. Humphrey, Third Infantry, instructor.
First Lieut. Henry C. Smither, First Cavalry, instructor.
First Lieut. Frank C. Jewell, Artillery Corps, instructor.

DEPARTMENT OF MODERN LANGUAGES.

Edward E. Wood, lieutenant-colonel, U. S. Army, 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. Peter E. Traub, Fifth Cavalry, instructor.^a
Capt. Wirt Robinson, Artillery Corps, instructor.
Capt. Albert E. Saxton, Eighth Cavalry, instructor.
Capt. Frank Parker, Fifteenth Cavalry, instructor.
Capt. William S. Guignard, Artillery Corps, instructor.
Capt. Bertram C. Gilbert, Artillery Corps, instructor.
First Lieut. Harvey W. Miller, Thirteenth Infantry, instructor.
First Lieut. William Kelly, jr., Fourth Cavalry, instructor.
First Lieut. Thomas A. Roberts, Tenth Cavalry, instructor.

DEPARTMENT OF LAW AND HISTORY.

Edgar S. Dudley, lieutenant-colonel and judge-advocate, professor. (July 31, 1901.) (By assignment under act June 6, 1874.)
Capt. Nathan K. Averill, Seventh Cavalry, assistant professor.
Capt. Dennis E. Nolan, Thirtieth Infantry, instructor.
First Lieut. Daniel G. Berry, First Infantry, instructor.
First Lieut. Samuel T. Ansell, Eleventh Infantry, instructor.
First Lieut. Halsey E. Yates, Fifth Infantry, instructor.
First Lieut. Pierce A. Murphy, Seventh Cavalry, instructor.

^a Not yet joined.

REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY. 21

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.
Capt. Joseph Wheeler, jr., Artillery Corps, assistant instructor.

LIBRARIAN.

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

CHAPLAIN.

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

CONTRACT DENTAL SURGEON.

Dr. John H. Hess.

TEACHER OF MUSIC.

George Essigke. (October 15, 1895.)

TROOPS.

BATTALION OF CADETS.

Lieut. Col. Charles G. Treat, captain, Artillery Corps, commanding.

DETACHMENT OF HOSPITAL CORPS.

Maj. James D. Glennan, surgeon, commanding.
Capt. Alexander N. Stark, assistant surgeon.
First Lieut. Albert E. Truby, assistant surgeon.

UNITED STATES MILITARY ACADEMY DETACHMENT OF ARMY SERVICE MEN.

Maj. John B. Bellinger, quartermaster, commanding.
First Lieut. William Kelly, jr., Fourth Cavalry.

UNITED STATES MILITARY ACADEMY DETACHMENT OF 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.

22 REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY.

List of officers at the United States Military Academy.

Name.	Corps or regiment.	On duty at Academy since—
Col. Albert L. Mills.....	Superintendent, captain, First Cavalry.....	Sept. 20, 1898
PROFESSORS.		
Larned, Charles W.....	Professor (July 25, 1876).....	Aug. 28, 1874
Tillman, Samuel E.....	Professor (Dec. 21, 1880).....	Aug. 28, 1879
Wood, Edward E.....	Professor (Oct. 1, 1892).....	Aug. 28, 1889
Fieberger, Gustav J.....	Professor (May 4, 1896).....	May 30, 1896
Edgerton, Wright P.....	Professor (Oct. 7, 1898).....	Jan. 28, 1899
Gordon, William B.....	Professor (Mar. 27, 1901).....	May 2, 1901
LIEUTENANT-COLONELS.		
Dudley, Edgar S.....	Lieutenant-colonel and judge-advocate, professor (July 31, 1901).....	July 31, 1901
Treat, Charles G.....	Commandant of cadets, captain, Artillery Corps (June 15, 1901).....	Aug. 31, 1900
MAJORS.		
Glennan, James D.....	Surgeon.....	June 9, 1902
Bellinger, John B.....	Quartermaster.....	June 5, 1900
CHAPLAIN.		
Shipman, Rev. Herbert.....	Chaplain.....	Apr. 25, 1896
ASSOCIATE PROFESSOR.		
Echols, Charles P.....	Associate professor (Oct. 7, 1898).....	Dec. 27, 1898
CAPTAINS.		
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
Stark, Alexander N.....	Assistant surgeon.....	Jan. 6, 1902
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
Macdonald, Godfrey H.....	Tenth Cavalry.....	Aug. 20, 1902
Hanson, Thomas G.....	Nineteenth Infantry.....	Aug. 20, 1901
Hagadorn, Charles B.....	Twenty-third Infantry.....	Aug. 20, 1902
Sladen, Fred W.....	Fourteenth Infantry.....	Aug. 28, 1900
Willcox, Cornelis DeW.....	Artillery Corps.....	Aug. 21, 1900
Pierce, Palmer E.....	Thirtieth Infantry.....	Nov. 8, 1901
Traub, Peter E. a.....	Fifth Cavalry.....	
Davis, Richmond P.....	Artillery Corps.....	Aug. 29, 1898
Robinson, Wirt.....	do.....	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
Jones, Samuel G.....	Eleventh Cavalry.....	Aug. 31, 1899
Livermore, Richard L.....	Tenth Cavalry.....	Nov. 2, 1899
Palmer, John McA.....	Fifteenth Infantry.....	Aug. 27, 1901
Malone, Paul B.....	Twenty-seventh Infantry.....	Aug. 4, 1901
Franklin, Thomas.....	Subsistence Department.....	Jan. 6, 1902
Jamieson, Charles C.....	Ordnance Department.....	Aug. 21, 1900
Hamilton, George F.....	Ninth Cavalry.....	Jan. 7, 1899
Saxton, Albert E.....	Eighth Cavalry.....	Aug. 21, 1900
Parker, Frank.....	Fifteenth Cavalry.....	Do.
Jervey, James P.....	Corps of Engineers.....	Jan. 4, 1899
Averill, Nathan K.....	Seventh Cavalry.....	Aug. 21, 1899
Bigelow, Mortimer O.....	Eighth Cavalry.....	Aug. 20, 1901
Heiner, Gordon G.....	Artillery Corps.....	Aug. 21, 1900
Hamilton, Alston.....	do.....	Aug. 6, 1900
Wheeler, Joseph.....	do.....	Aug. 20, 1902
Nolan, Dennis E.....	Thirtieth Infantry.....	Aug. 28, 1901
Sills, William G.....	First Cavalry.....	Aug. 21, 1900
Callan, Robert E.....	Artillery Corps.....	Apr. 20, 1899
Guignard, William S.....	do.....	Jan. 7, 1901
McNeil, Clarence H.....	do.....	Aug. 21, 1899
Hagood, Johnson.....	do.....	Aug. 20, 1901
Abernathy, Robert S.....	do.....	Do.
Bowley, Albert J.....	do.....	Do.
Gilbert, Bertram C.....	do.....	Do.
Stephens, John E.....	do.....	Aug. 21, 1900
Christian, John B.....	do.....	Do.
Moore, John K.....	Ninth Cavalry.....	Aug. 30, 1899
Miller, Claude H.....	Fifteenth Infantry.....	Aug. 27, 1902
	Twenty-fourth Infantry.....	Aug. 28, 1902

a Not yet joined.

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

Name.	Corps of regiment.	On duty at Academy since—
FIRST LIEUTENANTS.		
Ladue, William B.	Corps of Engineers	June 17, 1901
Stuart, Edwin R.	do	Aug. 21, 1899
Oakes, John C.	do	Aug. 20, 1901
Truby, Albert E.	Assistant surgeon	Aug. 13, 1902
Miller, Harvey W.	Thirteenth Infantry	Aug. 25, 1902
Berry, Daniel G.	First Infantry	Aug. 29, 1900
Hammond, Harold	Ninth Infantry	Aug. 20, 1902
Davis, Robert C.	Seventeenth Infantry	Aug. 10, 1901
Humphrey, Chauncey B.	Third Infantry	Oct. 18, 1901
Altstetter, Frederick W.	Corps of Engineers	Aug. 20, 1902
Ansell, Samuel T.	Eleventh Infantry	Do.
Yates, Halsey E.	Fifth Infantry	Do.
Kelly, William, jr.	Fourth Cavalry	Oct. 19, 1898
Summerlin, George T.	do	Aug. 3, 1900
Pope, Francis H.	Second Cavalry	Aug. 21, 1899
Murphy, Pierce A.	Seventh Cavalry	Aug. 21, 1900
Smith, Henry C.	First Cavalry	Do.
Roberts, Thomas A.	Tenth Cavalry	Oct. 25, 1901
Koehler, Herman J.	Instructor of military gymnastics and physical culture.	Feb. 1, 1885
Jewell, Frank C.	Artillery corps	Aug. 20, 1901
SECOND LIEUTENANT.		
Glade, Herman	Fourth Infantry	Mar. 14, 1902

W. C. RIVERS,
Captain, First Cavalry, Adjutant.

HEADQUARTERS UNITED STATES MILITARY ACADEMY,
West Point, N. Y., September 1, 1902.

B.—REPORT OF THE COMMANDANT OF CADETS.

WEST POINT, N. Y., *July 29, 1902.*

SIR: In obedience to circular No. 42, Headquarters United States Military Academy, July 14, 1902, I have the honor to submit the following report:

The battalion of cadets, 353 strong, returned from duty in camp at the Pan-American Exposition, Buffalo, N. Y., on August 29, 1901, and immediately went into barracks.

Owing to the large number to be accommodated, a great number of rooms had more than two cadets assigned to them; four of the large rooms in the angle, eighth division, had four cadets assigned to each of them. In the majority of these rooms at least one of the cadets was found deficient. This, I believe, was due in a measure to the fact that increased numbers in a room interfere with the proper preparation for academic duties. This coming September the conditions will be even more congested, and I recommend as a partial relief the fitting up of rooms Nos. 101 and 102 in the academic building, one as a dormitory and the other as a study room, to be occupied by fourth-class men.

The programme of practical military instruction for the entire year is appended hereto, comprising instruction for the fourth class in physical exercise, infantry drill, preliminary target practice, standing gun drill, 3.2-inch siege battery, tent pitching, intrenching, security and information, practice marches, field exercises, dancing, swimming, and on rainy days lectures, covering, in addition to the subjects mentioned, academic regulations, discipline, care of arms and equipment, military etiquette, and all subjects relating to the proper and thorough instruction of a recruit. The proper care and details for equipment, drill, and instruction of new cadets have been thoroughly systematized and reduced to a schedule compiled from past experience, which enables these recruits to be placed in the battalion for duty in about twenty-one days. The details of this were developed by Captain Smith and Capt. J. K. Thompson, who succeeded him as officer in charge of new cadets.

The third-class instruction has included infantry drill complete, rifle practice, light-artillery drill as cannoneers, and preliminary instruction as drivers, siege battery, seacoast artillery, machine gun, tent pitching, intrenching, duties on reconnaissance, practice marches, field exercises, dancing, swimming, and practical military engineering. Lectures have been delivered to this class covering all the subjects on which they have received practical instruction, together with such other subjects as have been deemed advantageous in the matter of discipline, care of horses and material.

The first-class instruction has included practical exercises in cavalry and light artillery alternating Saturdays, whole class attending; practical illustration of actual duties in the field is given and practiced in cavalry and with the light battery the drivers and cannoneers, together with the officers are all cadets. Teams are harnessed and unharnessed by cadets, and practical experience given in crossing streams, going into position in difficult places, and all such practical experience that can be devised. Cadets alternate in driving, so that equal experience is given in all positions. Practice in mountain artillery, using the Vickers-Maxim and the Hotchkiss 3-inch rifle; pack train and practical instruction in packing, using loads of all possible sizes and shapes, as assistant instructors in siege artillery, seacoast artillery and machine guns, and in all the duties pertaining to infantry drill, security and information, tent pitching, intrenching, field exercises and practice marches; rifle practice and revolver practice; voice culture, practice in giving commands. Lectures covering the entire course of instruction and such other subjects as are deemed necessary to supplement practical drill and theoretical instruction prescribed have been given.

Arrangements have been made to add a course covering the handling of the ration and preparation of the food in the field. A model camp kitchen is being constructed within the limits of the cadet camp, with all authorized styles of ovens, camp kettles, dutch ovens, and with the assistance of two or more practical field cooks all cadets will be practically instructed in caring for provisions and preparing them for the consumption of the soldier in the best possible manner.

The corps, numbering 421 men, four classes, went into camp June 5 in order that the barracks might be turned over for the use of visiting graduates during the centennial ceremonies. The programme of drills and exercises during these centennial ceremonies is appended and was carried out. The usual programme of instruction was taken up June 23, as per schedule.

Cavalry.—A complete course has been laid down for cavalry instruction, including outpost and advance and rear guard in addition to the regular drill in riding hall and on the plain. The use of the four reins has made a marked improvement in the behavior and even gait of the horses. The use of the spur has been curtailed, as it is believed the proper way to teach a man how to ride with the spur is to teach him to ride without it. About one horse in ten needs spurs, and only about one soldier in ten knows how to use them. This limiting the use of the spur also has had a marked improvement in the behavior of the horse and the improved seat of the man.

Practice in the use of the pad saddle for park riding, jumping, and playing polo has been had where it would not interfere with the regular instruction, and it has proved interesting and will be of great advantage to the cadet and officer after leaving the Academy. It is believed that thorough instruction in the military seat and the pad saddle improves both. The only difficulty to be surmounted is to teach the student not to confound them. The practice in the jumping chute has been continued with great advantage to both horses and men. This will be supplemented by practice on the steeplechase course on the flats north of the post. It is found absolutely necessary to devote some time in the summer to the preliminary instruction of the third class in riding. The large size of the class, the time available, and the size of the riding hall remaining the same, allow only about half the usual time for their instruction after coming into barracks. The conditions and instruction in this department have been progressive and well performed by those in charge. Every effort has been made to carry out the wishes of the Department as to changes and method of instruction.

Instruction in light artillery has been made as thorough and practical as possible. More attention is being paid to the instruction of cadets as drivers. The horses now are so well trained that the drills can be conducted using the cadets as drivers as well as cannoneers. Instruction in this department has been progressive and thorough. The use of the four reins and leading the off horse by the snaffle rings have been most successful in improving the manners and insuring regular gaits in the horses. A number of horses now used in the artillery are old ones taken from the cavalry. When these become unserviceable and as the new ones are furnished it is hoped that the perfect type of horse may replace them as an object lesson to cadets.

Infantry instruction has been very thoroughly carried out under the senior instructor of infantry. The battalion during the centennial ceremonies was in excellent condition and made an excellent showing on the drill ground. In addition to their precision in marching, they have been thoroughly taught in all the details of extended order and conduct on outpost duty. The senior instructor in this department deserves much credit.

First-class men have acted as company commanders by roster and also performed the duties of adjutant. When not actually in command of companies the regular cadet officers have been sent to drill mounted in order that they might observe defects to better advantage.

Mountain-artillery drill has been thorough and satisfactory, as has also instruction in packing. Instruction in machine gun and practice also has been good. Instruction in seacoast artillery has been confined to an 8-inch breech-loading rifle on a barbette carriage and a 12-inch breech-loading mortar. This instruction was augmented by practice in measuring horizontal angles by the use of a type "B" position finder. I renew my recommendation that a complete seacoast artillery plant should be simulated here for instruction. Target practice has been increased and extended to the first class. This year target practice has also been given to the fourth class up to 300 yards. It is deemed very important that more attention be given to this important branch, and hereafter target practice will be given each of the three summers a cadet is at West Point, taking him through the regular target course if possible, and making each and every man capable of becoming a proper instructor on graduation.

In order to carry this to its full development here, it is important that the target range be increased in length and better facilities be provided for the care of targets and for the accommodation of more men at one time. The range can be extended to 1,000 yards by the railroad being moved to the new proposed position outside Target Hill. Targets should also be arranged at points on the hillside on a much higher level than the firing point, and also arranged at a point far below the firing point in order to give practice under varying conditions. At present, after a rain storm, the

water stands in large puddles on the target range for five and six days thereafter. In order that it may be put in good condition for this and for other purposes, it is recommended that at least 10 inches of good soil be spread over it so that a good sod may be grown thereon.

It is important to stimulate effort in this branch of the profession, and to that end I recommend that authority be given to bestow badges for marksmanship where earned and to make superiority in this, as well as other similar accomplishments, count effectively in class standing.

Instruction in tent pitching and field intrenching has been carried out thoroughly and practically. Selection of positions—defensive and offensive—has been the subject of practical instruction.

Instruction in gymnastics has been carried out according to the prescribed programme. A table showing the average test of the class of 1905 and a comparison with the two classes preceding is given below:

	Dip.	Pull up.	Back.	Legs.	Right forearm.	Left forearm.	Lung capacity.
Beginning.....	4.44	7.24	274.38	462.72	106.06	98.31	257.83
Close.....	7.46	10.25	400.66	620.59	122.76	110.99	277.32
Gain.....	3.02	3.01	126.28	157.87	16.70	17.68	19.49
1903.....	6.42	4.78	71.77	114.05	14.34	11.24	20.01
1904.....	5.94	4.29	79.75	141.09	15.69	12.85	16.34
1905.....	3.01	3.02	126.28	157.87	16.70	13.68	19.49

I earnestly recommend that the physical training of cadets be extended throughout their entire course. At the end of the first year a cadet is in splendid physical condition and I believe it would be subserving the best interests of the service to keep them in this condition even at the sacrifice of some of the time devoted to their mental training. In no other profession does so much depend upon physical perfection as in the military.

Fencing has taken a long stride forward during the last year. This was due to the fact that a representative team from West Point was allowed to compete at the intercollegiate tournament in New York, after having met and defeated teams from Cornell, Columbia, Yale, Harvard, and Pennsylvania by a combined score of 32 to 10. The team won the championship at the intercollegiate meet, and one of its members won the individual championship. This team was selected by a process of elimination from a class of about 60 aspirants.

With the large number of men to train, and the necessity of maintaining the highest standard and having at our command the services of the best obtainable specialists, I earnestly recommend that authority be obtained to employ by contract an assistant instructor in fencing and an assistant instructor in riding and equitation. I renew my recommendations as to the enlargement of the gymnasium and the providing of recreation and club rooms for cadets, as set forth in my report of last year.

The above recommendations are based upon the report of the senior instructor in gymnastics, whose department has been excellently and energetically conducted. If in the plans for the rebuilding of West Point a drill hall sufficiently large and in the immediate vicinity of barracks could be provided, where the whole corps could be given setting-up drill for five or ten minutes daily, I feel that the results would be of the greatest benefit. In this connection I desire to recommend that hereafter no cadet be allowed to remain up after 15 minutes past 10. All the corps, except those on duty as subdivision inspectors, or such other duty requiring extra time, to be in bed and lights out by 10 o'clock.

The discipline of the Corps of Cadets is good. Efforts are being made to make every cadet when on duty and in a responsible position feel a pride in doing his duty to the very best of his ability—not confining himself to a strict interpretation of the letter of the order, but to carry out orders and requirements in the spirit intended.

Investigations have been held from time to time under paragraph 125 of the Regulations for the purpose of ascertaining the conditions as regards hazing and prearranged fights, and in but few instances has there been any indication of a lack of a desire to carry out the present Regulations loyally, consistently, and cheerfully. I have received the willing and effective cooperation of all officers serving with me in the department of tactics and to their efforts is due whatever of excellence that has been attained.

Very respectfully,

CHAS. G. TREAT,

Lieutenant-Colonel, United States Army, Commandant of Cadets.

The ADJUTANT UNITED STATES MILITARY ACADEMY.

28 REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY.

Programme of practical military instruction in the department of tactics, January 1 to December 1.

	Detail.		Months.	Hours.	
	Men.	Class.		A. M.	P. M.
INFANTRY.					
Manual of arms, bayonet exercise, close and extended order.	Whole	1, 2, 3, 4	Mar. 15-Apr. 1		4. 15-5. 30
Tent pitching, outpost, advance and rear guard, intrenching, etc.	Detail	1, 2, 3, 4	Apr. 1-Apr. 30		4. 15-5. 30
Battalion close and extended order, outpost, advance and rear guard, tent pitching, attack and defense, and security and information.	Whole	1, 2, 3, 4	May 1-May 31		4. 15-5. 30
Drill	Detail	3	June 28-July 9	9. 00-10. 00	
Do	Whole	4	July 5-July 9	9. 00-10. 00	
Drill (except Saturdays)	do	1, 3, 4	July 10-Aug. 15	7. 00-8. 00	
Instruction preparatory to tactical exercises (Saturday).	Detail	1	July 10-Aug. 15	7. 30-12. 30	
Do	Whole	3, 4	do	7. 30-12. 30	
Reconnaissance	Rem'nd'r.	3	do	8. 30-10. 00	
Practice marches, field exercises, and minor tactical problems.	Whole	1, 3, 4	Aug. 16-Aug. 28		
Tent pitching, intrenching, etc.	Detail	1, 2, 3, 4	Sept. 1-Sept. 30		4. 15-5. 20
Manual of arms, firing, bayonet exercise, close and extended order.	Whole	1, 2, 3, 4	Oct. 1-Oct. 15		4. 15-5. 20
Battalion drills.	do	1, 2, 3, 4	Oct. 16-Oct. 31		4. 15-5. 20
CAVALRY.					
Equitation—riding pad saddle	Detail	1, 2	Apr. 1-Apr. 30		4. 15-5. 30
Instruction in the school of the trooper, squad, troop, and squadron (6 days).	Whole	1	June 23-July 9	10. 00-12. 00	
Riding	Detail	1	June 23-July 9	7. 00-8. 30	
Do	do	3	do	7. 00-8. 30	
Instruction in the school of the trooper, squad, troop, and squadron.	do	1	July 10-Aug. 15	8. 30-10. 00	
Equitation and riding	do	1, 3	do	8. 30-10. 00	
Instruction preparatory to tactical exercises, Saturday.	do	1	do	7. 30-12. 30	
Equitation—riding pad saddle	do	1, 2	Sept. 1-Sept. 30		4. 15-5. 20
Instruction in the riding hall (every other week day, Saturday excepted).	do	3	Nov. 1-Mar. 15		2. 00-4. 00
Instruction in the riding hall (every other week day, Wednesday and Saturday excepted).	do	2	Nov. 1-Mar. 31		4. 00-6. 00
Riding on the plain and in riding hall, except Saturday and during February, every other day.	do	1	Sept. 1-June 1	11. 00-1. 00	
Saturdays, same, except during February.	Whole	1	Sept. 1-Dec. 1 and Mar. 15-June 1	11. 00-1. 00	
LIGHT ARTILLERY.					
Instruction	Detail	1, 2, 3	Apr. 1-Apr. 30		4. 15-5. 30
Instruction (4 days)	Whole	1	June 23-July 9	10. 00-12. 00	
Instruction preparatory to tactical exercises (Saturday).	Detail	1	July 10-Aug. 15	7. 30-12. 30	
Drill	do	1	do	8. 30-10. 00	
Do	do	3	do	8. 30-10. 00	
Do	do	1, 2, 3	Sept. 1-Sept. 30		4. 15-5. 20
<p>The drills in light artillery included instruction in the school of the driver, fitting of harness, use of the coupling rein, whip, bridling reins, of off horse, instruction to post teams with their carriages, to hitch and unhitch. Employment of light artillery in the field.</p>					
RECRUIT INSTRUCTION—NEW CADETS.					
Physical exercises	Whole	4	June 17-July 5	7. 30-8. 15	
Infantry instruction	do	4	do	8. 45-9. 45	4. 30-5. 30
Preliminary target instruction	do	4	do	10. 30-11. 15	
Lectures, academic regulations, blue book, care of arms and equipments, firing regulations, security, and information.	do	4	do	12-12. 45	

Programme of practical military instruction in the department of tactics, January 1 to December 1—Continued.

	Detail.		Months.	Hours.	
	Men.	Class.		A. M.	P. M.
COAST ARTILLERY.					
Drill.....	Detail	3	Apr. 1—Apr. 30.....		4.15-5.30
Do.....	do.....	1	July 10—Aug. 15.....	8.30-10.00.....	
Do.....	do.....	3	do.....	8.30-10.00.....	
Do.....	do.....	3	Sept. 1—Sept. 30.....		4.15-5.30
Instruction in coast artillery consisted in the care, cleaning, etc., of the rifle and mortar and manual of the same; use of horizontal position finder; use of plotting board to determine position, speed, and direction of moving vessels.					
PACK-TRAIN SERVICE.					
Drill.....	Detail	1,2	Apr. 1—Apr. 30.....		4.15-5.30
Do.....	do.....	1	June 23—July 9.....	7-8.30.....	
Do.....	do.....	1,2	Sept. 1—Sept. 30.....		4.15-5.20
The drills included instruction in the setting up of the aparejo, fitting the same to mules, loading cargo on the mules, and methods of adjusting loads of different kinds.					
MACHINE GUN.					
Drill.....	Detail	3	Apr. 1—Apr. 30.....		4.15-5.30
Do.....	do.....	1	July 10—Aug. 15.....	8.30-10.....	
Do.....	do.....	3	do.....	8.30-10.....	
Do.....	do.....	3	Sept. 1—Sept. 30.....		4.15-5.20
This instruction consisted of nomenclature and service of the piece, maneuver of the horse-gun detachment, firing piece with blank ammunition and ball ammunition on target range.					
MOUNTAIN ARTILLERY.					
Drill.....	Detail	1,2	Apr. 1—Apr. 30.....		4.15-5.30
Drill (4 days).....	Whole.....	1	June 23—July 9.....	10-12.....	
Do.....	Detail	1,2	Sept. 1—Sept. 30.....		4.15-5.20
The drills included instruction in the material, the gun, its ammunition, sights, etc., fitting pack saddles to mules in transportation of the battery by pack mules.					
SIEGE ARTILLERY.					
Drill.....	Detail	1,3,4	Apr. 1—Apr. 30.....		4.15-5.30
Do.....	One-half.....	4	July 5—July 9.....	7-8.....	
Do.....	do.....	4	July 10—Aug. 15.....	8.30-9.30.....	
Do.....	Detail	1	do.....	8.30-9.30.....	
Do.....	do.....	1,3,4	Sept. 1—Sept. 30.....		4.15-5.20
This instruction comprised the service of the piece, nomenclature, and general features of the pieces (rifling breech mechanism), etc., ammunition (weights, velocities), penetration, etc., effects of fire.					
3.2-INCH GUN FOOT DRILL.					
Drill.....	Detail	3,4	Apr. 1—Apr. 30.....		4.15-5.30
Do.....	One-half.....	4	July 5—July 9.....	7-8.....	
Do.....	do.....	4	July 10—Aug. 15.....	8.30-9.30.....	
Do.....	Detail	1	do.....	8.30-9.30.....	
Do.....	do.....	3,4	Sept. 1—Sept. 30.....		4.15-5.20
This instruction consisted of the service of the piece, instruction in aiming, setting the sights for indicated ranges and for indicated deflection, fuze setting, finding the range, and finding the length of the fuze.					
TARGET PRACTICE.					
Rifle.....	Detail	4	Apr. 1—Apr. 30.....		4.15-5.30
Do.....	One-third.....	3	June 23—July 9.....	7-12.30.....	
Do.....	Whole.....	4	July 5—Aug. 15.....		2.00-4.00
Do.....	One-half.....	1	July 10—Aug. 15.....	10.30-12.15.....	
Do.....	Detail	4	Sept. 1—Sept. 30.....		4.15-5.30
Revolver, mounted and dismounted.....	do.....	1	June 23—July 9.....		

30 REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY.

Programme of practical military instruction in the department of tactics, January 1 to December 1—Continued.

	Detail.		Months.	Hours.	
	Men.	Class.		A. M.	P. M.
DANCING.					
Instruction	Detail	3	June 23-July 9...	10. 45-11. 45	.....
Do.....	Whole	4	July 5-Aug. 15...	11. 45-12. 45	.....
Do.....	Detail	3	July 10-Aug. 15...	10. 15-11. 45	.....
Instruction optional.....		1	.....do		2. 30-3. 30
SWIMMING.					
Cadets not qualified.....	Detail	3	June 23-Aug. 15...	12. 00-12. 45	.....
Do.....	do	4	July 5-Aug. 15...	10. 10-11. 40	.....

Lectures were delivered to the first, third, and fourth classes on days unfit for practical work out doors.

C.—REPORT OF THE ENGINEER OFFICER.

WEST POINT, N. Y., July 17, 1902.

Sir: Complying with instructions contained in circular No. 43, current series, Headquarters United States Military Academy, I have the honor to submit the following report of operations of the department of practical military engineering, covering the period July 1, 1901, to June 30, 1902:

CADET INSTRUCTION.

First class.—Instruction was held daily, Saturdays and Sundays excepted, from July 5 to August 12, 1901, from 10.30 a. m. to 12.15 p. m.; during September, 1901, and April, 1902, daily, Wednesdays, Saturdays, and Sundays excepted, from 4.15 to 5.30 p. m. One-half the class reported on alternate drill days. Instruction covered knots, splices, and lashings, spar-bridge drill, fabrication of siege materials, trestle bridges, both with standard and improvised materials; pontoon bridge drill, truss bridges, reconnaissance instruments, laying out of field works, and launching expedients. The course of instruction is regarded as entirely satisfactory.

Third class.—Instruction was held daily, Saturdays and Sundays excepted, from July 5 to August 12, 1901, one-half the class attending on alternate days. Instruction covered the practical use of surveying instruments, chiefly the level and the transit. The large size of the sections, about 70 men daily, with but two instructors and the short hours, did not produce as satisfactory results as were hoped for. Experience has shown that eight men is about all that one instructor can handle properly and the hours of attendance should be much longer.

ENGINEER TROOPS.

From July 1, 1901, to December 24, 1901, Company M, Third Battalion of Engineers, was stationed at West Point, N. Y. On the latter date this company was transferred to Washington Barracks, District of Columbia, and replaced by Company C, First Battalion, formerly Company E. In April C Company was transferred to Fort Leavenworth, Kans., and the United States Military Academy detachment of engineers organized by the transfer of 88 enlisted men from C Company. At the time of the return of C Company from the Philippines it contained a large number of short-service men, there being about 40 discharges by expiration of service during the first six months of the year 1902. This has kept the company and detachment constantly below their authorized strength, and it was with great difficulty that the organizations were kept sufficiently filled to respond to the demands of post guard duty and of engineer drills for cadets. Instruction was held whenever practicable in infantry and engineer drills, and satisfactory results were obtained.

COMPLETE RENOVATION OF LIBRARY BUILDING.

Work was continued on this building, and the transfer of books from the temporary quarters in the academic building was made in October, 1901, at which time the new building was thrown open to use. The purchase of new furniture and special library equipment was completed in January, 1902. The balance of the available appropriation was expended during the spring in pointing up the exterior masonry. The work appears to have been an entire success and the Academy is to be congratulated upon having one of the neatest and most attractive of the small libraries in the United States. Additional book stacks will be needed at an early date to meet the future needs of the building.

NECESSARY IMPROVEMENTS TO THE WATER SUPPLY.

Under an appropriation of \$5,000 for this purpose for the fiscal year 1902 the work of improving and beautifying the surroundings of the new system of waterworks was continued. Slopes in the vicinity of the water house and filter beds were graded

and sown with grass seed, rubbish was removed from the immediate vicinity of the works, the construction of the breast-high wall on the west side was continued to its termination near the spillway, and only the capping for 600 linear feet remains to be put in place. The filling in of shallow bays on the east side was continued, material for the same being obtained by excavating for a roadway designed ultimately to afford a continuous driveway around the new reservoir.

WATERWORKS.

Under the annual appropriation of \$1,200 for this object several breaks in the Round Pond pipe line were repaired, quarters and outbuildings for the Round Pond keeper were kept in order, and materials and supplies for the maintenance of the waterworks purchased. The labor required for washing and replacing the filter sand was also paid from this appropriation.

DEPARTMENT OF PRACTICAL MILITARY ENGINEERING.

The annual appropriation of \$1,500 for this purpose was expended in the purchase of tools, materials, and supplies required for the instruction of cadets in practical military engineering drills and for extra-duty pay of skilled mechanics in the department, carpenter, and blacksmith, and for extra-duty pay of an engineer soldier in charge of the photographic laboratory.

RAISING AND FILLING IN OF PONTON GROUNDS.

Under an appropriation of \$3,000 for this purpose the ponton grounds were raised about 3 feet and the area slightly extended. The work consisted in rebuilding the sea wall, filling in about 1,200 yards of material, and raising and building new foundations for the ponton shed. The work was done by hired labor, assisted by the engineer soldiers, who received practical instruction in connection with the work of improvement.

CONSTRUCTION OF NEW OFFICERS' MESS AND QUARTERS.

Pursuant to orders from headquarters United States Military Academy, the undersigned was appointed superintendent of this work. Ground was broken by the contractor March 17, 1902, and at the close of the fiscal year the subbasement walls had been raised to the level of the first tier of iron work. The progress of the building has not been as satisfactory as it should have been, but present indications point to a more energetic prosecution of the work for the future.

Very respectfully,

JOSEPH E. KUHN,
Captain of Engineers, Instructor of Practical Military Engineering.

The ADJUTANT, UNITED STATES MILITARY ACADEMY.

UNITED STATES MILITARY ACADEMY,
West Point, N. Y., August 16, 1902.

SIR: Complying further with instructions contained in letter dated headquarters United States Military Academy, West Point, N. Y., June 23, 1902, I now have the honor to submit the following report, covering the instruction of the third class in practical surveying for the season of 1902.

The periods of instruction, as fixed by orders, extended from June 23 to July 9, inclusive, daily except Sundays, from 7 a. m. to 12.30 p. m., and from July 10 to August 15, inclusive, daily except Saturdays and Sundays, from 8.30 a. m. to 12.30 p. m., one-third of the class attending daily, or an average attendance of 32 men. The prescribed schedule afforded a maximum of forty drill days, of which three were lost by bad weather, leaving thirty-seven actual drill days. The average number of attendances by each cadet was ten. During the first period of instruction four instructors were available, but during the second period one instructor had to leave at 10.30 a. m. to attend to the first class.

METHOD OF INSTRUCTION.

Instruction was entirely practical, and at no time were cadets requested or advised to do any reading. As theoretical instruction in the department of mathematics had been dropped, the class was entirely ignorant of the subject at the outset, and short

lectures were given daily at first, explaining the construction, adjustments, and use of the instruments. In these lectures blackboard diagrams and the instruments themselves were freely used. Immediately after the lectures the instruments were placed in the hands of the cadets and definite problems assigned which each man was required to perform himself.

Lectures were dispensed with as soon as fundamental principles were understood, and the cadets were at once divided up into squads and given definite tasks with the instruments. During the entire course of instruction questions were constantly put to the cadets by the instructors to test their understanding of the instruments and explanations constantly made to remove all difficulties.

GROUND COVERED.

Instruction was limited to the surveyor's transit and wye level and to the operations usually performed with these instruments. The fundamental principles of construction were made clear, adjustments explained and made, and, finally, practical work with the instruments themselves undertaken. The practical work included such exercises as rod reading, profile leveling, differential leveling, and cross-section leveling with the wye level; angle reading, traversing lines, stadia surveying, and compass reading with the transit. Measurements of lines by chain and tape were involved in many of the exercises and were taught in connection with them.

CONCLUSIONS.

In my judgment the results of the season's work were most satisfactory and fully justify the change in method of instruction. I am convinced that no class at the Academy has ever acquired such a real practical working knowledge of surveying instruments as has the recent third class, and I believe that a majority of the class are as fully qualified in this particular as are the average graduates from technical schools with the degree of civil engineer. Most of the cadets appeared to take strong interest in their work, as is manifested by a number of incidents. One cadet who had missed several attendances desired permission to use an instrument during the afternoon; another stated that he had been reading up on the subject, and from other sources I heard that they were interested in the work. The experience gained will enable me to improve the course materially next season, and I feel confident that still better results can be obtained.

RECOMMENDATIONS.

1. *Attendance.*—During the first period of instruction there was some irregularity of attendance, but later on this improved materially. Since the total number of attendances for each cadet averaged about 10, the loss of one or two drills was quite material. If at all practicable it would be exceedingly beneficial to the course if the class could be divided into rigid sections, so arranged that guard details would not interfere. Such an arrangement would enable the entire class to progress equally and more rapidly.

2. *Instructors.*—Experience has shown that about 8 cadets, formed into three or four squads, is as many as one instructor can manage satisfactorily. A minimum of four instructors should be available for the size of classes now obtaining. As there are but two officers permanently attached to the department of practical military engineering, two additional officers should be provided from some other source. Two courses are open, one to secure the temporary detail of two engineer officers for six weeks in the summer or to secure one officer each from the departments of civil and military engineering and the department of mathematics, the selection of these to be left to the heads of the departments.

3. *Hours of attendance.*—During the first period of instruction the hours of attendance were from 7 a. m. to 12.30 p. m., or five and one-half hours. In my best judgment this is somewhat too long, tiring both cadets and instructors. If it can be arranged to reduce this to four hours, as is the case in the second period, I would recommend that it be done. I would, however, prefer to retain the hours as at present rather than lose any days of instruction.

4. *Rainy days.*—The schedule as at present arranged prevents any instruction in surveying on rainy days. Such days can be utilized to excellent advantage for lectures, and I would recommend that a part of rainy mornings be given to the department of practical military engineering for this purpose.

Very respectfully,

JOSEPH E. KUHN,

Captain of Engineers, Instructor of Practical Military Engineering.

The ADJUTANT, UNITED STATES MILITARY ACADEMY.

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

SIR: In compliance with instructions contained in circular No. 42, current series, Headquarters United States Military Academy, I have the honor to make the following report of the operations of the departments under my charge for the fiscal year ending June 30, 1902:

I assumed the duties of treasurer of the United States Military Academy, quartermaster and commissary of cadets, January 8, 1902, per Special Orders, No. 3, Adjutant-General's Office, January 4, 1902, and Special Orders, No. 5, Headquarters United States Military Academy, dated January 8, 1902, relieving Lieut. Col. Charles B. Hall, Thirtieth Infantry.

TREASURER UNITED STATES MILITARY ACADEMY.

The treasurer of the Academy being "charged with all matters relating to the pay and accounts of the cadets," it is necessary to open an individual account with each cadet, also to keep 28 different accounts, under the following heads given in statement No. 1, which also shows the disbursements and receipts under each account during the fiscal year.

	Dr.	Cr.
Assistant treasurer.....	\$252,656.22	\$248,533.35
Athletic association.....	1,982.00	1,982.00
Balances paid.....	11,740.20	12,179.01
Barber.....	989.85	989.85
Cadet cash.....	18,176.87	18,084.37
Cadet hospital.....	2,065.42	2,065.42
Cadet laundry.....	17,411.46	17,241.99
Cadet store.....	115,758.22	101,133.46
Cadet mess.....	99,711.88	96,703.74
Confectioner.....	34.00	22.00
Corps of cadets.....	266,630.55	269,173.52
Damages, ordnance.....	24.22	24.22
Dancing.....	492.16	492.16
Dentist.....	717.00	717.00
Deposits.....	14,957.54	14,969.79
Dialectic society.....	271.77	433.49
Equipment fund.....	12,172.00	45,928.00
Expressage.....	29.77	29.77
Gas fund.....	1,934.85	2,204.25
Hops and German.....	2,646.73	2,644.81
Miscellaneous fund.....	33.27	36.60
Miscellaneous items.....	26.25	33.27
Oaths (notary public).....	288,544.61	288,544.61
Paymaster.....	17.25	17.25
Periodicals.....	18.00	18.00
Photographer.....	6,543.87	6,543.87
Policing barracks.....	10,000.00	10,000.00
Reserve fund.....	503.85	861.75
Young Men's Christian Association.....	1,175.77	397.02
Washstand, etc., fund.....		

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

36 REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY.

inspection is reported, together with a statement of all debits and credits on different accounts. The last inspection was made July 31, 1902, and reported as follows:

Assets.		Liabilities.	
Assistant treasurer	\$4,021.87	Balances paid	\$488.81
Cadet cash	142.50	Corps of cadets	2,642.97
Cadet laundry	169.47	Deposits	12.25
Cadet store	14,624.76	Dialectic society	161.72
Cadet mess	3,008.14	Equipment fund	33,756.00
Confectioner	12.00	Miscellaneous fund	36.00
Hops and German	1.92	Y. M. C. A.	357.90
Washstand, etc., fund	778.75	Gas fund	269.40
Reserve fund	10,000.00		
Cash on hand	4,916.24		
	37,675.65		37,675.65

QUARTERMASTER OF CADETS.

The increase in the number of cadets in the corps has naturally increased, to a very large extent, the work in this department. More clothing is manufactured and repaired, as is shown by the following table; consequently more tailors, etc., are necessary, thus greatly crowding the already limited shop room. More supplies have to be kept on hand in the store and ware rooms, which were already too small for the purpose. In view of the fact that this congestion will probably be soon relieved by the construction of a new building, these conditions are merely mentioned to call attention to the advisability of completing such building at the earliest practicable moment.

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

	Manufactured.	Repaired.
Dress coats	392	1,001
Overcoats	249	788
Fatigue coats	610	711
Trousers, gray	719	1,970
Trousers, white	2,014	1,990
Trousers, flannel	238	
Trousers, riding	259	180
Trousers, officers'	99	195
Dress coats, officers'	1	9
Overcoats, officers'	3	8
Blouses, officers'	96	56
Walters' jackets	75	8
Shoes		2,895
Socks		19,655
Civilian suits, skirts, etc.		366
Socks tagged		12,473
Miscellaneous, fencing suits, etc ..		174
Chevrons sewed on		309
Service stripes sewed on		677

CADET LAUNDRY.

The increase in the number of cadets has also greatly increased the work of the laundry, as is shown by the subjoined statement. The laundry building is in fairly good condition. The machinery is all in serviceable condition, with the exception of the boiler and engine, appropriations for replacement of which have been granted and are now available. They will be replaced at the earliest possible moment. While the condition of the laundry is fairly satisfactory, the arrangement of the building and the machinery is such that it will never be possible to conduct the operations at the lowest possible cost. To insure this the operations or process of laundering clothes should be continuous. The goods should be delivered at one end of the building and should go straight through without ever crossing or recrossing their trail. From the platform where received it should go to the checking tables, from the checking tables to the sorting tables, from the sorting tables to the washers, from the washers to the wringers, from the wringers to the starchers, from the starchers to the drying rooms, from the drying rooms to the ironers, from the ironers to the delivery boxes, and from these boxes to the wagon.

As the present building has been added to, and new machinery installed from time to time, it is naturally not built nor laid out in such a manner as will permit of the best results being obtained.

While the employees of the laundry were compelled to work overtime last year during the summer months, this year, though the work has greatly increased, the employees have worked less hours per day during this summer than last, owing to the use of improved machinery and systematizing of the work.

For cadets.

Bathing suits.....	5	Sheets.....	34,848
Belts, shoulder.....	45,988	Shirts, white.....	25,483
Belts, sword.....	3,385	Shirts, night.....	18,572
Belts, waist.....	24,387	Shirts, under.....	57,733
Blankets, single.....	163	Socks, pairs.....	58,964½
Coats, fatigue.....	19	Towels.....	87,573
Clothes bags.....	5,859	Trousers, gray.....	102
Collars.....	148,204	Trousers, white.....	37,970
Comfortables.....	145		
Cuffs, pairs.....	118,887½	Total.....	899,894½
Drawers.....	52,975	Total pieces 1900-1901..	794,885
Gloves, pairs.....	59,400½		
Handkerchiefs.....	98,968	Increase over last year.....	105,009½
Pillowcases.....	20,263		

For cadet hospital.

Bandages.....	15	Tablecloths.....	182
Bedspreads.....	317	Towels.....	6,869
Blankets, single.....	17		
Napkins.....	2,749	Total.....	15,831
Pillowcases.....	2,067	Total pieces 1900-1901..	14,470
Sheets.....	2,823		
Shirts, hospital.....	792	Increase during year.....	1,361

For cadet mess.

Aprons.....	4,716	Sheets.....	725
Caps.....	68	Tablecloths.....	8,866
Cloths, cooks'.....	1,599	Table felts.....	368
Jackets.....	4,183	Towels.....	4,239
Napkins.....	78,951		
Overalls.....	95	Total.....	104,153
Pillowcases.....	343		

No record of this department kept last year.

Grand total of pieces laundered, 1,019,878½.

COMMISSARY OF CADETS.

As in the other departments, the increase in the number of cadets has been felt at the cadet mess probably more than in any other department, owing to the poor facilities at present existing for preparing food and caring for same.

The old kitchen having been torn down to make room for the new, commodious, and up-to-date plant now in process of erection, it has necessitated the use of a temporary kitchen, which, to say the least, is exceedingly inconvenient, entailing much extra work and considerable discomfort upon all. However, as all concerned in the cadet mess are aware of the present conditions, due allowances are made for the disadvantages under which the mess is at present operated, and it is hoped that soon a complete modern kitchen, sculleries, pantries, etc., will be completed.

In reading the report of my predecessor for the fiscal year 1902, I find a prophecy made by him which is quite remarkable, more so as, unlike most prophecies, it actually came to pass. To quote: "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 spring the prophecy came true; the waiters struck, but the only persons paralyzed were the strikers. With one exception they left at once and have not

been back since. But little difficulty was experienced in supplying their places promptly, and the cadets did not lose a meal.

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

Beef	pounds..	122,497	Meats, salt	pounds..	8,186
Butter	do....	36,668	Meats, smoked	do....	11,373
Cocoa	do....	2,173	Milk	gallons..	45,905
Coffee	do....	6,335	Potatoes	pounds..	250,754
Eggs	dozen..	12,258	Pork, fresh	do....	16,716
Fish	pounds..	12,262	Poultry	do....	22,973
Flour	do....	107,932	Sugar	do....	73,231
Lamb	do....	58,258	Veal	do....	29,462

To the uninitiated it may seem remarkable that the cadets can consume on an average 0.70 pound of flour, 1.85 pounds of meat, inclusive of fish and poultry, 2 pounds potatoes, one-fourth pound butter, and one-half pound sugar per day per man; but the fact remains that they do eat it, due of course to the tremendous amount of work they accomplish, both mentally and physically, while at the same time they are acquiring their growth.

I find that it has been the custom to refer to the efforts which were made during each year to improve the mess, add variety to the table, and keep down the cost. If success attended these annual efforts, as no doubt was the case, with my knowledge of what the mess is at present I can not help but wonder at the food which the cadets were compelled to eat in the early days of this institution. As it is now, while they are well fed with plain, substantial food and the variety is fair, in view of the fact that Americans are the best fed people in the world I do not consider that the cadets, who are representative Americans, live any too well; but this can not be remedied in view of their rather limited income.

The cost of subsistence of the mess during the last year has been 59.3 cents per day, as against 55.5 cents per day for last year. The increase is due in great measure to the increased cost of food supplies, especially meats, the price of which has increased since January 1, 1902, to date, from 35 to 50 per cent.

Very respectfully,

THOS. FRANKLIN,
*Captain, Commissary,
and Commissary of Cadets.*

Treasurer of the Military Academy, Quartermaster and Commissary of Cadets.
THE ADJUTANT UNITED STATES MILITARY ACADEMY.

E.—REPORT OF THE SURGEON.

UNITED STATES MILITARY ACADEMY,
West Point, N. Y., August 1, 1902.

SIR: In compliance with instructions contained in circular No. 42, Headquarters United States Military Academy, current series, I have the honor to submit the following report of the work of the medical department of the post for the year ended June 30, 1902:

Cases treated as patients in cadet hospital.....	457
Cases treated at soldiers' hospital (in hospital and in quarters)	619
Civilians treated (members of officers' and soldiers' families and servants)	1,814
Number of prescriptions filled at cadet hospital.....	3,549
Number of prescriptions filled at soldiers' hospital and subdispensary	3,890
Number of recruits examined	159

The health of the command has been good. The highest number of admissions to sick report has been for malarial diseases, with injuries and bronchial affections second and third. The question of malaria has been made the subject of a special report under the direction of the Superintendent.

There have been two deaths among the enlisted men of the command, one soldier having been drowned while bathing and one having been killed by a train while walking on the track. There has been no death from disease in the command.

The following surgical operations have been performed:

	Cases.
Curettagc of adenoids (1 cadet, performed by Maj. J. M. Banister; 9 civilians, performed by Capt. A. N. Stark)	10
Operations for appendicitis (1 officer, 5 cadets, performed by Maj. J. M. Banister; 1 civilian, performed by Lieut. George H. R. Gosman)	7
Operation for traumatic cataract of eye (1 soldier, performed by Maj. J. M. Banister)	1
Operation for acute cellulitis of arm (1 soldier, performed by Lieut. George H. R. Gosman)	1
Operations of circumcision (3 cadets, performed by Maj. J. M. Banister; 6 soldiers, performed by Captain Stark)	9
Excision of cysts (1 officer, performed by Lieut. George H. R. Gosman; 1 civilian, performed by Capt. Franklin M. Kemp)	2
Dissection and suture of ruptured tendon of extensor minimi digiti (1 officer, performed by Lieut. George H. R. Gosman)	1
Operations for hernia (2 officers, 1 cadet, 2 civilians, performed by Maj. J. M. Banister; 3 civilians, performed by Capt. A. N. Stark)	8
Excision of hemorrhoids (2 soldiers, performed by Capt. A. N. Stark)	2
Excision of papilloma of anus (1 soldier, performed by Capt. A. N. Stark)	1
Operation for peritoneal abscess of lumbar region (1 cadet, performed by Maj. J. M. Banister)	1
Operation for acute localized peritonitis (1 soldier, performed by Capt. Franklin M. Kemp)	1
Operation for strabismus (1 cadet, performed by Maj. J. M. Banister)	1
Stacke-Schwartz operation (1 soldier, performed by Capt. A. N. Stark)	1
Operation of thoracentesis (1 soldier, performed by Capt. A. N. Stark)	1
Operation of tonsillotomy (1 soldier, 2 civilians, performed by Capt. A. N. Stark)	3
Excision of toe nails (3 cadets, performed by Maj. J. M. Banister; 1 cadet, performed by Maj. W. L. Kneidler; 2 cadets, performed by Maj. J. D. Glennan; 1 civilian, performed by Capt. A. N. Stark)	7
Operations of trachelorrhaphy (7 civilians, performed by Capt. A. N. Stark)	7

40 REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY.

	Cases.
Curettage of uterus (1 civilian, performed by Capt. A. N. Stark).....	1
Operation for varicocele (1 cadet, 1 soldier, performed by Maj. J. M. Banister; 3 soldiers, performed by Capt. A. N. Stark).....	5
Ligature of varicose veins (1 soldier, performed by Lieut. George H. R. Gosman; 1 soldier, performed by Capt. A. N. Stark).....	2
Excision of warts (1 civilian, performed by Capt. A. N. Stark).....	1

J. D. GLENNAN,
Major and Surgeon, U. S. Army.

The ADJUTANT UNITED STATES MILITARY ACADEMY.

F.—REPORT OF THE QUARTERMASTER AND DISBURSING OFFICER.

OFFICE OF THE QUARTERMASTER AND DISBURSING OFFICER,
West Point, N. Y., August 8, 1902.

SIR: In compliance with instructions from your office, per circular No. 42, dated the 14th ultimo, 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, 1902:

QUARTERMASTER'S DEPARTMENT UNITED STATES MILITARY ACADEMY.

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 28, 1901	4,900 tons anthracite coal.
2	Westmoreland Coal Co.....	.....do.....	2,000 tons gas coal.
3	H. C. Swain & Sons.....	June 8, 1901	Tables and clothespresses.
4	Campbell & Dempsey.....	June 17, 1901	2 double sets officers' quarters.
5	J. A. Toscani & Co.....	July 20, 1901	Tile floors, etc., cadet mess hall.
6	The Penn Metal Ceiling and Roofing Co., Limited.	July 22, 1901	Steel ceilings cadet mess hall.
7	American Blower Co.....	Sept. 13, 1901	Installing apparatus for induced draft for heating plant.
8	Nicholson & Galloway.....	Oct. 15, 1901	Replacing roof and gutters, Academy building.
9	James O'Toole, jr.....	Oct. 24, 1901	Construction south wing cadet hospital.
10	Hewitt & Warden.....	Oct. 26, 1901	Electrical conduits south wing cadet hospital.
11	J. A. Toscani & Co.....	Oct. 30, 1901	Marble and tile work south wing cadet hospital.
12	James O'Toole & Son.....	Dec. 17, 1901	Enlarging cadet mess hall.
13	Hewitt & Warden.....	Dec. 24, 1901	Electric work cadet mess hall.
14	John H. Parker Co.....	Feb. 10, 1902	Construction officers' mess and quarters.
15	William Parrott.....	Apr. 12, 1902	Rebuilding north dock.
16	The Neuchatel Asphalt Co.....	May 1, 1902	Asphalt paving cadet hospital.
17	E. A. Matthews.....	May 12, 1902	Retaining wall cadet hospital.
18	.....do.....	June 19, 1902	Plastering academic building.
19	J. H. Gautier & Co.....	June 21, 1902	Floor benches for gas house.
20	George T. Barnes.....	June 23, 1902	Installing leaders academic building.
21	E. A. Matthews.....	June 28, 1902	Steam heating plant, etc., cadet hospital.
22	Steele & Condict.....	.....do.....	Reconstructing ice-and refrigerator cadet mess.
23	Hewitt & Warden.....	.....do.....	Generator and engine cadet mess.

All of the above contracts with the exception of those numbered 1, 2, 4, 5, 6, and 7 are still in force.

The following improvements and repairs have been made:

Five sets double officers' quarters constructed.

New floors in main guardhouse, ventilator in roof, repainting interior and exterior walls and woodwork.

Completing new powder magazine.

New porches built in front of quarters 25, 35, 37, 39, and 41.

Enlarging quartermaster shops by one brick story, excavating under shops, and building basement.

Painting and repairing interior of 18 officers' quarters.

Changing double set officers' quarters into mess building for single officers.

Building and completing dock house, 40 by 80 feet, for storing lime, cement, plaster, and miscellaneous articles.

Converting shed at artillery stable into a blacksmith shop.

Repairing, renovating, and painting interior walls, woodwork, and exterior wall and woodwork of restaurant.

Enlarging dining room of army service barracks, concreting floor, and painting interior walls and woodwork thereof.

Building squad room in quartermaster's stable for the accommodation of 4 men.

Ceiling walls of quartermaster's granary and placing 8 additional window frames and sash in same.

Painting and calcimining interior walls, ceilings, and woodwork in soldiers' hospital.

Painting interior walls, ceilings, and woodwork in cadet hospital, where necessary.

Placing metal ceilings in 2 squad rooms.

Painting exterior walls of brick annex.

Painting iron fence in front of officers' quarters.

Moving, enlarging, repairing, and painting telegraph office.

Replacing 12 rotten board and picket fences by new ones in officers' back yards.

Renovating, plastering, and painting interior and exterior walls of hotel.

Building 150 new tent floors for cadet camp.

Remodeling interior of cadet guardhouse, by removing walls, new stairway, new floors, attic, and painting walls, ceilings, and woodwork.

Changing dentist division and division formerly used by officers into rooms for cadets, and painting and calcimining walls and woodwork.

Painting and calcimining walls and woodwork of 196 rooms in cadet barracks and reflooring 8 halls and 48 rooms.

Built granolithic sidewalk and graded and built new macadamized road from library to memorial hall.

Rebuilt 384 linear feet retaining wall on road to south wharf.

Tiled floors and wainscoting in the northern and southern extensions of cadet mess hall.

Wired cadet mess hall for electric lights.

Removed and replaced roof of academic building; also placed leaders inside of the building.

Damaged plastering in academic building repaired.

One thousand four hundred and twenty-five feet of sewer pipe laid.

One thousand seven hundred feet of gas and water main laid; also connections made to 5 double sets officers' quarters.

Three thousand eight hundred and fifty-six cubic yards dry stone wall laid.

Five thousand eight hundred and fifty cubic yards stone and 405 cubic yards dirt removed at officers' quarters.

One hundred and fifty feet of brick subway for drain pipe constructed.

Steam heat placed in the following buildings:

Quarters Nos. 17, 22, 24, 26, 28, 37, artillery stable, telegraph office, addition to quartermaster's shops and to 2 greenhouses.

New steam pipe placed throughout in cadet guardhouse.

New rooms in cadet barracks equipped with steam.

Induced draft placed in steam plant.

All steam plants on post kept in repair and proper working order.

Floor bench with 6 retorts at gas house renewed and connections to gas holder repaired.

All plumbing kept in repair during the year.

The cemetery was properly cared for during the year.

PUBLIC WORKS UNDER CONSTRUCTION.

North wharf.

Addition to cadet hospital.

Addition to cadet mess.

Officers' mess and quarters.

I desire particularly to invite attention to the necessity for providing ample storage capacity for coal when plans are being made for the enlargement of the post. It would be economy to have a storage capacity capable of storing a year's supply of coal for the entire requirements of the post. For the last two years the increase in the contract price of coal necessitated applications being made to Congress for deficiency appropriations to supply sufficient coal for the needs of the post. This led me to make a very careful and exhaustive study of the prices of the coal trade, and I discovered that, under the present system of determining the prices for coal, a minimum price per ton is set for all deliveries made during the month of April, and that a 10 cent advance per ton is added to this minimum price for deliveries during each successive month, after the month of April, until this minimum price has been increased to 50 cents per ton. The price then remains constant until the following

April. It will be seen from this that a saving of 50 cents per ton can be made in the cost of coal for the post provided the coal is stored in April. At the present rate of consumption of coal at the post this would amount to somewhat more than \$5,000 per year saved in the coal bill of the Government. As coal sheds are merely four walls and a roof, it is readily seen that storehouses with ample facilities for storing a year's supply of coal for the post could be built from two or three years' savings in the coal bill by taking an April delivery of coal.

The number of animals at the post has increased greatly during the past few years and the storage capacity for forage is now insufficient. In order to obtain the most economical prices for forage at this post it is necessary to have delivery made by boat, and in order to do this there must be a storage capacity for forage sufficient to hold six months' supply.

The space for public animals is now not sufficient to stable them properly. It has been necessary in the last few years to make temporary inclosures to protect the animals from the weather. A stable of sufficient capacity should be built in connection with the enlargement of the post.

Statement of the receipts and disbursements under the various heads of appropriations during the year ending June 30, 1901, accompanies this report, marked "A."

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 and remained in force for the whole or more of the year:

No.	Contractor.	Date.	Purpose.
1	Clark & Wilkin.....	Apr. 9, 1901	Hard and soft pine wood.
2	Dickson & Eddy.....	.....do.....	Anthracite coal.
3	Hewitt & Warden.....	June 17, 1901	Conduits for officers' quarters.
4	The American Hay Co.....	Aug. 26, 1901	Hay.
5	Chas. L. Bickerson.....	Sept. 4, 1901	Oats, middlings, bran, and straw.
6	Richey, Browne & Donald.....	May 21, 1902	Steel and iron work for army service barracks.
7	E. A. Matthews.....	June 25, 1902	Road and retaining wall.

All of the above contracts, except those numbered 6 and 7, for steel and iron work at army service barracks and for construction of road and retaining wall, respectively, have been completed. The work on both of the last-mentioned contracts is progressing.

The contract entered into September 26, 1900, for three (3) double sets officers' quarters, was, after five extensions of time, completed November 8, 1901.

Improvements and repairs were made as follows:

- Installed grooming outfit with electric motor at artillery stable.
- Installed motor and built shed for sawing wood.
- Repaired army service barracks damaged by storm.
- Crematory, parts burned out, replaced.

TRANSPORTATION.

In addition to the ordinary demands upon this office for draft purposes, such as hauling building material, freight, and for daily police, transportation was furnished for hauling as follows:

One thousand five hundred and twenty-two tons forage; 8,000 tons anthracite coal; 200 cords wood; material for the repair of 8 miles of roads and paths; material for 420 linear feet of road, and 280 cubic yards stone on road from market to main road; 6,420 cubic yards earth and stone for remodeling cadet camp; 3,894 cubic yards stone for dry walls; 5,967 cubic yards rock excavation and 1,458 cubic yards earth excavation at new officers' quarters; 1,143 cubic yards broken stone for repairs of roads, paths, pavements, etc.

POST CEMETERY.

This cemetery was first laid out in 1816. The total number of interments recorded up to June 30 of this year was 1,198. The number of burials during the past year was 30. The care and maintenance of the cemetery is provided for in annual appropriations for the Academy.

44 REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY.

I desire also to invite attention to the necessity for a receiving vault at the post cemetery, due to the increase in the number of bodies brought from other places for interment in this cemetery:

DETACHMENT ARMY SERVICE MEN, QUARTERMASTER'S DEPARTMENT.

The detachment of army service of the quartermaster's department has now a strength of 150 men, and this number of men would apparently be sufficient for the services which the detachment is required to perform. This is not, however, the case, for, after deducting the men who are on permanent duties, such as janitors, clerks, policemen, teamsters, mechanics, etc., the number of men available for general laboring work averages not more than 12, according to the number of men on sick report. I have found that the men of this organization as a class, if properly handled, render services as good in quality and greater in quantity than the civilian employees, of which a large number are hired during the working season. With the increase which is to be made in the number of buildings at the post, I would recommend that the strength of this detachment be increased to 200 men.

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

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 purchase of gas coal, if appropriation therefor is not sufficient, and for miscellaneous expenses not provided for by annual appropriation of Congress.

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

Coke is sold at \$1.17 per 18 bushels, and tar under contract at 2½ cents per gallon.

During the year 21,442,200 cubic feet of gas were manufactured, an increase of 2,807,300 feet over the preceding year; 4,811,700 pounds gas coal and 6,100 gallons oil were used for this purpose.

In this connection attention is invited to the increased demand upon the gas works, due to increase of quarters and additional demands of public buildings.

The capacity of the holders when full is 83,000 cubic feet. In midwinter the demand daily exceeds the capacity of the holders from 5,000 to 10,000 feet, and will in the near future be greater. The capacity of the present plant should be increased and, as stated in my report last year, if done, will be but a temporary expedient. To meet the demands for illumination on the post a much larger plant, placed in another location, is an urgent necessity.

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

SPECIAL CONTINGENT FUND, UNITED STATES MILITARY ACADEMY.

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

The following were expended for repairs:

Hotel.....	\$1,593.09
Stable.....	70.00
Store.....	170.13

In addition to the above this fund is used 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, U. S. 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, 1902.

	Date.	Current and ordinary expenses.	Miscellaneous items and incidental expenses.	Buildings and grounds.	Memorial Hall.	Total.
CR.						
Balance on hand fiscal year—						
1899	July 1, 1901	\$36.00				\$36.00
1900		1,990.40	\$70.69	\$3,539.68		5,600.77
1901		4,705.20	2,270.21	33,215.32		40,190.73
Deficiency June 30—						
1901		3,313.25	656.60	12,614.78		17,584.63
1902		1,458.75	3,376.00	77,072.85		\$1,907.60
Memorial Hall					\$4,000.55	4,000.55
Received since fiscal year—						
1901				1,000.00		1,000.00
1902		78,246.80	31,525.00	120,000.00		229,771.80
Urgent deficiencies, June 30, 1902.		20,000.00	3,500.00	6,000.00		29,500.00
Total		109,750.40	41,398.50	254,442.63	4,000.55	409,592.08
DR.						
Deposited fiscal year 1900	June 30, 1901	1,940.64	70.69	1,155.55		3,166.88
Disbursed fiscal year—						
1899	do	18.00				18.00
1900		49.76		2,381.61		2,431.37
1901		2,808.60	2,224.77	33,440.60		38,473.97
Deficiency, June 30—						
1901		2,945.23	656.25	13,571.85		17,173.33
1901-2		164.43	3,168.11	36,891.53		40,224.07
1902		71,873.93	30,751.79	105,528.99		208,154.71
Urgent deficiencies, June 30, 1902.		17,184.53	2,291.58	5,999.96		25,476.07
Balance on hand fiscal year—						
1899		18.00				18.00
1900				2.52		2.52
1901		1,896.60	45.44	774.72		2,716.76
Deficiency, June 30—						
1901		368.02	.35	42.93		411.30
1901-2		1,294.32	207.89	40,181.32		41,683.53
1902		6,372.87	773.21	14,471.01		21,617.09
Urgent deficiencies, June 30, 1902.		2,815.47	1,208.42	.04		4,023.93
Balance on hand, Memorial Hall					4,000.55	4,000.55
Total		109,750.40	41,398.50	254,442.63	4,000.55	409,592.08

J. B. BELLINGER,
Major and Quartermaster, United States Army,
Disbursing Officer, United States Military Academy.

WEST POINT, N. Y., August 8, 1902.

B.—Statement of funds pertaining to the Quartermaster's Department, United States Army, received and disbursed during the fiscal year ending June 30, 1902.

	Regular supplies.	Incidental expenses.	Transportation of the Army.	Barracks and quarters.	Clothing and equipage.	Miscellaneous receipts.	Total.
CR.							
June 30, 1901—							
Balance on hand	\$16,324.63	\$300.32	\$467.49	\$10,313.10			\$27,405.74
Received since	48,481.82	11,671.35	7,230.85	28,450.37	\$566.18		96,400.57
Sales to officers	5,898.60		6.22		521.51		6,426.33
Sales at auction						\$2,228.95	2,228.95
	70,705.25	11,971.67	7,704.56	38,763.47	1,087.69	2,228.95	132,461.59
DR.							
Expended	54,391.69	11,475.44	6,960.78	36,468.71	87.00		109,883.62
Deposited	6,175.42	291.13	473.71	423.10	521.51	2,228.95	10,113.82
Balance on hand June 30, 1902	10,138.14	205.10	270.07	1,871.66	479.18		12,964.15
	70,705.25	11,971.67	7,704.56	38,763.47	1,087.69	2,228.95	132,461.59

J. B. BELLINGER,
Major and Quartermaster, U. S. Army.

WEST POINT, N. Y., August 8, 1902.

46 REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY.

C.—Statement of receipts and expenditures pertaining to the special contingent fund, United States Military Academy, from July 1, 1901, to June 30, 1902.

Balance on hand July 1, 1901		\$2,410.95
Amounts received:		
From rents of—		
West Point Hotel	\$2,000.00	
Post-office	187.50	
Stables	250.00	
Store	125.00	
	<hr/>	2,562.50
From sale of—		
Gas	5,995.24	
Coke	427.07	
Coal tar	441.79	
Miscellaneous	390.53	
	<hr/>	7,254.63
Total to be accounted for		12,228.08
Disbursed		<hr/> 11,166.03
On hand June 30, 1902		<hr/> 1,062.05

J. B. BELLINGER,
Major and Quartermaster, U. S. Army,
Treasurer Special Contingent Fund, United States Military Academy.

WEST POINT, N. Y., August 8, 1902.

G.—REPORT OF ORDNANCE OFFICER.

WEST POINT, N. Y., *July 5, 1902.*

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, 1902.

LABORATORY.

The routine work at the laboratory by the ordnance detachment includes the care and preservation of all the service and obsolete ordnance, trophy guns, etc., at the post, the preparation of ammunition and blank cartridges for cadet practice and drill, the manufacture of fireworks, and such repairs and other work connected with guns, carriages, small arms, ammunition, and ordnance supplies generally as may be necessary in the practical instructions of cadets in their various duties.

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

The trophy and other guns stored in that part of old Fort Clinton which is now used for the enlarged cadet camp have been moved out of the way and properly skidded about Kosciusko's monument, along the parapet of the fort, and on Trophy Point.

The woodwork about the laboratory buildings has been painted during the year, gas has been introduced into the workshops and extended in the barracks, and a bathroom for the enlisted men has been installed.

The new magazine, situated in an isolated position near the old Crows Nest intake, well removed from any other buildings, having been completed, all fixed ammunition for field and mountain guns has been moved from the old magazine and placed in the new one.

The addition to the strength of the detachment referred to in report of July, 1901, was made by the Chief of Ordnance, and it has consequently been possible to perform satisfactorily all the varied duties required.

MUSEUM.

The very interesting and valuable collection of trophy flags, guns, small arms, etc., from the Revolutionary, Mexican, Civil, and Spanish wars which have been presented to the Military Academy are exhibited, together with models of service cannon, machines, small arms, projectiles, etc., and minor curios, in a large room set aside for the purpose in the Academy building.

The officers of the army in the Philippines and on the China relief expedition have recently contributed to the museum many small arms, cannon, mortars, bolos, swords, Chinese umbrellas and banners, 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, however, of sufficient interest to be shown.

In addition to its value for purposes of instruction, the museum is one of the most interesting features of the post to the thousands of citizens who visit it every year, and more room should be provided for this valuable collection at the earliest possible date, to permit the proper exhibition of all the articles on hand.

All the models and trophies have been kept in good order, and woodwork repaired during the year. Seven large cases have been added to contain small articles and permit their exhibition without risk of loss or breakage.

MODELS.

Several new models have been made at the laboratory during the year, viz: One 10-inch breech mechanism, one-fourth size, such as is used on the latest type sea-coast guns; one complete Pond Tool Company planer, one-sixth size; one 8-inch rifle, wood, model 1888 modified, one-tenth size, arranged to show how the gun is built up, and models of boring, reaming, and rifling tools.

In addition there have been furnished by the Ordnance Department for use in connection with cadet instruction—

Two Weldon range finders.

One 15-pounder cartridge case and primer, sectionalized.

Two 3-inch shrapnel, front-bursting charge; parts fitting loosely, so that they can be taken apart to exhibit construction.

Two 3-inch shrapnel, base-bursting charge; parts fitting loosely, so that they can be taken apart to exhibit construction.

Two sets caliber .30 cartridge cases and primers showing each step of manufacture from the blank to the finished product.

Two combination fuses, 15 seconds, latest model, sectionalized; sets of samples of all the parts of this fuse.

Two samples boards of the various powders in service.

The most important and expensive machines, tools, etc., used in cadet instruction are habitually kept in the museum on convenient stands, protected by glass tops; others in the instructor's office. All are moved to the section rooms, temporarily, as needed.

NEW ORDNANCE MATERIAL.

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

Four Vickers-Maxim mountain guns, caliber 75 millimeters, with carriages, pack outfit, ammunition, and implements, complete.

Two 5-inch B. L. siege rifles, model 1898.

One Hotchkiss mountain gun, for percussion firing, caliber 1.65 inches, with carriages, pack outfit, ammunition, and implements complete.

One artillery store wagon, with implements, etc., of latest model.

One forge and battery wagon combined, with implements and equipments, of latest model, and all required stores, such as powder, small arms ammunition, ball and blank, shrapnel, shell, targets, material for repairs, etc.

Very respectfully,

F. E. HOBBS,

Captain, Ordnance Department U. S. Army, Instructor Ordnance and Gunnery.

The ADJUTANT UNITED STATES MILITARY ACADEMY.

H.—REPORT OF LIBRARIAN.

UNITED STATES MILITARY ACADEMY,
West Point, N. Y., August 20, 1902.

SIR: I have the honor to submit the following report upon the library for the year ending June 30, 1902, which year makes a distinct and most important epoch in the history of the Academy library. The renovation and remodeling of the building were completed in the early autumn of last year, and all the books were returned thereto by the 12th of October. About this time, owing to a desire and favorable opportunity to return to his native city and country, Dr. Otto Plate tendered his resignation as assistant librarian to take effect on the 1st of November. Dr. Plate's eight years' work at the library was most conscientiously and faithfully performed, and the results of his services were most valuable to the Academy.

Upon Dr. Plate's departure, the Academy and library were most fortunate in securing for the place the temporary services of Dr. E. S. Holden, a very distinguished graduate of the Academy of the class of 1870, formerly director of the Washburn Observatory, Madison, Wis.; president of the University of California, and for ten years a director of the Lick Observatory, a man of international scientific reputation with much experience in bibliographic and library work and endowed with unusual aptitude and fondness for such work.

Since November 1 the library work has been entirely along lines suggested by Dr. Holden, with results so remarkable, beneficial, and promising that I consider it incumbent upon me to refer to some of the most important operations completed or inaugurated by him.

IMPROVEMENTS IN THE CATALOGUE.

The card catalogue of books has heretofore consisted only of one author's and one subject card. The defects of this system are very evident when it is considered that every single general subject always embraces many subtitles, and many of these subtitles appear under different subjects; it is therefore evident that all the information included under each subtitle can only be had by examining this title under every subject. Facility in such examination is therefore enormously increased; in fact, for the average student the examination is only made possible by cataloguing the subtitles. This extension of the card catalogue involves a vast amount of work, but it has already been begun and in time will be extended to all military works and other important technical and professional works. In most cases the number of cards referring to a subject will be increased from ten to thirty times, but the catalogue will be correspondingly more valuable to all seeking information, and will become a useful guide to the reading of cadets. The system of book classification itself is not satisfactory, and a new one for the purely military books has been found necessary. Such system has already been worked out by Dr. Holden and will be considered for adoption by the library committee. Inspired by Dr. Holden's desire for improving the catalogue, a number of officers on duty at the Academy have, under his direction, accomplished a lot of very valuable work.

A complete authors index of the Journal of the Military Institution of the United States and of the Journal of the United States Cavalry Association has been made by Lieut. T. A. Roberts. A similar index to the United States Artillery Journal has been made by Capt. C. de W. Willcox. An index to the publications of the United States Infantry Association has been made by Lieut. R. C. Davis. The valuable bibliography, complete from 1895, regularly published by the United States Artillery Journal, classified by subjects and containing reference to all articles of interest printed in the 138 journals received at the school, has been extracted, pasted on cards, and added to our library card catalogue of subjects. This work was done by Capt. A. J. Bowley, and it makes available the reference of every important article of military literature since 1895. Lieutenant Jewell has under preparation a card list of the important battles of history, giving the name and date of each. Each card of this list will be eventually supplemented by others referring to the books in which the battles are described. This battle catalogue will be of the

greatest use to officers as well as cadets. A card catalogue of the published writings of all graduates of the Academy, 1802-1902, is being made by copyists and is well under way, already containing about 10,000 cards. The mere addition of the letters "U. S. M. A.," with date of graduation, to all existing authors cards referring to graduates, has made these cards much more instructive to cadets. A card catalogue of portraits of army officers which occur in the library books has also been begun.

Each department of instruction at the Academy has accumulated a special library pertaining to the work of that department. Dr. Holden has proposed an arrangement by which all these books will be referred to in the card catalogue of the main library, so that this catalogue will be a directory to all the Academy books. He has also devised and commenced to execute a system for making available the large number of pamphlets in the library.

The library has commenced the collection and arrangement of material relating to the history of each and every regiment of the Army, and much new and valuable material touching the early Army and Academy has been acquired or located by Dr. Holden. The most important of this historic material which will soon be put at our disposal is the large manuscript collection of Gen. J. G. Swift, United States Military Academy, 1802. Several important manuscripts relating to the war of the Revolution and to the civil war have been acquired by gift, and valuable diaries of soldiers of the Revolution, of the civil war, and of the Cuban and Philippine wars. By the courteous assistance of the Bureau of Military Information, Adjutant-General's Office, a complete account of the present state of military schools of foreign countries has been gathered and put in order.

ARRANGEMENT OF THE LIBRARY.

The library space consists of the main room devoted to the general purposes of the library and also affording a quiet reception room for the friends of cadets. The east room of the first floor is the general reference library, the west room of this floor the periodical room. The west room of the second floor is the chart and map room, and the east room of this floor is the officers' study. It is proposed by Dr. Holden that these two second-floor rooms shall afford ample and ready facility for any military studies that officers may wish to undertake—in fact, that they shall be a valuable bureau of military information. He has wisely economized the lower halls of the library for displaying maps of any locality or current interest and for installing bulletin boards upon which are displayed, for the benefit of cadets, the latest matters of executive or administrative interest as to the Academy or post, or other important general information likely to be of interest to them.

THE BOOKS OF THE LIBRARY.

One of the most important defects of our library, to which Dr. Holden immediately called attention, was the large number of duplicates or old editions of books, in many cases made worthless by newer editions. These obsolete volumes occupied much space, and the library committee adopted a plan suggested by Dr. Holden for retaining in the library any such books as are useful and for disposing of the others in the most advantageous manner. One result of this action was the beginning of a post library for the enlisted men by transfer thereto many of the duplicates or obsolete volumes; others have been advantageously exchanged, others returned to the Government Printing Office, and some presented to the library of the Artillery School, the final result being a great gain of book space in the Academy library.

NEW BOOKS FOR THE LIBRARY.

Dr. Holden proposed in May, 1902, an arrangement, at very reasonable expense, with the Book Lovers' Library, of Philadelphia, by which the library of the United States Military Academy keeps 125 of their new books constantly on its shelves. This arrangement was approved by the library committee and operates most excellently. It saves our library the expense of buying many of these books which are of only temporary interest, and which would uselessly encumber our shelves in a short time after purchase, and yet affords our library the opportunity to examine the current light literature and select such as is considered worth preserving.

LOANS AND PRESENTS TO THE LIBRARY.

Through the wide acquaintance and the personal efforts of Dr. Holden a number of important loans and valuable gifts have been made to the Academy, among which

may be mentioned two portraits of Washington by Gilbert Stuart, one loaned by Hon. John Cadwallader, of New York, and the other by Miss Anna Warner—a portrait of Professor Warner, chaplain of the Academy, 1828-1838, loaned by Miss Warner; historic books and paintings given by Mr. S. P. Avery, New York; United States Order Books of the Army of Virginia presented by Lieut. F. H. Pope; many insignia presented by military or historic societies, etc. A list of presents to the library during the year is hereto appended.

The important general work of the library alluded to above and a very large number of minor but beneficial improvements have been instituted or completed without other regular assistance than the enlisted attendants. Especial mention should be made of the faithful services of these regular attendants. Corporal Maher has written and submitted for revision a large number of cards for books added to the collection, only a few of which have required change or addition. Private Brownley has been faithful and conscientious in attention to his instruction, and Private Lamont has worked intelligently and willingly in keeping the building in good condition.

On the 27th of July last, under the law enacted by the last Congress providing for a Librarian of the Academy, Dr. Holden was appointed to the position. In the annual report of the Superintendent of the Academy for 1901 the following full statement was made as to what should be the relations, conditions, and functions of the library:

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 taught 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.

One important suggestion of this statement can and I recommend that it be immediately carried into effect, to wit, that instructions through lectures by the librarian be given to each class of cadets as to how to use a library, how to acquire information from books in the quickest and most thorough way, how to record it in a systematic manner when acquired so that it may ever after be available, and how best to keep a record of the current professional literature that may need to be consulted in the near future.

52 REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY.

With the satisfactory library building, and with the able and experienced head who has been selected for librarian, I feel confident that the library will properly meet in a surprisingly short time the ends hoped for and so clearly outlined in the above extract from the Superintendent's report.

S. E. TILLMAN,

Professor of Chemistry and lately Librarian.

The ADJUTANT UNITED STATES MILITARY ACADEMY.

List of gifts to the library, November 1, 1901, to July 1, 1902.

Name of donor.	Books.	Pam- phlets.	Photo- graphs.
American Museum of Natural History, Central Park, New York	12	2	
American Ordnance Company	1		
Army and Navy Club, London	1		
Artillery School, Fort Monroe, Va		1	
Association of Graduates, United States Military Academy		50	
Athenaeum Club, London	1		
Avery, S. P. (11 engravings, 1 etching.)	1	1	20
Bailey, Prof. W. W.	1		
Banister, Dr.		1	
Barnum, Captain			Album.
Bellinger, Maj. J. B. (1 manuscript.)	11		
Budge, Señor E., commissioner-general, Chile, Pan-American Exposition	44	54	
Butler, Charles H.		1	
Bayard, Henry	1		
Cavalry Club, London	1		
Century Association, New York	1		
Cormack, Professor, London University	3		
Daniels, G. H.	1		
Davis, Geo. W., brigadier-general	1		
Davis, Lieut. R. C.	1		
Department of Engineering, United States Military Academy (3 maps)			
Department of tactics, United States Military Academy	1		
East India United Service Club, London	1		
Farley, Col. J. P.		2	
Fiebigler, Col. G. J., professor, United States Military Academy		2	
Fish, Hamilton		1	
Gardiner, A. B.		1	
Gorham Manufacturing Co.		1	
Gosman, Dr.		3	
Greene, Gen. F. V., 1870	2	1	
Guards Club, London	9		
Hastings, Hugh, State historian	1		
Headquarters United States Military Academy	2		
Historical Publishing Co., Toronto, Canada	4		
Holden, Edward S.	1		
Huse, Colonel. (Moses Runles's discharge.)	10	21	1
Jacoby, Harold		1	
Judson, W. V., captain, U. S. Army		1	
Knickerbocker Club	1		
Knight, Hon. E. C.	1		
Larned, Colonel	5		
Lazelle, Col. H. M.	1		
Library, State of New Jersey	1		
Louison, Henry, first sergeant, Company B, Battalion of Engineers (MSS. record of B Company from July 5, 1899, to Dec. 23, 1901).			
Long Island Historical Record	5		
Loubat, Duc de	3		
McCurdy, Richard A.		1	
Main Commandery M. O. L. L. U. S.	1		
Military Society War of 1812 (set of its insignia).			
National Academy of Sciences, Washington	4		
Naval and Military Club, London	1		
New England Society in the city of New York	1		
New York Charity Organization Society	1		
New York State Museum	1		
Peabody Museum, Harvard University	1		
Pezet, F. A.	7	5	
Pope, Lieut. F. H., U. S. Army	1		
Confederate flag. 3 newspapers.		1	
Quartermaster-General, Washington	1		
Quartermaster, United States Military Academy	1		
Randolph, C. F.			
Rassieur, Leo (1 medal, G. A. R.)		1	
Reeve, Capt. H. M.			1

REPORT OF SUPERINTENDENT U. S. MILITARY ACADEMY. 53

List of gifts to the library, November 1, 1901, to July 1, 1902—Continued.

Name of donor.	Books.	Pam- phlets.	Photo- graphs.
Rogers, William E	1		
Rosengarten, J. G		2	
Ryder Co. (2 maps.)			
Searight, James	1		
Secretary Royal Engineers Institute, Chatham	2		
Schurman, President	2		
Secretary Association of Graduates, United States Military Academy	59		
Selers, William & Co.	1		
Shipman, Dr.		1	
Sladen, F. W., captain, U. S. Army	1		
Smithsonian Institution	5		
Society Army of Santiago (set of its insignia)			
Thompson, Maj. G		1	
United Service Club	1		
University State of New York	8	10	
Watson, B. F., brevet-colonel, U. S. Volunteers	1		
White, Jas. T., & Co		1	
Wood, C. E. S	1		
Wilson, General		1	
Washington:			
Adjutant-General's Office, U. S. Army	4	1	
1 medal of honor.			
1 map.			
Coast and Geodetic Survey	1		
14 maps.			
1 atlas.			
Census Office	1	53	
50 Congressional documents.			
Department of Agriculture	2	26	
Department of the Interior	3		
2 atlases.			
Department of Justice	1		
Department of State	2		
Division of Insular Affairs	6	22	
2 maps.			
Engineer Department		10	
1 diploma.			
5 maps.			
Hydrographic Office	4	2	
6 charts.			
Library of Congress	5	3	
Light-House Board	2		
Patent Office	5		
Navy Department	3		
Signal Office	1		
14 maps.			
Subsistence Department	5		
1 atlas.			
Treasury Department	1		
United States Geological Survey	1		
1 map.			
United States Naval Academy		2	
War Department	13		
Weather Bureau		7	

I.—VISIT TO BATTLEFIELD OF GETTYSBURG.

DEPARTMENT OF ENGINEERING,
UNITED STATES MILITARY ACADEMY,
West Point, N. Y., April 19, 1902.

SIR: I have the honor to submit the following report on the visit of the first class to the battlefield of Gettysburg in connection with the study of the strategy and tactics of that campaign and battle.

When notice was received that the Secretary of War had decided to give the senior class the privilege of visiting one of the great battlefields of the civil war, Gettysburg was selected for study, on account of its military and historic importance. In order to enable the students to approach this campaign with an intelligent comprehension of its significance, a course of instruction was undertaken, embracing the operations of the entire civil war from its beginning. This course was carried out under my personal charge, by lecture and by recitation, and covered all the operations of the armies of the Potomac and Northern Virginia from their organization to the beginning of the Gettysburg campaign.

At this point the instruction which had been general in its character became more detailed, and was divided into the following phases: The military situation at the close of the Chancellorsville campaign, including the organization of the armies of the Potomac and Northern Virginia, as well as their reserves in the Northern departments of Virginia, Washington, and the Middle Department, and in the Southern departments of Richmond, West Virginia, and North Carolina; the military features of the topography of the theater of operations limited by the Susquehanna and Rappahannock rivers and the Allegheny Mountains; the plans of operation proposed by Generals Lee and Hooker; the movement from the Rappahannock and the concentration at Gettysburg; the battles of July 1, 2, and 3; the retreat and pursuit to the Potomac River.

The time spent on the study of the pamphlet on the campaign and battle covered a period of about a month. During this time lectures were delivered and extracts were read from the Rebellion Records and "Battles and Leaders of the Civil War" to further elucidate special features. This did not interfere with the regular course of study, as only a few cadets reported daily for this course of study and the remaining members of the class joined me only after they had recited in the section room.

The department was fortunate in having complete sets of the official and other maps of this field, as well as a relief map showing the position of the troops on each of the successive days. When the day arrived for the visit each member of the class was not only familiar with the topography of the field, but was able to give the movement of each army corps by brigades during the entire battle.

On the evening of April 10, the entire class (with the exception of one cadet absent on sick leave) the instructors, Captain Jervey, Lieutenant Stuart, and myself, took the train at West Point, and at 10:30 a. m. on the 11th reached the town of Gettysburg. Here we were met by Colonel Nicholson and Majors Robbins and Richardson, of the Gettysburg Park Commission, who had kindly taken it upon themselves to secure tourist wagons for the party, as well as the services of Captain Long, who was familiar with all the details of the field and battle.

The general plan of examination was to visit, first, the ground upon which the Confederate forces deployed for the attack, and from that point examine the Union lines and the topography of the ground which separated them. Next, to examine the lines along which the Union forces deployed for defense and the character of the intervening ground from their point of view. Then to follow on the ground as closely as possible the operations of each day's engagement, attention being especially paid to the effect of the topography in influencing the movements on a battlefield, and the lines of deployment of regiments, brigades, divisions, and corps. This field is particularly suited to such a study, as the lines of deployment are well marked by monuments, and the field, while generally open, is intersected by ravines, ridges,

woods, walls, fences, etc., which greatly affected the tactical operations of the opposing forces. In the examination of the minor operations we were greatly assisted by the members of the Commission, who had taken part in the battle and took great pains to explain the details of the operations in which they assisted.

The morning of the first day was spent on the field north of Gettysburg, where, on the 1st of July, the corps of Generals Reynolds and Howard and Buford's cavalry were attacked by the Confederate divisions of Generals Heth, Pender, Rodes, and Early. The afternoon of that day was spent in visiting East Cemetery Hill, where General Howard's corps was attacked by General Early on the evening of July 2, and Culp's Hill, where General Slocum's corps was engaged with General Johnson's division on the evening of July 2 and on the morning of July 3.

The second day was spent in visiting the principal field of operations of July 2 and 3, where the corps of Generals Hancock, Sickles, Sykes, Sedgwick, and the cavalry of General Kilpatrick were engaged with the corps of Generals Longstreet and Hill. The study of the field was completed on the afternoon of April 12, and immediately thereafter the class took the train for West Point, which was reached on the morning of April 13. Time did not permit a visit to the field of the cavalry engagement of Generals Gregg and Stuart; its location was, however, pointed out to the class and its relation to the other operations explained.

The visit to this field was found even more valuable to the cadets of the first class than was at first thought probable. The anticipation of the visit greatly stimulated their interest in all their military studies; this interest was evinced on the field by their numerous and intelligent questions. The time and space problems in tactics, as well as the effects of local topography, were impressed upon them in a manner impossible in simple description or even by the aid of the best maps.

In conclusion I would state that the sleeping cars furnished by the Quartermaster's Department were wholly satisfactory and were moved by the railroad company on schedule time.

Respectfully,

G. J. FIEBEGER,
Professor of Engineering.

The ADJUTANT UNITED STATES MILITARY ACADEMY.

K.—THE CENTENNIAL OF THE UNITED STATES MILITARY ACADEMY.

ALUMNI DAY, MONDAY, JUNE 9, 1902.

THE AFTERNOON.

A luncheon for the alumni in the assembly room of the Memorial Hall at half after 1 o'clock.

A meeting of the alumni in the Thayer room of the Memorial Hall at 3 o'clock.

THE ORDER OF THE EXERCISES.

- I. The meeting called to order by the oldest living graduate as temporary chairman.
- II. A prayer.
- III. Music.
- IV. An address by the president of the association of graduates.
- V. Music.
- VI. An address by a veteran of the Mexican war.
- VII. Music.
- VIII. Addresses by veterans of the civil war.
- IX. Music.
- X. An address by a veteran of the Spanish-American war.
- XI. Music—The Star Spangled Banner.
- XII. The benediction.

THE EVENING.

An illumination of the Memorial Hall and the vicinity at half after 8 o'clock.

A reception by the president of the association of graduates and Mrs. Schofield, the Superintendent of the Military Academy, and Mrs. Mills, in the Memorial Hall from 9 until 11 o'clock.

FIELD DAY, TUESDAY, JUNE 10.

THE MORNING.

The annual athletic contests between the four classes of the Corps of Cadets on the parade at 10 o'clock.

THE AFTERNOON.

A baseball game between Yale and West Point on the parade at 3 o'clock.

THE EVENING.

The graduation ball in the Memorial Hall at 9 o'clock.

CENTENNIAL DAY, WEDNESDAY, JUNE 11.

THE MORNING.

- I. Military honors to the President of the United States at 10 a. m.
 - (a) An escort to the quarters of the Superintendent of the Military Academy by the Corps of Cadets.
 - (b) A review of the Corps of Cadets immediately thereafter.
- II. A reception to the President of the United States by the Superintendent of the Military Academy at his quarters after the review.
- III. A luncheon for the invited guests, the alumni, and former officers and cadets of the Military Academy, in the assembly room of the Memorial Hall, at 1 o'clock.

THE AFTERNOON.

The invited guests, the alumni, and former officers and cadets of the Military Academy will assemble at the quarters of the Superintendent at a quarter to 3 o'clock to escort the President of the United States to the centennial exercises in the Memorial Hall.

The order of march.

- I. The Corps of Cadets.
- II. The President of the United States.
- III. The invited guests.
- IV. The alumni, staff, and former officers and cadets of the Military Academy.

The centennial exercises.

- I. A prayer by the chaplain of the Military Academy.
- II. Music.
- III. An address of welcome to the invited guests by the Superintendent of the Military Academy.
- IV. Music.
- V. The introduction of the President of the United States by the Superintendent of the Military Academy.
- VI. Music—Hail to the Chief.
- VII. An address by the President of the United States.
- VIII. Music—My Country.
- IX. The unveiling of the commemorative tablet by the president of the association of graduates of the Military Academy.
- X. Music.
- XI. An address by the orator of the day.
- XII. Music.
- XIII. An address by the Secretary of War.
- XIV. Music—The Star Spangled Banner.
- XV. The benediction.

The "graduating parade" will take place at 7 o'clock.

The evening.

A banquet in the mess hall at half after 8 o'clock.
There will be fireworks and an illumination of the post during the banquet.

GRADUATION DAY, THURSDAY, JUNE 12.

THE MORNING.

The graduation exercises of the class of 1902 will take place at half after 10 o'clock.

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