

ANNUAL REPORT

OF THE

BOARD OF VISITORS

OF THE

UNITED STATES MILITARY ACADEMY,

MADE TO

THE SECRETARY OF WAR,

FOR

THE YEAR 1872.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1872.

**OFFICERS AND PROFESSORS ON DUTY AT THE UNITED STATES MILITARY
ACADEMY SEPTEMBER 1, 1872.**

Name.	Rank and regiment.	Duties.
Thomas H. Ruger.....	Colonel Eighteenth Infantry.....	Superintendent.
Emory Upton.....	Lieutenant colonel First Artillery.	Commandant of cadets.
Albert E. Church, LL. D.....	Professor of mathematics.....	
Robert W. Weir, N. A.....	Professor of drawing.....	
Henry L. Kendrick, LL. D.....	Professor of chemistry, &c.....	
Patrice de Janon.....	Professor of Spanish.....	
Peter S. Michie, Ph. D.....	Professor of philosophy.....	
George L. Andrews.....	Professor of French.....	
John Forsyth, D. D.....	Chaplain, and professor of ethics and law.	
Junius B. Wheeler.....	Professor of engineering.....	
Thomas A. McParlin.....	Surgeon, medical department.....	Post surgeon.
Joseph S. Conrad.....	Captain Second Infantry.....	Assistant instructor of infantry tac- tics.
Robert H. Hall.....	Captain Tenth Infantry.....	Adjutant.
Tully McCrea.....	Captain First Artillery.....	Quartermaster.
John Egan.....	Captain Fourth Artillery.....	Assistant instructor of artillery tac- tics.
Oswald H. Ernst.....	Captain Engineers.....	Instructor of practical military engi- neering.
Charles W. Raymond.....	do.....	Assistant professor of philosophy.
Alfred E. Bates.....	Captain Second Cavalry.....	Assistant instructor of cavalry tac- tics.
John R. McGinniss.....	Captain Ordnance.....	Instructor of ordnance and gunnery.
Alexander M. Miller.....	Captain Engineers.....	Assistant professor of engineering.
Jenkins A. Fitzgerald.....	Assistant surgeon medical depart- ment.	Assistant post surgeon.
James W. Reilly.....	First lieutenant Ordnance.....	Assistant professor of ethics and law.
John P. Story, jr.....	First lieutenant Fourth Artillery.	Assistant professor of mathematics.
Edward H. Toften.....	First lieutenant First Artillery...	Assistant professor of drawing.
James M. Marshall.....	First lieutenant Fourth Artillery...	Treasurer.
Samuel M. Mills.....	First lieutenant Fifth Artillery.....	Assistant instructor of tactics.
Thomas H. Handbury.....	First lieutenant Engineers.....	Acting assistant professor of engi- neering.
John C. Mallory.....	First lieutenant Engineers.....	Acting assistant professor of engi- neering.
John F. Stretch.....	First lieutenant Tenth Infantry..	Assistant instructor of tactics.
William F. Reynolds, jr.....	First lieutenant First Artillery.....	Acting assistant professor of mathe- matics.
Sedwick Pratt.....	First lieutenant Third Artillery ..	Acting assistant professor of draw- ing.
John M. K. Davis.....	First lieutenant First Artillery...	Assistant instructor of tactics.
Thomas H. Barber.....	do.....	Assistant professor of French.
John E. Greer.....	Second lieutenant Ordnance.....	Acting assistant professor of mathe- matics.
Edgar W. Bass.....	Additional second lieutenant En- gineers.	Acting assistant professor of phi- losophy.
Frank Heath.....	Second lieutenant Third Artillery.	Acting assistant professor of mathe- matics.
David D. Johnson.....	Second lieutenant Fifth Artillery.	Acting assistant professor of chem- istry, &c.
David S. Denison.....	do.....	Assistant professor of Spanish.
Samuel E. Tillman.....	Second lieutenant Engineers.....	Assistant professor of chemistry, &c.
Daniel M. Taylor.....	Second lieutenant First Artillery.	Acting assistant professor of French.
William P. Duvall.....	Second lieutenant Fifth Artillery.	Acting assistant professor of mathe- matics.
Henry L. Harris.....	Second lieutenant First Artillery ..	Acting assistant professor of mathe- matics.
John G. Bourke.....	Second lieutenant Third Cavalry..	Acting assistant professor of French.
David A. Lyle.....	Second lieutenant Second Artillery.	Acting assistant professor of phi- losophy.
Edward S. Holden.....	Second lieutenant Engineers.....	Assistant instructor of practical military engineering.

MEMBERS OF THE BOARD.

Appointed by the President.

General H. T. REID, (President,) Iowa.
Colonel JAMES L. SCUDDER, (Secretary,) Tennessee.
Rev. CHARLES HODGE, New Jersey.
Hon. LOUIS S. LOVELL, Michigan.
Rev. CHARLES W. ELIOT, LL. D., Massachusetts.
GEORGE A. THRUSTON, Maryland.
HENRY R. PIERSON, New York.

Appointed by the President of the Senate.

Hon. SIMON CAMERON, United States Senator from Pennsylvania.
Hon. ALEXANDER RAMSEY, United States Senator from Minnesota.

Appointed by the Speaker of the House of Representatives.

Hon. WILLIAM HOUGHTON, Representative from Michigan.
Hon. AARON A. SARGENT, Representative from California.
Hon. SAMUEL S. COX, Representative from New York.

EXTRACT FROM ACT OF CONGRESS APPROVED AUGUST 8, 1846, AMENDED BY ACTS OF
MARCH 16, 1868, AND FEBRUARY 21, 1870.

That the President be authorized to appoint a Board of Visitors to attend the annual examination of the Military Academy, whose duty it shall be to report to the Secretary of War, for the information of Congress, at the commencement of the next succeeding session, the actual state of the discipline, instruction, police, administration, fiscal affairs, and other concerns of the institution: *Provided*, That the whole number of visitors each year shall not exceed seven: *Provided further*, That no compensation shall be made to said members beyond the payment of their expenses for board and lodging while at the Military Academy, and an allowance, not to exceed eight cents per mile, for traveling by the shortest mail route from their respective homes to the Academy, and back to their homes. And in addition to the other members of the Board of Visitors to be appointed by the President, according to law, to attend the annual examination of cadets at the United States Military Academy, there shall be on every such board two Senators, to be designated by the Vice-President, or President *pro tempore* of the Senate; and three members of the House of Representatives, to be designated by the Speaker of the House of Representatives; such designations respectively to be made at the session of Congress next preceding the time of such examination; and the Senators and Members so appointed shall make full report of their action as such visitors, with their views and recommendations in regard to the said Military Academy, within twenty days after the meeting of Congress, at the session next succeeding the time of their appointment.

ANNUAL REPORT
OF THE
BOARD OF VISITORS OF THE U. S. MILITARY ACADEMY.

WEST POINT, *June*, 1872.

SIR: The Board of Visitors to the United States Military Academy, for 1872, has the honor to submit the following report upon "the actual state of the discipline, instruction, police, administration, fiscal affairs, and other concerns of the institution."

DISCIPLINE.

The discipline of the Academy has been excellent under the administration of the present Superintendent and Commandant, partly because of the good judgment and soldierly qualities of these officers, and partly because of the firm support which the War Department has wisely given to the Superintendent and the Academic Board. The Visitors believe that, while the discipline is strict and severe, as is essential in a military institution, it is also, in the main, just and judiciously adapted to the ends in view.

The Board cordially approve of the discontinuance, within the last two years, of the system of exacting from cadets pledges on oath or on honor with regard to their conduct. Such pledges are objectionable, as giving occasion for all sorts of demoralizing casuistry, and as being confessions of weakness on the part of the authorities which are singularly inadvisable in a military school. Pledge

In general, the Visitors believe that the punishments used in the Academy are duly proportioned to the offenses for which they are inflicted; but they find the punishment of summary dismissal too severe to be made by regulation the only legal punishment for the offense of harassing or molesting new cadets, an offense which may have many degrees of heinousness. Excessive or unreasonable punishments give grounds for legitimate complaints, and do more harm than good to the discipline of any place of instruction. There are, it is true, means of avoiding the injustice which the literal enforcement of the regulation numbered 122 would not infrequently cause; the Superintendent may recommend to mercy a cadet who has committed an offense which is really venial; or the War Department or the President may modify the Punish

sentence imposed by regulation ; but inasmuch as the bare existence of a regulation which is frequently disregarded is an evil in itself, and inasmuch as the interference of authorities outside of and above the Academy is to be deprecated as inevitably injurious to discipline unless such interference is very rare and very judicious, the Visitors respectfully suggest that there be added to Regulation 122 the phrase employed in several other regulations relating to offenses, namely : " or be otherwise less severely punished, according to the degree of his offence."

It has seemed to the Board of Visitors that some of the cadets needed to be reminded by the precept and example of all their officers and teachers that violence of speech is as unbecoming an officer and a gentleman as any other sort of brutality, and that it would be well to have it understood that in selecting young officers for duty at the Academy, the Department looks for men who are as quiet as they are firm, and as self-controlled as they are energetic.

By Regulation 174, as amended March 15, 1872, reveille is at 5 o'clock a. m. from June 1 to September 1, at 6 o'clock a. m. from November 1 to March 1, and at 5½ o'clock a. m. the rest of the year, the signal to extinguish lights being at 10 o'clock p. m., during the whole year. The great majority of the cadets go to bed again after reveille and the first inspection of rooms, and get from an hour and a half to three-quarters of an hour of stolen sleep. This violation of the regulation has been winked at for many years, because the young men actually need more sleep than the regulation gives them. The Visitors respectfully suggest that the regulation be so changed as to allow every cadet at least eight hours of unbroken sleep at all seasons of the year.

The best medical opinion is opposed to the use of the eyes in reading or study immediately after waking and before breakfast, and to violent exercise of any sort before breakfast. In deference to this opinion the Board suggests that the hour of breakfast should be placed as soon as practicable after reveille.

INSTRUCTION.

Terms of admission.—The character of a school is greatly influenced by the quality of the young persons who are admitted to its lowest class, and the requisitions for admission go far to determine this quality. The Military Academy is very disadvantageously situated in this regard ; its requisitions for admission are by no means as high as those of the leading scientific and polytechnic schools of the country ; indeed, there are many high schools and academies which demand more for admission than is demanded at West Point. The average age of the candidates for admission is eighteen years and eleven months, (see Appendix I,) but these adult men are only examined in reading, writing, arithmetic, English grammar, and the elements of geography and American history. Many boys of twelve could sustain the examination with ease. During the past five years the number of rejections for incompetency, at even this

admission examination, has been from 20 to 50 per cent. of the whole number of applicants, in spite of the fact that the candidates have recently had notice of their provisional appointments several months before the examination. The professors and instructors who deal with the lowest class of the Academy, testify that they have to teach the greater part of the class how to study. Much time is necessarily devoted to this preliminary training.

Opinions may differ as to the real causes of this very low intellectual condition of the majority of the young men who gain admission to West Point, or as to the inevitableness of this condition of things, but as to the fact there can be no dispute. It is a fact which affects the whole course of study at the Academy, and it is necessary that an examining board should bear it constantly in mind, or they will be liable to do injustice to the teachers and the methods of the Academy.

The reason for keeping the requisitions for admission to West Point low, is that there are parts of the country in which a poor man's son can get no instruction in any but the most elementary subjects. This argument, though reasonable within certain limits, need not be pushed to the extreme of allowing the most ignorant State or Territory to set the standard for all the rest of the country. Five years ago the requisites for admission were increased by adding "a knowledge of the elements of English grammar, of descriptive geography, particularly of our own country, and of the history of the United States," to the earlier requisites, which were simply reading, writing, and arithmetic. It is never wise to make sudden changes of great amount in the requisites for admission to an educational institution. The Board of Visitors, therefore, while it joins the many preceding boards which have reported upon this subject in deploring the present low standard of admission, would only recommend that the standard be raised in a slow way by successive small steps. One step would be the addition to the requisitions of a portion of elementary algebra, namely, the ground rules, fractions, and simple equations; a second step would be the addition of quadratic equations to this first requisition of algebra; a third step would be the addition of plane geometry.

It is in the power of the Academic Board to make much or little of the requisitions actually prescribed by Congress. The Visitors observed, with satisfaction, that it was the purpose of the Academic Board to make the admission examination searching and effective within its very limited range.

It is a legitimate and wholesome effect of a national school, to which admission is obtained through a well-conducted examination of reasonable range, that it stimulates, and to some extent regulates, the lower schools of the country. The lower schools, both public and private, exert themselves to fit boys well for such examinations. Every boy who succeeds in passing creditably the Government examination, wins a prize for the school which fitted him, as well as for himself. The strong

effect of the college examinations for admission upon the preparatory schools and academies of the country illustrates this principle.

With their present requisitions for admission, the Military and Naval Academies of the United States can have no stimulating effect on any school in the country above a primary school.

The Board of Visitors respectfully commend this important subject of the terms of admission to the consideration of the Department; they feel that the future welfare of the Academy depends largely upon the wise solution of this problem. The Academy must keep up with the general educational progress of the country; its raw material will go far to determine the nature of its product.

Course of instruction.—The great merit of the course of instruction and discipline at West Point, taken as a whole, is, that it cultivates in an eminent degree the virtues of obedience and self-denial, the sentiment of honor, and the sense of duty. The next conspicuous merit of the Academy is the thoroughness with which all the instruction is given, both in the theoretical and practical branches. In the theoretical studies this thoroughness is obtained at the sacrifice of range and variety, but under the peculiar circumstances of the Academy this sacrifice is wise. It is a third merit of the Academy that it sends out lieutenants who are competent to command in all three arms of the service; they have learned the duties of a soldier in the artillery, cavalry, and infantry. This is not the system of European military schools, but it is, nevertheless, a system singularly well adapted to the peculiar needs of the people and Government of the United States. The Board of Visitors desires thus to express its hearty recognition of these conspicuous merits of the Military Academy before it makes any criticisms upon the course of instruction, or indicates the points at which improvements seem possible.

The Visitors are decidedly of the opinion that the study of Spanish should be discontinued, and that the time now allotted to Spanish should be given to French. The argument which caused the introduction of Spanish into the course was, that we border upon a people who speak Spanish, and have many relations with the South American Spanish-speaking nations. The arguments which determine the opinion of the Board of Visitors are, first, that, as there is not time for the cadets to learn two foreign languages well, French is vastly the best language for them to study, because it is still the most available language for communication with foreigners, and because it has a very important military literature, which Spanish has not; secondly, that the mental training obtained by studying one language thoroughly is more valuable than that gained in getting a smattering of two languages; thirdly, that, as a matter of fact, the cadets can get only a very slight acquaintance with Spanish in the short time allotted to that study; there is no possibility of teaching them to speak or write the language, and the little they learn of it must soon be forgotten by the great majority of the cadets.

If this recommendation of the Board of Visitors should be adopted, French would be studied every day for two years. A substantial knowledge of the language can be gained in that time, even by young men who have had no other linguistic training. At the end of the second year, however, French is absolutely dropped, according to the present programme of studies. In order to keep up the knowledge of the language once acquired, the Visitors recommend that a French text-book be used in some important department, both in the third and fourth year of the course.

French

The Board of Visitors, like many preceding boards, has remarked among the cadets a lack of ease and precision in the use of English. Rhetoric is not studied, and there are no exercises in English composition. Under the existing terms of admission, the graduate of the Military Academy may never have received any adequate instruction in the use of his native language. In addition to what he has been taught at the Academy itself, the graduate of the Academy is only expected to know what is taught in primary schools or in the lower classes of grammar schools. If he knows anything else, he has gone beyond the official requirements. In this condition of things the Board recommends that in the event of the time allotted to French being increased by the suppression of Spanish, the department of French be instructed to require of the cadets frequent written translations from French into English, and to exact careful attention to the correctness and elegance of the English and to neatness of penmanship.

The Visitors think better of such exercises than of English compositions, believing that it is a vicious practice for young men to write upon subjects about which they really have no ideas. The Board of Visitors further recommends the vigorous and incessant enforcement of accuracy of language and distinctness of enunciation on the part of the cadets at all the ordinary recitations.

Clear speech

The Board respectfully reports to the Department that the equipment of the departments of natural philosophy and chemistry is wholly inadequate, and that the mode of teaching in both these departments needs reconsideration and modification. Under the existing programme of studies, the cadet spends one-half of all the time he has for study, in the first two years of his course, upon the mathematics. The professor of mathematics is a man of great ability, force, and experience, and he comes in contact with every cadet every week for two years from his first entrance into the Academy. Under these circumstances the mode of teaching and the mode of recitation in all their details, including the use of the chalk and pointer at the blackboard, which are prescribed, and wisely prescribed, in the mathematical department, are carried into the teaching of the sciences of observation and experiment, where they are by no means so appropriate. There is a peculiar discipline to be got from the proper study of chemistry, mineralogy, acoustics, optics, and electricity, a discipline which is not like the discipline to be derived from mathe-

Apparatus

matics, and it is that peculiar discipline which the cadets should get from these studies; for chemistry and physics, when taught with book and blackboard, as if they were mathematics, are not as useful for training as the mathematics themselves. Indeed, it would be hard to contrive a more unprofitable and odious employment for the mind than committing to memory the facts of chemistry out of a manual. To commit a Latin grammar to memory would be better training, and more useful in every point of view. In order that chemistry and physics should yield to the student's mind their own peculiar fruits, they must be studied by observation and experiment on the part of the student. Only in this way can he acquire any just conceptions of the processes, methods, and results of these sciences. The student must handle the tools himself and observe for himself. If the bare facts of chemistry and physics are unprofitable husks, the theories and hypotheses of those sciences are not much better mental food when separated from the experimental data on which they rest. Indeed, when an inexperienced and defenseless student has a physical theory or speculation impressed on his mind by authority, as if it were a natural fact, he suffers a mental injury, which is always serious and sometimes irreparable. These views concerning the right mode of teaching the natural and physical sciences are by no means new. They are admitted in the practice of the best scientific schools and colleges. In order to equip working laboratories in chemistry and physics, it would be necessary to spend a moderate sum, say \$5,000, in each department, in providing the necessary fixtures and apparatus. Several excellent examples of such working laboratories may be found among the private incorporated colleges and polytechnic schools of the country.

It is, moreover, very desirable that the collections of illustrative apparatus in chemistry and physics should be gradually increased. A moderate annual appropriation in each department would be better than a large sum in one year and nothing in succeeding years.

While they make these suggestions about the mode of teaching chemistry and physics, the Board of Visitors do not mean to cast any imputation upon the efficiency of the excellent professors in these departments, and they desire expressly to guard against the possible inference that they would like to have more time devoted to these sciences. The Board is of opinion that enough time is allotted to these subjects; they only suggest a different use of the time now given to them.

The thought that it will be hard to find young Army officers, graduates of West Point, who would be competent laboratory assistants to the accomplished professors of chemistry and natural philosophy, in giving the new kind of instruction suggested, brings into view a general difficulty in the organization of the Academy which well deserves the attention of the Department. All the instructors at West Point, apart from the professors, are young graduates of the Academy, who, after a few years of service on the frontier or on the sea-board, come back to West

Point to act as teachers for four or five years under the active supervision of the professors. These young men have had the West Point training, and, as a rule, no other systematic instruction. Being under the orders of the permanent professors, they cannot strike out new ways of their own, even if they should devise any, which is highly improbable. They have no opportunity of enlarging their experience and increasing their knowledge and skill by studying at universities or special schools, either of this country or Europe. In short, the Military Academy breeds in and in. The inherent conservatism of the system is only intensified by the frequency with which the Superintendent and Commandant are changed. The Board of Visitors content themselves with calling the attention of the Department to this danger, which they feel to be a grave one.

The three departments of mathematics, natural and experimental philosophy, (which includes mechanics,) and military and civil engineering, form, in some important respects, a sequence or progression. It is important that the several subjects which constitute this series should occupy the proper proportion of time, and that the transition from one subject to the next higher should be made at the right moment, and without waste by unnecessary repetitions in one department of what has really been taught in another. The Board has received the impression that some time might be saved in the last two years of the course if the relations of the three departments above mentioned should be thoroughly re-examined by the Academic Board, and they believe that the present is a propitious time for such a revision, because two young professors have lately been appointed, who would bring fresh minds to the work. The professorship of military and civil engineering is greatly overloaded. One professor, however able, is insufficient for such a wide range of both theoretical and practical knowledge, particularly as the same professor is called upon to give all the instruction in grand tactics, strategy, and the art of war. It is greatly to be desired that military and civil engineering should be separated, and a professorship be established for each subject; but so long as the requisitions for admission remain at their present deplorably low level this improvement cannot well be made, because the course is full, and the cadets now give as much time to the general subject of engineering as can fairly be claimed for it, with due regard to the other equally pressing demands upon their attention.

At present the instruction given at the Academy in applied mechanics and engineering is necessarily elementary and incomplete. There are several scientific and polytechnic schools in the country in which much ampler courses of instruction in applied mechanics, and civil, topographical, and mechanical engineering are provided than are given at West Point, or can be given there so long as the starting-point of the Academy remains what it is.

The drawings made by the several classes of the Academy were care-

fully inspected by the Board of Visitors. The free-hand drawings prove that a certain number of the cadets are capable of learning to use the pencil, pen, and brush with skill, but that for the majority of the cadets the time spent in free-hand drawing is wasted in spite of the assiduity and genius of the professor of drawing. With the greater number of his pupils, neither the eye nor the hand can be trained. The attention paid to mechanical drawing, taking the whole course through, seemed insufficient. The general mechanical execution of the last drawing made by the first class—a drawing of a half-front of fortifications, with dry ditches and horizontal site—was not very creditable. In view of these facts, the Board ventures to suggest that the drawing of the second year (third class) be confined to lettering, plotting, perspective, shades and shadows, topography, and other kinds of mechanical drawing, and that the drawing of the third year (second class) be dispensed with as a required exercise. To fill the void thus made, the Board further ventures to suggest that each cadet be required to study some one of the following subjects: free-hand drawing, chemistry, (laboratory work,) experimental philosophy, (laboratory work,) or French, the value to be given to either subject, in forming the merit-roll, being 100. The cadets would probably choose with reference to their own tastes and capacities. This measure would give a chance of training assistant instructors in those four departments who would have attainments somewhat beyond the ordinary requirements.

The Board were surprised to find that several weeks of the second year (third class) were devoted to ordinary penmanship at the expense of drawing. In the opinion of the Board, a fair handwriting ought to be insisted upon at the admission examination, and no time should be given, in the programme of studies at the Academy, to the practice of penmanship.

The cadets get but very little practice in the use of surveying-instruments. In the opinion of the Board, more time might wisely be devoted to field-work in surveying and leveling. The actual use of the instruments gives excellent training of eye and hand, and the theory of the subject is made familiar by practical applications.

The observatory of the Academy is not in working order. The domes, shutters, and other appurtenances are out of repair; the equatorial is an old instrument, and is not in good condition; and certain alterations in the building have rendered it less fit than it originally was for the use of an observatory. If the Government proposes to maintain at West Point an astronomical observatory as a station for scientific labor, a liberal appropriation for building and equipping a new observatory will be necessary, and thereafter an annual appropriation for defraying the expenses of incessant observation. If, on the other hand, the Government simply desires to fit a few engineers every year for work upon the surveys which are likely to be in progress for many years to come in this country, a moderate expenditure upon the present observatory

*Drawing**selection of standards**Penmanship**Surveying**Observatory*

would make it an available though not a convenient place of practice in the common astronomical and geodetical observations. With the present programme of instruction in the Academy, it is impossible to give the cadets any practical instruction, either in astronomy or geodesy, and the Board does not perceive that the observatory has any direct function in regard to the cadets. *action only*

In all the departments of instruction in the Academy, a great deal of time is given to reviews or repetitions as the cost of thoroughness. This fact is well illustrated by the following figures obtained from the three leading departments:

Mathematics.

Fourth class.	Algebra—57 lessons in advance, 47 in review during the year.	}	Best section, 28 lessons in advance, 27 in review during the year.
	Trigonometry.	}	Best section, 15 lessons in advance, 12 in review during the year.
Third class.	Analytical geometry.	}	Best section, 24 lessons in advance, 21 in review during the year.
Diff. and integ. calculus.	}	Best section, 41 lessons in advance, 47 in review.	
			Surveying . . .
Right-line drawing—18 days.	}	Best section, 14 lessons in advance, 16 in review.	
	}	Best section, 36 lessons in advance, 34 in review.	
	}	Best section, 14 lessons in advance, 9 in review.	

Natural philosophy.

Second class.	}	Mechanics—55 lessons in advance, 61 in review, 6 to 8 lectures.
		Acoustics—8 lessons in advance, 6 in review, 1 to 2 lectures.
		Optics—16 lessons in advance, 13 in review, 4 to 6 lectures.
		Astronomy—30 lessons in advance, 31 in review, 2 to 4 lectures.

Military and civil engineering.

First class.	}	Fortification and stone-cutting—9 lessons in advance, 5 in review.
		Civil engineering—34 lessons in advance, 36 in review.
		Field-works—20 lessons in advance, 14 in review.
		Permanent works—17 lessons in advance, 10 in review.
		Outposts—art of war—15 lessons in advance, 9 in review.
		Drawing—24 days.
		Lectures—10 days.

Every class in the Academy is divided, for the recitations in each subject, according to proficiency in that subject. The sections into which each class is divided in each subject do not all accomplish the same amount of work. The poorest scholars pass over, in a somewhat inferior manner, from two-thirds to three-quarters of the ground covered by the best scholars. It is the custom to omit the hardest problems or passages of the text-book with the poorer sections. That the ratio of the attain- *Thomson*

ments of the worst section to those of the best can be kept so high, illustrates the efficiency of the means of compelling study which are in use at the Academy.

merit roll

The Board of Visitors has been much impressed with the prominence which the merit-roll has in the minds of both teachers and cadets. It is an important function of the professors to teach the assistant instructors (who are constantly changing) how to "mark," and to watch the daily recitations of the cadets with a view to estimating accurately the true standing of each individual. The cadets are allowed to get their "marks" every week, and so to keep account of their own and each other's progress. Emulation is thus made constant and keen. Every cadet, therefore, whether a good scholar or bad, works under an intense external pressure.

Prof's out each

The Board of Visitors feel some doubt as to the after effects of this system. The training given at West Point is but a good foundation, on which the young graduate must himself build, if he hopes to attain to any broad culture or any high professional skill. The Visitors cannot but fear that the young graduate may miss the accustomed stimulus, and find nothing within himself to make good the loss of it. The fact that the permanent professors at West Point do not, as a rule, give instruction themselves, increases the difficulty now under discussion. Their time is mainly given to supervising the daily work of the assistant instructors, and hence it happens that the only experienced teachers at the Academy do not habitually and regularly instruct any portion of the cadets. Now, good teaching is largely a matter of personal skill and personal influence, and this skill and influence can very seldom be imparted to others by any amount of drilling. The cadets studying under this system have very little chance of catching inspiration from their teachers, and yet inspiration and enthusiasm are essential to any large success in any pure or applied science. The Board regrets the practical diversion of the professors from the high function of daily teaching, but does not venture to give any advice concerning a remedy for this evil.

Length of Recitations

The Board is not persuaded that the custom of making the ordinary recitations one hour and a half long, which has prevailed for many years at this Academy, is a wise one. The practice of the academic world is in favor of one-hour recitations. In Germany the ordinary length of a lecture is three-quarters of an hour. If the cadets attend closely during the hour and a half, the continuous strain is unreasonably long; if each attends only while he is himself at work, he wastes an hour or more during which he might be doing something profitable. The Board is inclined to think that general experience would be a safe guide upon this point.

rather than written

The Visitors would suggest that the Academic Board might advantageously consider whether written examinations could not be substituted for oral throughout the Academy. The oral examinations which

the Board attended were rather exhibitions or specimens of recitations than examinations. The written examination applies the same test to all, and the written evidence of competency or incompetency remains behind. It is impossible to give much weight to a hasty oral examination, which, after all, is only a single recitation of five or ten minutes for each person examined. The very general adoption of the written mode of examination on all serious occasions, both in this country and Europe, seems to the Board of Visitors suggestive.

ADMINISTRATION.

The Board of Visitors took pains to inspect frequently and unexpectedly the cadets' mess. During their stay the mess-hall, kitchen, and store-rooms were neat and the food was good. The diet seemed judiciously selected, except in one respect, to which the Board begs to call attention. The cadets are not allowed milk to drink. The Board thinks that the cadets should be encouraged to use milk instead of strong tea and coffee, and advises that as much milk as they will consume be regularly provided morning and evening. In the opinion of the Board, it is desirable that a more skillful cook and a better class of waiters should be employed for the mess. *Milk*

The cadets' hospital seemed to the Board entirely unsuitable—badly placed and badly constructed and lacking light, ventilation, and drainage. The building would make good quarters for officers, which are much needed. The Board recommends that a new hospital be built as soon as possible.

The houses on the western side of the plain, occupied by officers of the Academy, have no proper means of drainage. The Board recommends that a sewer be constructed for them with a water-supply capable of keeping the sewer clean.

FISCAL AFFAIRS.

The Board of Visitors, through a committee of its number, examined the books and vouchers of the treasurer and quartermaster. The system of accounts is clear and comprehensive, so that the committee were enabled readily to ascertain the amounts appropriated and the items of expenditure. The committee further examined the accounts kept by the treasurer with the cadets, and reported to the Board that the accounts were kept with great care and with all necessary details.

The buildings and appointments of the Academy are adequate for a much larger number of cadets than are ever present. An increase in the number of cadets will therefore not entail a corresponding increase in the cost of maintaining the Academy. Under the new apportionment, the size of the corps will be somewhat increased. The Board of Visitors believes that it would be for the interest of the country to have the Academy kept constantly full to the legal limit, and respectfully *Buildings*

suggests that the Department use all means within its power to accomplish this end.

In conclusion, the Visitors beg leave to say that they have attended to the duty imposed upon them with a satisfaction qualified only by a sense of the inadequacy of the inspection which they have been able to make, and of their unfitness for the task. A thorough inspection of a place of instruction can only be made when the regular work is going on. The annual visit to West Point is inevitably somewhat of a "show" occasion, when the ordinary routine of the Academy is interrupted. The members of the Board of Visitors received every facility and many courtesies from the officers of the Academy, for all of which they beg to return their sincere acknowledgments.

Their brief study of the institution has quickened their pride in its honorable past, and their zeal for its improvement, and growth in the future. Gratitude, pride, and prudence should all impel the nation to cherish the Military Academy at West Point.

H. T. REID, of Iowa,

President of the Board.

JAMES L. SCUDDER, of Tennessee,

Secretary of the Board.

CHARLES HODGE, of New Jersey.

CHARLES W. ELIOT, of Massachusetts.

GEORGE A. THRUSTON, of Maryland.

LOUIS L. LOVELL, of Michigan.

H. R. PIERSON, of New York.

SIMON CAMERON, of Pennsylvania.

ALEX. RAMSEY, of Minnesota.

WILLIAM L. STOUGHTON, of Michigan.

AARON A. SARGENT, of California.

Hon. WM. W. BELKNAP,

Secretary of War.