

REPORT
OF THE
BOARD OF VISITORS

ON THE PART OF

THE HOUSE OF REPRESENTATIVES,

UPON

THE DISCIPLINE, INSTRUCTION, POLICE ADMINISTRATION,
AND FISCAL AND OTHER AFFAIRS

OF THE

MILITARY ACADEMY AT WEST POINT,

WITH

ACCOMPANYING REPORTS THEREON OF THE SEVERAL
COMMITTEES APPOINTED BY THE PRESIDENT.



WASHINGTON:
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BOARD OF VISITORS, JUNE, 1884.

APPOINTED BY THE PRESIDENT OF THE UNITED STATES.

1. General F. W. PALFREY.....Massachusetts.
2. Hon. L. F. MOSHER.....Oregon.
3. Col. HENRY HAYMOND.....West Virginia.
4. Mr. GEORGE E. WARING, JR. (*Secretary*).....Rhode Island.
5. Hon. GEORGE W. HOUK.....Ohio.
6. General DANIEL RUGGLES.....Virginia.
7. Hon. B. GRATZ BROWN.....Missouri.

APPOINTED BY THE PRESIDENT OF THE SENATE.

8. Hon. OMAR D. CONGER.....Michigan.
9. Hon. RICHARD COKE.....Texas.

APPOINTED BY THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

10. Hon. W. S. ROSECRANS (*President*).....California.
11. Hon. LEWIS BEACH.....New York.
12. Hon. CHARLES R. SKINNER.....New York.

REPORT
OF THE
BOARD OF VISITORS OF THE MILITARY ACADEMY.

WEST POINT, N. Y., *June 17, 1884.*

SIR: The undersigned, the Board of Visitors, beg to present herewith their report upon the character and condition of the United States Military Academy at West Point, as prescribed in United States Revised Statutes, secs. 1327, 1328.

The Board met on Monday, June 2, and organized by the election of General W. S. Rosecrans president, and George E. Waring, jr., secretary.

The Board took into view that this Academy owes its origin to the suggestions of President Washington, who, as early as 1793, officially called the attention of Congress to the subject of such an institution; that Congress, in May, 1794, providing for a corps of engineers and artillerists, directed that the Secretary of War should attach to each of the four battalions so provided for eight *cadets*, who were to be instructed in the arts and sciences required for the discharge of the duties of their profession; that as early as 1808 this provision was enlarged and the Military Academy was established substantially on its present foundation; that from that time to the present it has commanded the support and confidence of every administration; that reports have annually been made to Congress on its condition and working, with the exception of the four years of the late war, many of which reports will be found of record as stated in appended Annex 1, giving references to volumes in which the reports may be found.

It also adverted to the exhaustive report of the commission ordered by the act of June 21, 1860, chapter 163, section 8, and printed in Senate Miscellaneous Documents, second session Thirty-sixth Congress, containing 350 pages.

Considering all these facts, and that the objects of the law providing for an annual examination of the affairs and workings of the United States Military Academy (U. S. Rev. Stat., chapter 4, section 1327-28-29, p. 227) is to secure to the President, the Senate, and House of Representatives eye-witnesses of the actual condition of the institution, and their judgment of its usefulness to the public service.

The president announced the following committees:

First committee.—On the mode of appointment, qualifications, initial examination, and final admission of cadets, including the question of the propriety of a Government preparatory school for aspirants to cadetship: Messrs. Brown, Beach, Ruggles, and Coke.

Second committee.—On the course of studies, methods of instruction and examinations, grading, relative and general proficiency, and moral

tone of cadets at the United States Military Academy: Messrs. Palfrey, Brown, Houk, and Skinner.

Third committee.—On discipline of the Corps of Cadets, composition, organization, government, practical instruction in infantry, cavalry, and artillery; relation of cadets to officers and to each other; messing, mess-hall and hospital management, &c.: Messrs. Mosher, Ruggles, and Raymond.

Fourth committee.—On public buildings, grounds, sewerage, roads, and improvements: Messrs. Waring, Raymond, and Houk.

Fifth committee.—On fiscal affairs, cost of maintenance of the Military Academy, source of revenue, methods of accountability for expenditures as follows: (a) of quartermaster's funds; (b) of commissary funds; (c) of hospital funds; (d) of post funds; (e) of contingent funds: Messrs. Houk, Beach, and Palfrey.

The president was made an *ex-officio* member of each committee.

The work of the various committees has been performed with thoroughness and fidelity, and the recommendations of this report are in all cases based on the facts obtained by their investigations, and made after discussion in full Board. The full reports of the several committees and the papers presented therewith are appended. They constitute an integral part of this report.

It is hardly necessary to say that the Board has found the general condition of the Academy and its belongings highly satisfactory, if not beyond criticism. The Government has been generous in its provisions, and the administration, now as in the past, is all that could be desired. The United States may well be proud of its Military Academy, whether from the point of view of those who are interested chiefly in general and technical education, or in that of those who appreciate an intelligent and thorough administration of a great public establishment. The grounds, the buildings—so far as funds allotted permit—and the careful attention to detail in every department combine to produce a most satisfactory general result. The recommendations of this Board cover only such minor details as can be satisfactorily compassed with moderate appropriations. The great investment has been made and this school founded on a most substantial and practical basis.

It is believed that a fuller knowledge of the character and achievements of the Military Academy among the people at large would insure the removal of any prejudice against it that may now exist, and create a general disposition to maintain it in the best manner. To this end it is hoped that this report may receive a wider distribution than has been given to the reports of previous boards.

Of course, the first object of the Military Academy is, and always has been, the proper technical education of officers and their preparation in all mental, moral, and physical qualities for the important duties which they are to perform. The public knows very well that this object has always been satisfactorily attained. Our experience during the Mexican war and during the recent rebellion has demonstrated, to the satisfaction of all, the great value to the success of our arms of the period of early thorough preparation through which nearly all of the officers of the Regular Army had passed. While regular officers had by no means a monopoly of the glory and success of the recent war, a very casual review of the names of those who were most prominent and useful will testify the degree to which a West Point education seems to have aided in securing its final result.

One advantage of this training which does not present itself to the public mind is found in the immense economy of life and material se-

cured in time of war, through the management and instruction of raw troops by experienced officers. A full regiment put on active service for six weeks would not fall below 85 to 90 per cent. of its full strength for daily duty, while under precisely the same conditions, but with inexperienced officers, it has been found that the men fit for service seldom exceed 65 per cent. The relative economy in the matter of clothing and transportation is even greater. Officers educated here are the leaven from which civilian officers grow in time of war. To this estimate, however, must be added another much more serious, when it is remembered that it is very largely from those who thus become unfit for duty that our permanent pension lists are recruited, and that in any sickly regiment the energy of the men for service will always be a large percentage below the normal standard of men of vigorous health.

Probably no one having in mind the importance of preparing for war in time of peace questions the policy of maintaining the Academy in full efficiency. Doubts concerning its value, as a part of the military establishment, if entertained in any quarter, can be based only on the idea that our strength and our remote position among the nations of the world make it unlikely that we shall again have occasion to raise a large army. Without discussing the soundness or unsoundness of this idea, those who entertain it might with advantage study the character of the Academy from other points of view than that of the mere military training of officers. As a school, it is the nucleus for a completeness of training and development of character and for an encouragement of a delicate sense of honor and of fidelity to trusts of which the moral influence on the community at large must be out of all proportion to the cost and care of its maintenance.

In no single respect have the members of the present Board of Visitors been more impressed than by the relation to their work held by the officers and instructors in charge of the Academy.

The opinion that the performance of the duties of a public office, of whatever character, has for its chief incentive the drawing of public pay—an opinion unfounded, as we believe, throughout the public service generally—is especially controverted here. The zeal with which officers and instructors devote themselves to the performance of their duties, and the personal interest they evidently feel in their tasks, and their solicitude for the success of the institution with which they are only temporarily connected has been most interesting to see. It would hardly be too much to say that the spirit inculcated and developed here, among the large number of officers of the Army detailed for duty each four years, must exert a highly beneficial influence throughout the service.

The various committees of the Board, and in some cases the whole Board, have given their attention from day to day to the whole course of examination in the Academy and in the field, and have remained to inspect the examination for admission of the incoming class. The result of this observation has been to impress us most fully with the value not only to the Army but to the whole country of the course of training and development here maintained. There is nothing in any of the civic colleges and universities at all equal to it. The incoming class, appointed from all parts of the country, arriving at West Point in June, is subjected to an examination by the Academic Board to ascertain whether the appointees have the qualifications required by existing laws and regulations. These requirements, although much below those demanded for entering the freshman class of a college, are probably such as would enable their possessor to learn his course at the Military Academy.

The examination is perfectly fair and impartial, and the issue is not influenced by favoritism, friendship, or personal sympathy, while as rigid as it can be made in view of the fact that tests must not be applied which cannot be satisfied by the usual educational facilities of any Congressional district in the country, and as broad as the very limited range of subjects will allow, the law prescribing preparation only in reading, writing, arithmetic, geography, American history, and English grammar. The purpose of the examination is not so much to find out what a young man knows or remembers of what he has learned on these subjects, as it is to test the degree to which his previous instruction has prepared him for the educational work on which he is about to enter. It seemed evident that the character of this preparation was intended to be the controlling test, and that the only motive for exclusion was based on the improbability of the success of the candidate in his academic course; that is, the only thing considered is the chance of his being able to maintain his position among his fellows and to repay the Government for his cost by profiting from his advantages.

That the examinations are not too severe is evidenced by the fact that fully 55 per cent. of those who enter fail to keep up with their classes. They drop out of the way either because they are too heavily handicapped by insufficient preparation, or because they lack the natural persistency and industry necessary to the mastering of the very exacting course of study.

These young men having been admitted, and having shown by their proficiency during the first half year that they are worthy to be mustered into the service as cadets, receive their warrant, enter upon a course of education, of military drill and training, and of physical development, lasting, with little intermission, for three and a half years. Two months vacation in the second year and two months relief from study while in camp during the other years are all the recreation allowed them, and even during the camping period the military instruction and drill are rigorously prosecuted.

Not to detail the experience of a cadet from the time of his admission until his graduation, a sufficiently comprehensive idea can be given of the treatment to which he has been subjected by his condition at the time of graduation.

We have carefully watched the various examinations and exhibitions, and, not speaking of the members of the class in higher standing, but considering only those of average grade, we have seen young men who four years ago came here from country schools and from rural occupations, educated barely well enough to be admitted, far from erect in their bearing, often slouchy and delicate in physique, and incapable of enduring fatigue or of continued physical activity—we have seen these young men, erect, bright, clean-cut, and intelligent, standing square upon both feet for ten or fifteen minutes while giving an intelligent demonstration of abstruse scientific problems or passing examinations in other branches most creditably; going through the evolutions of dress parade as well as soldiers who have no other duty and no other training; handling a light battery in active drill evidently without fatigue and without hesitation; performing equally well in cavalry drill, at target practice with siege guns and sea-coast guns and mortars, at ponton and spar bridge-building, and in every branch of the duty of a soldier acquitting themselves with the skill of veterans and with the intelligence of educated men. Their exercise in the gymnasium and fencing school were excellent. In the riding school the exhibition was an astonishment to all who saw it for the first time. A near approach to perfection in such

horsemanship as is indispensable to a well-trained cavalry soldier was to be expected, but the bareback riding, mounting with one hand, vaulting into the saddle and over the horse, mounting and dismounting at a gallop, taking the belt with saber and revolver from the ground when in motion, performed by the whole class present—these and other exercises, when considered in connection with all else that a cadet must learn to do with his head and with his body, were more than remarkable.

It may by some be questioned whether or not it is necessary, in order that a young man may become a good officer, that he should know as much or be able to do as much as he is made to do and is taught at West Point; but that it is, for other reasons, a great thing for the country at its own expense to maintain one young man from each Congressional district throughout the land subject to such complete training and development, no one can question. Were the graduates of the Academy to make no other return to the country than to go back among their own people as an example of what may be done by proper intellectual and physical education, the maintenance of the West Point Academy would still be justified.

Concerning the matters of detail to which the attention of the Board was especially called in its investigation, reference is made to the reports of the several committees published herewith. These reports have been discussed in full meeting, and their recommendations have, in the main, met with the approval of all of the members.

Concerning the recommendation of the first committee, that examinations be made with reference to certain prescribed text-books, it was thought that, while such a course would have marked advantages, there would be possible objections to its adoption in view of the commercial zeal of text-book manufacturers. As a rule the questions given in the examination papers are such as are answered in all of a wide range of text-books. The applicant is asked to name the text-book that he used in preparing on each subject, and the value of his answers is measured with reference to such authority. Although the difficulties attending the present method of examination for admission are fully recognized, the Board is not able to recommend any other system which, while equally fair to all comers, would afford so good an answer to the only vital question: "Is or is not this applicant a fit subject for the course of education to which he must be subjected if admitted?"

Whatever hardship the present regulations may seem to work in special cases, we feel assured that they are administered liberally and with judgment as well as with fairness. The fact must always be borne in mind that the purpose of the examination is to secure good material for training in the Academy, not in any sense to distribute gratuitous education to the sons of the people. Disappointed applicants must suffer, and they have our sympathy, but the good of the whole people is best secured by ignoring entirely all questions of personal sympathy and seeking only the very highest quality of raw material to be developed for the people's service.

The suggestion made by the second committee as to the relative importance of instruction in the French and Spanish languages is not made the subject of any specific recommendation by the Board beyond an expression of opinion that more attention should be given to Spanish—without designating the study from which extra time therefor shall be taken.

The Board gives its unqualified indorsement to the recommendation made by the third committee for the detail of Capt. William F. Spurgin as treasurer of the Military Academy and quartermaster and com-

missary of the Corps of Cadets, for a further tour of four years. In no department of the institution did we see better evidence of intelligence and thoughtful management than in this most important one. Indeed, we believe that much of the good condition of the corps, as we saw it, was due to the excellent character of everything pertaining to its mess and general system of supply. Especial attention is called to the table appended to the report of the third committee, giving an abstract of the cost of provisions, &c., used in supplying the mess for ten years ending April 30, 1884. The average cost per year for each cadet has ranged from \$174.10 to \$241.09. During the last year it was \$212.19. A great improvement in the amount and quality of food, character of preparation, and service has been secured without an increase of cost.

Old graduates of the Academy generally concur in attributing to the better and more ample feeding of the cadets the great reduction of truancy under the present management. Formerly the cadets were often tempted by insufficient nutrition to seek food outside the limits. An analysis of the table shows a considerable increase in the expenditure for provisions and a great decrease in the incidental expenses of the mess. The peculiar qualifications of Captain Spurgin for the duties he is now performing are of a sort very difficult to secure, and it would in our judgment be a great misfortune to deprive the cadets of their continued exercise.

The Board concurs fully in the recommendations made by the fourth committee, especially with reference to the sanitary improvements proposed, placing first in importance the renewal of the sink at the cadets' barracks, and next the establishment of proper facilities for the public at suitable points in the grounds.

It is in connection with the recommendations of this committee that the greatest outlay is required, and attention is called to the reason given by the committee for not submitting an estimate of cost.

The report of the fifth committee sets forth sufficiently in detail the manner in which the fiscal affairs of the Military Academy are regulated and checked. Its expression of approval of the methods of administration adopted are fully indorsed by the Board.

The total number of cadets graduated from 1837 to 1884 is 2,167. The total cost of each to the Government, as shown by the tables of pay and appropriations appended to the report of the fifth committee, has been \$3,828.23. This estimate is hardly a fair one, however, as considerably more than one-half of those who have entered the Academy have failed to complete the course, and those who have so failed have generally derived much benefit from their instruction. They are fitted to become and often do become excellent officers for local military organizations, and good engineers or instructors in high schools and colleges.

The Board recommends that the band be increased to forty pieces, and that the pay of the men be made adequate to the securing of a good class of musicians. This is the only band supported by direct appropriation, and it should be made better than its present foundation will allow it to be.

In addition to the recommendations of the committees, it was resolved, on motion of Senator Conger, to recommend that a *light battery* be stationed at West Point for the purpose of providing means for adequate artillery practice and instruction, and that the number of cavalry horses required for the complete instruction of the cadets in cavalry tactics be kept here at all times and used for that purpose only.

On motion of Senator Conger, it was resolved that the address of Mr. Houk to the graduating class be referred to in the general report, and

that it be appended in full to the proceedings of the committees of the Board of Visitors.

It was further resolved that it is desirable that hereafter a better room for the meetings of the Boards of Visitors be provided by the Superintendent than the one now occupied in the basement of the hotel.

All of which is respectfully submitted by direction of the Board.

W. S. ROSECRANS,

President.

B. GRATZ BROWN, of Missouri,
 DANIEL RUGGLES, of Virginia,
 FRANCIS W. PALFREY, of Massachusetts,
 GEO. W. HOUK, of Ohio,
 L. F. MOSHER, of Oregon,
 HENRY HAYMOND, of West Virginia,
 GEO. E. WARING, JR., of Rhode Island,

Members appointed by the President.

ANNEX I.

Address delivered by Hon. George W. Houk, of Ohio, member of the Board of Visitors, at the graduating exercises, West Point, N. Y., June 14, 1884.

LADIES AND GENTLEMEN: It has been the pleasure of General Merritt, the Superintendent, in accordance I believe with former usage, to request the Board of Visitors to designate one of their number to make a few remarks on this occasion, as a part of these graduating exercises; and it has been my misfortune, and perhaps yours, that the partiality of my associates has conferred upon me the distinguished, and I am sure unmerited, honor of attempting the performance of that delicate and somewhat embarrassing duty. The discharge of the official duties imposed upon us by the letters of our appointment, and by the administrative industry of our chief (General Rosecrans)—interspersed with the irresistible allurements supplied by the society, the scenery, and the associations of this delightful place, have left me much less time than I would have desired for preparation to respond in so distinguished a presence as this, to the call thus made upon me.

I beg to acknowledge first, and on behalf of the Board of Visitors, the numberless courtesies extended to us, as a body and individually, by the superintendent and officers of the post, and by the gentlemen of the academic staff. Every possible facility has been afforded us in our investigations concerning the affairs of the Academy, its course of study, discipline, and general administration. The examinations of the classes made in our presence, and the very creditable practice in the various military exercises, have furnished most abundant and convincing proof of the thoroughness of the training and the excellence of the discipline adopted at this Academy.

The regularity in the habits of the cadets, the total abstinence from the use of all stimulants, including tobacco, which is rigidly enforced, the daily routine of mental occupation and physical exercise, required by the rules, together with a tone of moral purity, official faithfulness, and gentlemanly demeanor that has always, and still continues to be, characteristic of this Academy and those connected with it, have combined to make this body of young men, now before me, in all the essential qualities of a true incipient manhood, about as good a sample of the race as can be found assembled together anywhere in the world. I am only speaking, young gentlemen, of what you are being enabled to be-

come. The result will be in your own hands, and according to your faithfulness to the teachings here received, and to yourselves.

It is only necessary that public opinion in the United States should be properly informed in regard to the true character of this institution—its history—the principles upon which it was founded, the necessities to which it owes its existence, and which still imperatively demand its maintenance, to cause it to be universally (as it is now only by the better informed) regarded as a jewel of the Republic, or to speak without metaphor, as the very best model, in many essential respects, for American educational institutions. Here, as nowhere else, there is absolute equality among the students, in respect to financial resources, expenditures, dress, and personal privileges. No advantages of equipment or surroundings, or of any description, are enjoyed by the wealthy that are denied to those who are poor. Social position outside makes no difference in rank here. Each man stands upon his own individual merit and naked character—it is like unto that searching ordeal so graphically depicted by Pollock, in "The Course of Time," when the King comes to judgment without his crown, the Bishop without his miter, the Priest without his surplice, and the Monk without his cowl; where all insignia of worldly or official rank, or of wealth, or of social distinction, are stripped off, and when each individual stands bereft of everything but naked character, to be judged by that test alone, with the poorest and humblest of the race.

No temptation exists here to increase, no prejudice to restrict, the number of admissions. Every portion of the United States is entitled by law to a representative, and the destitute widow who comes with her son from Colorado, stands upon precisely the same footing in respect to the rights of admission for her boy as the millionaire from Boston or New York, who seeks the same benefit for his son; and if they alike pass the ordeal of the examination, they continue here upon absolute equality in respect to all privileges and opportunities. They have the same studies and exercises, the same conveniences, and quarters furnished in the same style. No money is required from the parent to enable his son to defray the expenses of this course of education. He is taught the strictest economy and accountability in the keeping of his accounts, and is only allowed the use of money to pay for necessities, his money and account book being kept by a proper officer of the Academy. The diligent prosecution of the academic course leaves no time for the organization and practice of "Glee Clubs," or the various other "Championship" diversions, which form so conspicuous and expensive feature in our modern college life.

The sterling American quality of common sense, which (thanks, no doubt, to Colonel Thayer, whose memory is so much revered here, and is fitly perpetuated in yonder statue), excluded from this place all temptation to waste of time or extravagance, and all tendencies to indulgence in expensive and fashionable diversions, during the academic course, has continued to preserve this as about the only first-class educational institution in the country in which survives the spirit of economy and equality that characterized the earlier days of the Republic. The influence of the rapid and vast accumulation of individual wealth that has so powerfully tended, and is still tending, to the establishment of a false standard in our political and social life, and has found its way into our collegiate institutions, has been unable as yet to effect any lodgment here. The only standard here is personal merit, faithful devotion to duty, absolute truthfulness, a high sense of personal honor, and natural endowment—these alone give rank. It is difficult to estimate the beneficent influences of such an institution upon

the *morale* of our Army establishment, as well as upon the country at large.

The idea of this Academy is as old as the Continental Congress that gave to the world the Declaration of Independence. In October, 1776, that Congress passed a resolution appointing a committee to report a plan for a Military Academy. Early in '83, when General Washington had his last military headquarters in the venerable house still standing and so dutifully preserved in your neighboring city of Newburgh, when the sun of American Independence, so long obscured, at last broke through the clouds of the Revolutionary war, that great leader, intent upon consolidating the liberties he had been so largely instrumental in achieving, called the attention of his general officers to the important subject of the Peace establishment. It was at this crisis, when a veteran army was about to be disbanded, its offices and men maimed in battle or broken with long service about to be cast destitute and disabled upon the world, that the matchless wisdom and patriotism of Washington shone with a luster more brilliant even than that of his fortitude and abilities in war. In the plan of that Peace establishment was embraced the idea of the permanent organization and maintenance of this Military Academy. Colonel Pickering, his Quartermaster-General, in an elaborate and conclusive report, set forth the necessity of such an institution, to be permanently located upon this spot. In that report it is refreshing to encounter the tone and purity of such a sentiment as this—"The pursuit of knowledge, in itself an economical possession, is inconsistent with, and destroys the desire for indulgence, in idle or vicious amusements." It is an hundred years, gentlemen, since that sentiment was expressed; but its spirit found a lodgment in the constitution of this Academy, and we now see, in its present and past record, its beneficent legitimate results. Afterwards, in 1793, when the message of General Washington was being prepared for transmission to Congress, he pressed the recommendation for a Military Academy. It was promptly approved by Mr. Randolph, General Hamilton, and General Knox, members of his Cabinet—but Mr. Jefferson, with that jealousy of the tendency to the exercise of legislative powers not specifically delegated, which characterized his political creed, questioned its constitutionality. He afterwards, however, upon fuller reflection, became satisfied of his error, and during his own administration, subsequently, approved of legislation favoring and increasing the efficiency of this institution. This Academy, then, gentlemen, was born of the throes of the American Revolution. The founders of the Republic, with the smoke of that memorable struggle still lingering in their garments, were its founders. It had its origin in their wisdom, their patriotism, their love of liberty—and it still preserves features in its organization and administration that recall the purity, the simplicity, the grand thought of the heroic age that gave it birth.

One of the objects for which the Federal Government was established was "*to provide for the common defense.*" There is perhaps no single utterance that was ever made in political literature more comprehensive or grand than the preamble to the Constitution of the United States. It states the true source and object of government. Every young man in the United States should be taught to know it and repeat it, as he knows the Lord's Prayer. "We, the People of the United States, in order to form a more perfect Union, establish justice, insure domestic tranquillity, provide for the common defense, promote the general welfare, and secure the blessings of Liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of Amer-

ica." In furtherance of the purpose "to provide for the common defense," the entire military and naval establishments of the Government have been organized, and are maintained by Federal authority. Upon the efficiency of that organization it is evident the public safety must largely depend.

Organized force is the conservator of peace. It "insures domestic tranquillity," it "promotes the public welfare," by protecting industry, and its accumulations. It secures the harmonious co-operation of all the complicated forces, from which results civilization.

Ordained force—that is law. It is in this sense, under our system, the will of the majority, expressed under constitutional restrictions, in accordance with prescribed legislative forms—and when so expressed the entire force of society is pledged through the Government, to compel its observance. So perfect is the organization that a writ of personal liberty duly issued by the civil authority, anywhere in the United States, may, if its execution be forcibly resisted, call into exercise, if required, the entire force of the Government. Whilst the entire military power of the American people, as it is well known, and as it has been recently demonstrated, is at least unsurpassed by that of any other nation, the Army proper of the United States, embraces but about twenty-five thousand men, and is established upon principles totally different from those upon which the force of any other first-class power in the world is organized. This difference results from political and geographical conditions.

We have inherited from the founders of our Government, an aversion to a large standing Army establishment in time of peace. Our necessities do not require, and our traditions forbid it. It is far different with the European powers. They are territorially adjacent. In case of hostilities, any one found unprepared would be exposed to immediate devastation. Hence the necessity of an immediately effective organization of the entire military force of each, in a vast and expensive standing army. There are to-day not less perhaps than six millions of able-bodied men from the age of 18 upwards, taken from the productive occupations of peace, and armed, enrolled, and organized ready for instant war, in the various nations of Europe. It is scarcely necessary to say these establishments are immensely expensive and oppressive upon the people. Happily in our country, we are exposed to no such necessity or danger. The Regular Army of the United States is made up, as to rank and file, entirely of voluntary enlistments. It is organized by acts of Congress, the details of which are no doubt more familiar to you than to me. By far the most important feature in that organization, *its great nerve center*, is this Academy.

It is to this point I wish to direct public attention. It was from this source that proceeded the military skill, the knowledge of all the details of the art of war, the *Esprit du Corps*, which, during the war of the rebellion, astonished the world by the startling development of the warlike spirit, energy, and resources of the American people. Other nations, whilst comparatively ignorant of or indifferent to the domestic differences that brought on the conflict, were at once impressed by the mighty physical forces they saw developed, and the superior military skill and efficiency with which those forces were organized and handled; and whilst that gigantic struggle, with all its memories of glory and disaster, of heroic sacrifice and suffering, and its grand results will constitute forever, perhaps, the most thrilling page of our national history, the value of its influence upon other nations, respecting us, is simply incalculable; and it may, perhaps, be said with truth that to

that influence we were in no small degree indebted for the success of the Geneva arbitration. It is, as I see it, gentlemen, impossible to overestimate the value of this institution, even in a pecuniary sense, to the people of the United States. The real military force of our people is enrolled and organized, as you know, through the action of the State governments—subject in case of necessity to the call of the Federal authorities. That organization, as all know, is not uniform, and otherwise extremely defective, and this Academy may earn a new claim upon the gratitude of the country, if one of its distinguished graduates, now in Congress (General Slocum), shall succeed in devising a constitutional and effective plan that will be in all respects satisfactory for the organization of the militia forces by Federal law. The maintenance of this institution in the highest possible state of efficiency, is the most essential and by far the most important feature in the organization of the Army of the United States.

It saves more than ten times its cost annually to the people of the States by saving to them the cost of attempting to attain the same necessary results by separate action. It would be impossible, under separate State action, to effect the objects here reached. By maintaining in constant readiness a thoroughly educated body of officers, trained at the same institution, and skilled in all the details of the art of war, the entire military force of the people of the United States is susceptible of almost instantaneous organization and mobilization as a substantial unit, thus saving to the country during the long periods of peace the fruits of the productive industry of millions of men who might otherwise be required to pass a stated term of years in early life, as in European countries, under arms in time of peace. It was to the technical knowledge of the military art here gained, and imparted by graduates to volunteer officers, that the country is indebted for some of the most brilliant military reputations acquired in the late war.

And now, young gentlemen, I will have a few words in conclusion to say to you. You are about to be graduated from an institution justly celebrated as one of the very best of its class in the world. The fame that has been achieved by many of those who have preceded you in the academic course you have just completed, has passed into the imperishable record of history. That record will remain interesting and instructive to mankind, at least, until that great change foretold in prophecy, "when swords shall be beaten into plow shares and spears into pruning hooks. When nation shall not lift up sword against nation, neither shall they learn war any more." You need not be apprehensive, young gentlemen, that this change will occur soon enough to deprive you of your commissions. The distinguished ability that has always been displayed here by a faithful administration and capable staff of instructors, has entitled this Academy to the support and confidence of the Government, and to the indorsement of intelligent public opinion throughout the United States. You have had all the opportunities for instruction afforded by the experience, faithfulness, and thorough knowledge of your teachers, and of which you have had the capacity and purpose to avail yourselves. More than that, you have been subjected to a wholesome discipline, mental, physical, and moral, during a term of four years, at a period of your lives when habits are formed, which places you this day in the possession of all the faculties, unimpaired, with which God has endowed you.

The spirit of truth, the sense of personal honor, that have always been inseparable from this institution and those connected with it—even as these mountains and this majestic river impart to this spot the

physical characteristics of dignity and beauty, and make us feel that closeness to God which is the secret of our love of nature—have become under the mysterious processes of your education here incorporated into the very fiber of your being; and you may have derived patriotic inspiration from these unchanged features of natural scenery which unlike us do not age with the lapse of time, and which are indissolubly associated with the most interesting historical reminiscences of the American Revolution. You go out from this Academy to-day, young gentlemen of the graduating class, to take the respective stations to which you may be assigned in the public service full-armed and equipped in the vigorous health of youth, in exuberance of hope, active in all your faculties, regular and abstemious in your habits, simple and inexpensive in your tastes, and, I trust, thoroughly truthful and honorable in your principles. For all these blessings, under God, you are indebted to your country, which maintains this institution, to the fidelity of your instructors, and to the obedience to the discipline and rules prescribed here for your government. Let not your release from the wholesome restraints to which you have been subjected here tempt you to renounce the power of self-control which it has been one of the chief objects of this discipline to enable you to exercise, and which is indispensable to your success and happiness in life.

If you were to ask me to designate an object at which you should aim in your professional career, I would not point you to the prize of the Presidency of the United States, although that distinction has been attained by a graduate of the Academy, and may be in store for others hereafter. I would not point you even to the insignia of rank worn by the General of the Army, who, with the President, honor this occasion by their presence. I would rather say, young gentlemen, that I trust each of you will be animated alone by the noble ambition to *do your duty*. There is no word so comprehensive in its signification, respecting human conduct, as the word *duty*. There is no word more glorious in the vocabulary of a true soldier. It embraces fidelity to your country, to your whole country; faithfulness to your fellows; bravery, fortitude, integrity, truthfulness, obedience, honor, gentlemanhood. It comprises that which you owe to God, to your country, and to yourselves. And let me here say to you, young gentlemen, respecting the first, that I know of no man who has ever lived, whose name is connected with any great achievement for the betterment of the human race, who had not an abiding faith in the existence and overruling providence of Almighty God, and a due sense of his obligations to that divine power. Such a faith, it seems to me, at least is necessary to a true dignity and purity of human character. To your country you owe the duty of fidelity to her Constitution and laws, and obedience to the authority of those to whom the administration and execution of those laws has been committed. This duty involves the devotion of your faithful personal services, and of your lives, whenever necessary, to preserve your country's honor or your own. With respect to your fellows, your whole duty is comprehended in the golden rule. Notwithstanding the great inequalities existing among men in social and official rank, as well as in cultivation and natural endowment, there are certain respects in which the absolute equality of manhood is to be recognized and always respected. Let this never be forgotten. It is this simple recognition upon which our Government was formed. It is this essential equality of manhood that should never be lost sight of in legislation and administration. It is that recognition, too, that is the secret of the devotion of the American soldiers to their old commanders.

And now, lastly and briefly, young gentlemen, to yourselves you owe the duty of personal purity, of preserving unimpaired, and improving to their utmost capability, all the useful powers with which God has blessed you. It is, of course, your duty to be patriotic and brave, courteous and truthful, honest and honorable, for these are among the characteristics of *gentlemanhood*, and you are, of course, aware that it is the law of your profession that he is no longer entitled to hold a commission as an officer in the Army of the United States *who ceases to be a gentleman*.

This, then, above all: to your own selves be true,
And it must follow, as the night the day,
Thou canst not then be false to any man—

nor to your country.

ANNEX 2.

1847. Report of the Secretary of War, first session Thirtieth Congress, page 629.
 1848. Report of the Secretary of War, second session Thirtieth Congress, page 282.
 1849. Report of the Secretary of War, first session Thirty-first Congress, page 235.
 1850. Report of the Secretary of War, second session Thirty-first Congress, pages 364-370.
 1851. Report of the Secretary of War, first session Thirty-second Congress, page 363.
 1852. Report of the Secretary of War, second session Thirty-second Congress, page 168.
 1853. Report of the Secretary of War, first session Thirty-third Congress, page 180.
 1854. Report of the Secretary of War, second session Thirty-third Congress, page 117.
 1855. Report of the Secretary of War, first session Thirty-fourth Congress, page 225.
 1856. Report of the Secretary of War, volume 5, second session Thirty-fourth Congress, page 292.
 1857. Report of the Secretary of War, volume 3, No. 11, first session Thirty-fifth Congress, page 197.
 1858. Report of the Secretary of War, volume 3, second session Thirty-fifth Congress, page 839.
 1859. Report of the Secretary of War, volume 2, first session Thirty-sixth Congress, page 658.
 1860. Report of the Secretary of War, volume 2, second session Thirty-sixth Congress, page 274.
 1861. Report of the Secretary of War, first session Thirty-seventh Congress, page 29.
 1862. Report of the Secretary of War, volume 4, third session Thirty-seventh Congress, page 21.
 1863. Report of the Secretary of War, volume 5, first session Thirty-eighth Congress, page 76.
 1870. Report of the Secretary of War, first session Forty-first Congress, page 305.
 1871. Report of the Secretary of War, page 432.
 1872. House Mis. Doc. No. 14242.
 1873.
 1874.
 1875. Report of the Secretary of War, first session Forty-fourth Congress, page 451.
 1879. Report of the Secretary of War, second session Forty-sixth Congress, page 447.
 1880. Report of the Secretary of War, third session Forty-sixth Congress, page 541.
 1881. Senate Mis. Doc. No. 14.
 1882. House Mis. Doc. No. 24.
 1860. Commission, Senate Mis. Doc. 2, 36, No. 3.

The several reports herein enumerated refer to the number and pages of the reports of the Board of Visitors to West Point, including the report of 1860 of commission; for the years of 1864, 1865, 1866, 1867, 1868, 1869, no reports of the Board appear to have been made.

W. H. SMITH,
Assistant Librarian.

HOUSE OF REPRESENTATIVES, *June 30, 1884.*

REPORT OF FIRST COMMITTEE.

The undersigned, a committee to which was referred "the mode of appointment, qualifications, initial examination, and final admission of cadets, including the question of the propriety of a Government school for aspirants to cadetship," would report:

That the mode of appointment as now prescribed by law and regulated by usage in the presentment of suitable candidates from each Congressional district by members of the House of Representatives seems to combine the two essentials of placing the selection in responsible hands and making it accessible to deserving young men in every section of the country.

The opportunity thus offered to those who frame our laws of contributing to the efficiency of the Army organized to uphold them is one that is very rarely exercised without much concern and discrimination by those to whom it is intrusted. The appointment is for life, is sure to be closely scrutinized, and the success which may attend the cadet will be followed throughout his career with increasing interest, not only by the individual who confers the appointment, but by the community from which he comes. The Academy, too, is thus brought into close contact with the body of the people, is infused with fresh life, new associations, differing elements of culture, and the military equipment of the nation is liberalized to correspond with its very rapid development.

As regards "qualifications for entrance," the subject has been much mooted from the very beginning of the Academy up to the present time; and the difficulty of determining just what to recommend in the premises is by no means slight. The law prescribes that all applicants shall be between the ages of seventeen and twenty-two, and shall be able to pass examination in reading, writing, arithmetic, geography, American history, and English grammar, and it would seem as if such requirements were as little as could be asked from an applicant of such age, and as low a grade as would qualify for the subsequent studies. Neither are there any such differences in the educational advantages throughout the country but that the required standard could be attained in any high school or academy of good repute. Yet the number of rejections compared with the number of admissions shows that there is something radically defective in the methods. Thus in 1881 there were 149 vacant cadetships, and that number of applicants presented themselves, yet 64 were dismissed as not qualified. In 1882 the presentments were 184, the rejections 55. In 1883, 200 were examined and 59 pronounced deficient. It is scarcely to be presumed that any of these candidates came forward without, as they deemed, ample preparation in the studies in which they were to be examined. Neither can it be supposed that they were selected without some regard to their superiority of attainments over others who may have solicited the position. Assuming it to be desirable that all who may be appointed to cadetships should find admission to the Academy, and the law certainly contemplates as much, it will be well worth inquiry, under the very incomplete attainment shown, just where the difficulty does lie.

Whilst the studies indicated as the basis of admission are very primary in their character, yet any examination upon them may be very extended under a searching order. It would not be difficult to propound a series of questions in arithmetic, in geography, in grammar, and especially in American history, that few of our college graduates could answer. Clearly, therefore, it is within the power of a board of exam-

iners to reject a larger or smaller proportion of applicants, as the examination may be made more or less rigid and searching. No preparation could well compass the one-half of what might be insisted upon, and yet the preparation of the schools of the country may be fully up to ordinary scholarship and to all the necessities of the Academy in these several branches.

To meet this difficulty there have been various suggestions made both by preceding Boards of Visitors and by superintendents in charge of the Academy. In view of the fact that the standard of admission cannot be well lowered if the present course of studies is to be mastered in four years, it has been suggested that the term should be extended to five years. But it is very doubtful if this would accomplish any good result in the direction named. If the term is to be prolonged by admitting applicants of sixteen instead of seventeen, it certainly could not do so, and if it contemplates an added year to the course we think it would be more likely to involve additional studies than any lightening of present requirements for admission. Indeed it would be very hard to draw the line in a general way of preparatory studies otherwise than is now done, and certainly none of those named could be dispensed with entirely. If not acquired previously they would have to be acquired within the Academy, and that would interfere seriously with the general advancement in other branches of knowledge.

Again, a remedy has been proposed in the shape of a preparatory school under the auspices of the Government to fit applicants for an entrance by a one or two year course of study and upon completion of which they should be entitled to admission to the Academy. It seems to us that this would only remove the difficulty one or two years further back, for a standard of qualification for entrance would have to be established there just as is now done here. It would transfer to other hands, also, the duties and privileges of an examination which it is believed should rightly be maintained, under proper restrictions, within the Academy itself. The additional expense which would be incurred, and it would certainly be very large, might be better expended in furnishing additional facilities to the present institution. And, as has been already suggested, the ordinary schools of the country are entirely equal to furnishing the preliminary education if only sufficient directness and precision be had in indicating just what it shall consist in.

Members of Congress have in many instances sought to assure an admission for their appointee by a competitive examination, but the fact that many of those who are thus chosen fail to enter would go to show that it does not entirely obviate the trouble.

One reason is perhaps that their examination is not conducted according to any fixed standard of excellence, and another is that there is very little uniformity in the extent to which such examinations go.

In view of what has been said concerning the necessity of preparation to a certain extent, concerning an examination by the Board of the Academy to ascertain that extent, concerning the very uncertain character of that examination as to its scope, and the difference in the grade of requirement which it may compass as differently administered, it is submitted that perhaps the best solution of the matter will be found in prescribing the text-books in which applicants shall be required to be proficient in order to entitle them to admission on the score of scholarship. If this shall be determined upon, as the text-books of the after course are now determined upon, and set forth fully in circular, as the general line of examination is now indicated, to be sent to those appointed, and the preliminary year now granted before entrance be maintained there is no

reason why any intelligent lad between the ages named should not be able to secure admission. The designation of text-books, even in the alternative which might well avail in such primary studies, would put some limit upon an examination which otherwise might proceed to unexpected lengths and enable the applicant to concentrate his endeavor upon acquiring the essentials instead of wandering away in search of the merely conjectural. It is not intended to imply by anything that has been said that an examining board of the Academy would, under any circumstances, abuse their trust by insisting upon too severe an ordeal; but, as their desire must of necessity be to get the best selections possible and establish a high grade of excellence at the very outset, it is only fair that some known limit to the examination be established, if for no other reason yet in order that the mind of the student and that of the examiner may have the same objective points of attainment.

This regulation, it is conceived, could be most properly made by the Secretary of War, after advising with the Superintendent of the Academy, and then communicated to members of Congress for their information.

In regard to the time which intervenes between the admission of cadets in June and their final muster into service in January, we think it very essential to be maintained, as a means of testing under a course of study the fitness of those who have entered to go through with the very arduous tasks which lie before them. Acquirements may be, but capacities scarcely ever can be ascertained by a single examination, yet it is the enduring vigor, mentally, morally, and physically, which is sought for in the service of the country—a vigor sure to be taxed to the uttermost in the end, and which alone can qualify for large commands of men.

Number of candidates who were admitted and rejected in the years 1881, 1882, and 1883.

	1881.	1882.	1883.
Admitted	85	129	141
Rejected by Academic Board	60	52	56
Rejected by Medical Board	4	3	3
Total rejected.....	64	55	59

All of which is respectfully submitted.

B. GRATZ BROWN.
LEWIS BEACH.
DANIEL RUGGLES.
RICHARD COKE.

REPORT OF SECOND COMMITTEE.

The second committee, appointed to consider and report upon the course of studies, methods of instruction and examination, grading, relative and general proficiency, and moral tone of cadets at the United States Military Academy, respectfully submit, as the result of their observations made in the discharge of the duty assigned them, as follows:

1. That in the general course of instruction followed here they had constant occasion to recognize and applaud the wise results of long and

intelligent effort and single-hearted devotion to the ends in view. Whatever has been adopted here seems to have been adopted upon such mature consideration and to have been so thoroughly subjected to the test of experience, that your committee can make no suggestions of alterations without diffidence. The general purpose of the Academy is to take young men from all parts of the United States, and whose previous opportunities for mental and physical training have been entirely unequal, and to bring them, at the end of four years, into a condition of high fitness for beginning to perform the duties of officers of the United States Army. This purpose they believe to be faithfully and successfully pursued here.

The only suggestions which your committee desire to make in regard to the course of studies are as follows :

(a.) They incline to doubt the wisdom of the course pursued in the somewhat technical instruction given in English, including rhetoric, and to suggest for consideration the question whether better results might not follow from devoting much time to reading aloud from acknowledged English classics, and the writing of simple themes, which last should be examined and commented on by the instructors.

(b.) The instruction in the modern languages does not seem to produce satisfactory results. In the judgment of your committee, the power of speaking French does not seem to be likely to be useful to the American officer except as an elegant accomplishment, while the power of speaking Spanish is likely to prove to him of real and practical value.

The power of reading either language may be readily acquired by an ambitious student, and almost as well without an instructor as with one. In view of these considerations, your committee inclines toward recommending the devotion of much time to Spanish, and they would strenuously recommend the employment of a competent native Spaniard as a teacher of pronunciation alone; not to be an officer, or to have any voice in grading, or any charge of or responsibility for discipline, but to be simply an adjunct of the regular instructor, and unemployed except in the section room and in his presence.

2. As the fourth committee is charged with the duty of reporting upon buildings, &c., your committee will only add here that in their judgment the provision for the physical laboratory and for gymnastic exercises is entirely inadequate, and they would recommend that largely increased provisions be made for them. The growth of technical knowledge, especially in the domain of electricity, gives especial force to their recommendation.

METHODS OF INSTRUCTION AND EXAMINATION.

Your committee have had no opportunity to judge of the methods of instruction except from seeing the results as shown at the examination, and from witnessing the methods of examination.

Without more knowledge than the committee possesses of the degree of absolute instruction or the want of it, and of the acquired fitness for learning which characterizes the average cadet when he enters the Academy, it is impossible to form a complete idea of the progress made, and so of the adequacy of the method of instruction, but every indication led us to believe that the latter was wisely conceived and faithfully applied.

The instructors appeared to us generally masters of their respective branches, and patient and thorough in testing the attainments of the cadets in the various examination rooms. Really brilliant recitations

were common, and very fair ones made up the rest. No instance of what could be called complete failure came under the notice of the committee.

The evidence was abundant that the instructors were doing their duty not only conscientiously, but with an earnest enthusiasm, and sparing no effort to fill their respective places to the very utmost of their ability, and their fitness for their special work seemed in almost every instance to be marked. It was also apparent that while they were altogether faithful to their duty to see to it that the United States Army received from the Academy none but competent candidates for commissions, they never lost sight of their duty to see to it that each cadet had full justice done him.

GRADING—RELATIVE AND GENERAL PROFICIENCY.

The system of grading adopted here, and pursued from year to year, seems to be very thorough and complete, and to be of a character to insure—

1st. That each cadet should have his right place in his class.

2d. That the comparative attainments of cadets in different classes may be determined with a good degree of approximation to the last.

This system, excellent in itself, seems to be applied with scrupulous fidelity, and by so many hands that exact results are habitually attained.

MORAL TONE OF CADETS.

Your committee can form few ideas on this subject except from report. They are assured on every hand that the moral tone of the cadets is excellent. Their good appearance, their bright eyes and clear complexions might be the result of strict discipline, whether willingly or unwillingly submitted to, but everything that comes to the ears of the committee is in the direction of showing that the sense of honor among the cadets is extremely high, and that absolute fidelity to truth is the first virtue they inculcate and insist upon.

Respectfully submitted.

FRANCIS W. PALFREY.
B. GRATZ BROWN.
GEORGE W. HOUK.
CHAS. R. SKINNER.

JUNE 14, 1884.

REPORT OF THIRD COMMITTEE.

[With papers attached marked respectively A, B, C, D, and E.]

The members appointed on the third committee on "Discipline of Corps of Cadets, composition, organization, government, practical instruction in infantry, cavalry, and artillery, relations of cadets to officers and to each other, messing, mess-hall and hospital management," beg leave to submit the following observations:

The Corps of Cadets is composed of one cadet from each Congressional district and Territory and the District of Columbia; also ten appointed at large by the President.

Under the existing laws if all vacancies were filled the strength of the corps would be 344. The strength of the corps at this time, present and absent before the graduation of this year, is 268.

The commandant of the Corps of Cadets is an Army officer with the local rank of lieutenant-colonel, and is its Instructor of Tactics.

The corps is organized into a battalion of four companies, designated as A, B, C, and D, each company being composed indiscriminately of all four academic classes, each commanded by an Army officer, who is also an assistant instructor of tactics.

There is in each company a cadet captain, one first and two second lieutenants, one first sergeant, four duty sergeants, and four corporals. The adjutant, quartermaster, sergeant-major, and quartermaster-sergeants of the corps are also taken from the cadets.

As a rule the cadet officers are selected from the first-class, the sergeants from the second class, and the corporals from the third class. The General commanding the Army, under the War Department, has supervision and charge of the Military Academy.

The Superintendent has the immediate government and command of the Academy, and is commandant of the military post of West Point, and renders, through the Adjutant-General, all reports and estimates concerning the Academy, and also has supervision over the administration, discipline, and the instruction of the Corps of Cadets.

The rules, regulations, and orders pertaining to the discipline and government of the corps are minute and complete, and all violations or breaches of discipline are invariably followed by certain punishment.

The punishments to which a cadet shall be liable are comprised in the three following classes, viz:

1st. Privation of recreation and privileges, extra duty (not guard), reprimands, arrests, or confinement to his room or tent, or in light prison; reduction of officers or non-commissioned officers.

2d. Confinement in dark prison.

3d. Suspension, dismissal, with the privilege of resigning; public dismissal.

The punishments of the first class mentioned in the preceding paragraph may be inflicted by the Superintendent; those of the second class only by virtue of a sentence of a general courts-martial, except in cases of mutinous conduct or breach of arrest; and those of the third class only by the Secretary of War.

From personal observation and frequent conversation with the individual members of the Corps of Cadets we are of the opinion that the discipline and instruction tends to inculcate a soldierly and manly bearing towards their superiors and each other, and teaches them self-reliance, a spirit of just pride in their profession, and a devotion and loyalty to their country.

The committee has witnessed the practical exercises of the Corps of Cadets in parades, guard-mounting, infantry battalion and skirmish drill, also in light artillery and cavalry tactics, practice with siege and seacoast guns, mortar firing, and exercises in ponton and spar bridge-building, and is of the opinion that nothing is wanted in the skill, rapidity, and perfect accuracy with which these operations and movements are conducted.

While in barracks two cadets occupy one room, and each one in turn is responsible for one week for the police of the quarters.

The furniture is plain but substantial and comfortable. All quarters are furnished alike, and pictures, maps, and ornaments are prohibited from being affixed to the walls.

The cadets receive while in barracks, when the weather is favorable, military instruction each day, except Saturday and Sunday.

While in camp, which usually extends from about the middle of June to the 28th of August in each year, all studies are suspended and military exercises take place at such times as may be directed.

The relation of the cadet to his superior officers is strictly a military one, and there is demanded from him a prompt and unquestioning obedience to orders, as well as a personal recognition of his superior in rank at all times and places. On the other hand, the cadet knows what is required of him, and knows that his officers will treat him with exact justice and equity. He is taught in a kindly, painstaking manner those principles of personal honor and integrity that are inseparable from the military profession, and that are calculated to make him a useful member of society and an honor to the nation whose ward he is.

The pay of the cadet is \$540 a year, or \$45 a month. No money is paid to the cadet, and he is required to deposit all private funds with the quartermaster and commissary of the Corps of Cadets, for which a receipt is given him.

Every two months, commencing January 1 of each year, the cadet signs a muster and pay roll, which constitutes a receipt for his pay for that period. This roll is forwarded to the Paymaster-General of the Army, who places the aggregate amount due to the credit of the commissary and quartermaster of the Corps of Cadets, and it is drawn out by him as required.

Each cadet keeps a pass or check book and is credited in it with the amount of pay due him by law, and is charged with all articles procured by him from the storeroom.

He is charged with subsistence, clothing, bedding, text-books, washing, gas, brooms, buckets, brushes, policing barracks, use of dictionary, soap, printing, and such other articles as are considered necessary for him to have.

There is retained from his pay \$4 per month, known as the equipment fund, the object being to purchase with the amount so retained the equipments at his graduation required by an officer of the Army upon joining his regiment.

A strict supervision is kept over the accounts of each cadet, in order that he may not expend all of the pay allowed him.

The accounts with each cadet are simply and accurately kept, and in a few moments the financial standing of each cadet can be determined.

The meals are served in a large hall, and the quality of the food, its preparation, and serving, is conducted in an admirable, and, so far as we can learn, in a manner that is entirely satisfactory to the cadets. We append copies of bills of fare for two different days as a part of this report, marked A and B, respectively.

The corps is marched to meals by the cadet officers at stated hours.

The cost of subsistence for each cadet during the months of April and May, 1884, was \$34.65, or \$17.32½ cents per month for each cadet.

An abstract of the cost of provisions, &c., is appended, marked C.

A copy of the accounts of a cadet, taken from a pass-book, showing all the items charged as actually purchased, is filed as a part of this report, marked D.

The garden attached to the post furnishes a large quantity of vegetables for the use of the cadets.

The hospital is a model of neatness and cleanliness, its condition being all that could be required, reflecting credit upon the experienced surgeon in charge.

The healthfulness of the corps is shown by the fact that on June 9

only two cadets out of a total present of 263 were in hospital, and they being sufficiently convalescent to attend recitations.

A communication from the surgeon in charge of the post hospital as to the influence of the course of instruction and discipline upon the health and physical condition of the cadets is herewith attached, marked E.

The uniform, clothing, and shoes for the use of the corps are manufactured at the post, and are well made and from excellent material.

The use of tobacco is prohibited, as well as all other stimulants.

All members of the corps are required to attend church at least once each Sabbath. A prayer-meeting is held each week, which is numerously attended, and is conducted by the cadets. Sabbath-school is also well attended, some of the cadets having charge of the classes of the children residing on the post.

Owing to the peculiar fitness of and the unexceptional manner in which William F. Spurgin, captain, Twenty-first United States Infantry, treasurer of the Military Academy and quartermaster and commissary of the Corps of Cadets, has administered its important duties, we would respectfully recommend that he be detailed for another tour of four years in that position.

All of which is respectfully submitted.

L. F. MOSHER.
DANIEL RUGGLES.
HENRY HAYMOND.

WEST POINT, N. Y., *June 14, 1884.*

A.

Cadets' mess, United States Military Academy, Monday, May 26, 1884.

DINNER.—*Soup*: Ox-tail. *Relishes*: Mixed pickles, Worcestershire and Harvey sauces. *Meat*: Roast beef. *Vegetables*: Stewed tomatoes, roast English potatoes. *Dessert*: Fruit pudding, cherry sauce.

SUPPER.—Cold roast veal, apple-sauce, round buns, milk, butter, coffee, tea, sirup, &c.

BREAKFAST (following morning).—Broiled veal cutlets, potato sauté, Fench rolls, milk, coffee, bread, butter, sirup, &c.

B.

Cadets' mess, United States Military Academy, Sunday, June 1, 1884.

DINNER.—*Soup*: Chicken, with rice. *Relishes*: Lettuce salad, Worcestershire and Harvey sauces. *Meat*: Roast veal, stuffed. *Vegetables*: Asparagus, cream sauce, mashed potatoes, baked. *Dessert*: Strawberries and cream.

SUPPER.—Cold roast beef, stewed peaches, cake, milk, butter, coffee, tea, bread, sirup, &c.

BREAKFAST (following morning).—Broiled porter-house steak, French-fried potatoes, tea biscuits, milk, coffee, bread, butter, sirup, &c.

C.

Abstract of cost of provisions, property, &c., used, issued, and consumed at the cadets mess, United States Military Academy, West Point, N. Y., from May 1, 1874, to April 30, 1884.

Period.	Provisions.*		Contingent property.†		Furniture.‡	
	Cost for the year.	Average cost per cadet.	Cost for the year.	Average cost per cadet.	Cost for the year.	Average cost per cadet.
May 1, 1874, to April 30, 1875	\$47,826 05	\$192 07 ⁵² / ₂₃₉	\$3,062 32	\$12 29 ¹¹ / ₂₇₃	\$1,078 07	\$4 32 ¹³ / ₂₃₉
May 1, 1875, to April 30, 1876	51,649 25	189 19 ²⁸ / ₂₇₃	2,768 83	10 14 ⁸ / ₂₇₃	1,725 72	6 32 ³⁵ / ₂₇₃
May 1, 1876, to April 30, 1877	42,479 24	154 47 ¹ / ₂₇₃	2,134 11	7 76 ¹¹ / ₂₇₃	2,143 88	7 79 ¹³ / ₂₇₃
May 1, 1877, to April 30, 1878	38,540 18	153 54 ¹⁵⁴ / ₂₈₄	2,016 58	8 03 ²² / ₂₈₄	984 14	3 92 ²⁴ / ₂₈₄
May 1, 1878, to April 30, 1879	36,698 03	133 56 ²⁹ / ₂₉₉	1,856 75	6 77 ¹⁷ / ₂₉₉	780 15	3 88 ¹² / ₂₉₉
May 1, 1879, to April 30, 1880	36,792 63	143 16 ¹⁵ / ₂₅₇	1,491 11	5 82 ³² / ₂₅₇	417 03	1 62 ²² / ₂₅₇
May 1, 1880, to April 30, 1881	34,320 72	151 19 ⁵³ / ₂₅₇	1,486 78	6 54 ³² / ₂₅₇	783 56	3 45 ²⁷ / ₂₅₇
May 1, 1881, to April 30, 1882	33,005 36	160 92 ¹⁵⁴ / ₂₈₄	1,458 95	7 08 ⁴⁷ / ₂₈₄	937 74	4 55 ²⁵ / ₂₈₄
May 1, 1882, to April 30, 1883	43,294 14	181 14 ²⁹ / ₂₈₄	1,036 25	4 33 ¹⁸ / ₂₈₄	972 05	4 06 ¹³ / ₂₈₄
May 1, 1883, to April 30, 1884	48,722 04	181 79 ⁵³ / ₂₈₄	1,679 18	6 36 ¹⁸ / ₂₈₄	1,161 06	4 33 ²⁸ / ₂₈₄

Period.	Incidentals.§		Total.		Average number of cadets present.
	Cost for the year.	Average cost per cadet.	Cost for the year.	Average cost per cadet.	
May 1, 1874, to April 30, 1875	\$8,064 35	\$32 38 ¹⁷ / ₂₃₉	\$60,030 79	\$241 09	249—
May 1, 1875, to April 30, 1876	8,562 67	31 32 ²⁴ / ₂₇₃	64,706 47	250 02	273+
May 1, 1876, to April 30, 1877	8,892 95	32 35 ²⁸ / ₂₇₃	55,650 16	202 36	275+
May 1, 1877, to April 30, 1878	8,270 40	32 94 ¹⁶ / ₂₈₄	49,811 30	194 46	251—
May 1, 1878, to April 30, 1879	8,359 42	30 50 ²⁴ / ₂₉₉	47,703 35	174 10	274+
May 1, 1879, to April 30, 1880	7,995 30	31 11 ²⁷ / ₂₅₇	46,696 07	181 70	257+
May 1, 1880, to April 30, 1881	8,119 62	35 76 ³³ / ₂₅₇	44,710 68	196 96	227+
May 1, 1881, to April 30, 1882	5,743 89	27 83 ¹⁷ / ₂₈₄	43,145 94	209 45	206+
May 1, 1882, to April 30, 1883	5,894 72	24 06 ¹⁸ / ₂₈₄	51,197 16	214 21	239+
May 1, 1883, to April 30, 1884	5,304 23	19 79 ⁵⁷ / ₂₈₄	56,866 81	212 19	268—

* Consumed in cadets' mess and cadets' hospital.

† Table linen, napkins, towelings; aprons and jackets for waiters; brooms, mops, brushes, soap, &c.

‡ Dishes, cooking utensils, &c.; *i. e.*, general table and kitchen furniture.

§ Pay of employes, freight on supplies, and repairs to furniture.

Respectfully submitted.

WM. F. SPURGIN,
*Captain, Twenty-first Infantry,
 Quartermaster and Commissary Cadets,
 Treasurer United States Military Academy.*

D.

[Paste this receipt on first fly leaf of Account Book.]

TREASURER'S OFFICE, U. S. MILITARY ACADEMY,
West Point, N. Y., June 14, 1883.

Received from Candidate ————, three and $\frac{54}{100}$ dollars.

\$3 $\frac{54}{100}$.

WM. F. SPURGIN,
Captain 21st Infantry, Treasurer.

[Paste this on first fly leaf of Account Book.]

TREASURER'S OFFICE, U. S. MILITARY ACADEMY,
West Point, N. Y., July 1, 1883.

Received from new Cadet ————, eighty dollars.

\$80.

WM. F. SPURGIN,
Captain 21st Infantry, Treasurer.

Cadet ————, in account current with the treasurer of the Military Academy.

Cr.

Date of order.	Authorized to receive the following articles from the Cadet Quartermaster's Department—	Amount.	Total.
1883. June —	Mattress	\$10 37	
	Blankets	6 45	
	Comfortable	2 35	
	Pillow	2 19	
	Washstand	1 05	
	Chair	1 65	
	2 buckets	88	
	Broom	40	
	Washbowl	40	
	Dipper	18	
	Looking-glass	70	
	2 white jackets	8 00	\$26 62
	1 flannel jacket	5 90	
	1 pair of flannel pants	4 75	
	Forage cap	3 02	18 65
	4 sheets	2 80	
	3 pillow-cases	75	
	2 clothes bags	76	
	1 nail-brush	27	
	2 towels	36	
	Cake toilet soap	08	
	Tumbler	05	
	Quire uniform paper	14	
	Razor	1 40	
	Razor-strop	40	
	Shaving-brush	49	10 03
	Shaving-soap	06	
	Shaving-mug	09	
	10 postage-stamps	30	
	12 collars	96	
	6 pairs uniform gloves	1 80	
	1 paper pins	06	
	6 sets belts	2 16	
	Infantry Tactics	1 40	
	2 stocks	10	
	1 pair uniform shoes	4 75	7 42
	1 pair double-soled shoes	5 00	
			9 75
July —	Dress coat	16 85	
	8 pairs white pants	28 80	
			45 65
	Dress hat	2 90	
	Helmet	3 15	
	Helmet trimmings	1 60	
	Bathing suit	50	
6	Quire uniform paper	14	
	Envelopes	06	
	6 pens	06	
	2 collar buttons	20	

Cadet ———, ———, *in account current with the treasurer, &c.*—Continued.

CR.

Date of order.	Authorized to receive the following articles from the Cadet Quartermaster's Department—	Amount.	Total
1883. July 19	Tooth powder	\$0 35	
	Tooth brush	30	
	10 postage-stamps	30	
	Quire uniform paper	14	\$9 56
	Cosmic oil	14	
	Account book	90	5 67
Aug. —	1 piece crape	25	
	1 Bourdon	1 44	
	1 rhetoric	1 05	
	1 English grammar	90	
	1 slate	27	
	1 ex. book	48	
	1 pad	10	
	Amount		
	Paid		
	Balance due .....			31 37
	By balance from last settlement		
	By deposit		83 54
	By equipment fund from		
	By credit with cadet quartermaster's department		
	By pay from July 1, to August 31, 1883, inclusive		90 00
			173 54

DR.

To equipment fund	8 00	
To board from June 14 (79 days)	47 05	
To damages to mess property		
To laundry	8 62	
To baths, shoe black, &c.	2 28	
To barber	39	
To confectioners		
To policing barracks	2 20	
To printing	24	
To Dialectic Society		
To gas fund	70	
To dentist		
To damages to Quartermaster's Department, U. S. A		
To damages to ordnance		
To damages to library		
To postage	06	
To expressage		
To periodicals		
To miscellaneous (use of dictionary)	05	
To dancing lessons	1 72	
To oath of allegiance	25	
To cash		
To amount paid cadet quartermaster's department	101 98	
Balance in hands of treasurer		173 54

CR.

By balance from last settlement		
By deposit		
By equipment fund from		
By credit with cadet quartermaster's department		
By pay from September 1 to October 31, 1883, inclusive	90 00	90 00
By balance from last settlement		
By deposit		
By equipment fund from		
By credit with cadet quartermaster's department		
By pay from November 1 to December 31, 1883, inclusive	90 00	90 00

Cadet ———, in account current with the treasurer, &c.—Continued.

Dr.

Date of cr.	Authorized to receive the following articles from the Cadet Quartermaster's Department—	Amount.	Total.
	To equipment fund.....	\$8 00	
	To board (61 days).....	36 00	
	To damages to mess property.....	05	
	To laundry.....	5 54	
	To baths, shoe-black, &c.....	1 99	
	To barber.....	26	
	To confectioner.....		
	To policing barracks.....	1 34	
	To printing.....	28	
	To Dialectic Society.....		
	To gas fund.....	70	
	To dentist.....		
	To damages to Quartermaster's Department, U. S. A.....		
	To damages to ordnance.....		
	To damages to library.....		
	To postage.....	07	
	To expressage.....		
	To periodicals.....		
	To miscellaneous.....	05	
	To cash.....		
	To amount paid cadet quartermaster's department.....	35 72	
	Balance in hands of treasurer.....		\$90 00
1883.	Balance due from last settlement.....		31 37
Sept. 6	Garters.....	33	
	Indelible ink.....	18	
	Slippers.....	1 50	
13	Eye shade.....	10	
	10 postage stamps.....	30	
20	Suspenders.....	60	
Oct. 25	Pad.....	10	
	Record book.....	48	
	Gymnastics.....	1 32	3 59
	Logarithm tables.....	48	
	1 pair winter shoes.....		1 80
	Amount.....	36 76	6 00
	Paid.....		42 76
	Balance due.....		35 72
			7 04
	To equipment fund.....	8 00	
	To board (61 days).....	35 00	
	To damages to mess property.....	08	
	To laundry.....	5 16	
	To baths, shoe-black, &c.....	1 43	
	To barber.....	39	
	To confectioners.....		
	To policing barracks.....	1 50	
	To printing.....	24	
	To Dialectic Society.....		
	To gas fund.....	70	
	To dentist.....		
	To damages to Quartermaster's Department, U. S. A.....		
	To damages to ordnance.....		
	To damages to library.....		
	To postage.....	05	
	To expressage.....		
	To periodicals.....		
	To miscellaneous.....		
	To cash.....		
	To amount paid cadet quartermaster's department.....	23 04	
	Balance in hands of treasurer.....		75 64
			14 36

Cr.

	By balance from last settlement.....		14 36
	By deposit.....		
	By equipment fund from.....		
	By credit with cadet quartermaster's department.....		
	By pay from January 1 to February 29, 1884, inclusive.....		90 00
			104 36

Cadet ———, in account current with the treasurer, &c.—Continued.

Dr.

Date of order.	Authorized to receive the following articles from the Cadet Quartermaster's Department—	Amount.	Total.
1883.	Balance due from last settlement.....		\$7 04
Nov. 8	Envelopes.....	\$0 07	
	Quire uniform paper.....	14	
	10 postage stamps.....	20	
	Tooth brush.....	30	
	6 pens.....	06	
	Matches.....	02	
	Soap.....	08	
	Soap dish.....	09	
22	Quire uniform paper.....	14	
	3 pairs gloves.....	90	
	Matches.....	02	
30	Razor.....	1 40	
	Pair winter gloves.....	70	
	6 pens.....	06	
Dec. 6	6 collars.....	48	
	Shaving soap.....	06	
	Quire note-paper.....	12	
	Envelopes.....	12	
20	Overshoes.....	1 11	4 96
	Matches.....	02	
	Pad, 11 cents; 4 postage stamps.....	21	
Aug.	1 pair gray pants.....	6 90	
	Window shade.....	1 00	
	Pants repaired.....	60	0 24
	Shoes repaired.....	1 20	
			1 80
	Amount.....		23 04
	Paid.....		23 04
	Balance due.....		
1884.			
Jan. 17	1 pair gray pants.....	6 50	
	10 postage stamps.....	20	
	Anal. Geometry.....	1 55	
	Surveying.....	1 55	
	Legendre.....	1 10	
	Keetel's Grammar.....	1 45	
	Keetel's Reader.....	1 20	
	"How to Write".....	42	
	Trigonometry.....	45	
	Pad.....	10	
31	2 boxes matches.....	05	
	Ink.....	04	
	Spool cotton.....	05	
	Hank of thread.....	05	
	Quire uniform paper.....	14	
	10 postage stamps.....	20	
	Envelopes.....	06	
Feb. 7	Waste paper.....	11	8 61
	Lead pencil.....	08	
	10 postage stamps.....	20	
14	10 postage stamps.....	20	
	Pad.....	11	
	Pair uniform shoes.....		70
	Dress coat.....		4 75
21	Tumbler.....	05	17 25
	Forage cap.....	3 02	
	Crape.....	25	
	Amount.....		3 32
	Paid.....		41 13
	Balance due.....		41 13
	To equipment fund.....	8 00	
	To board (60 days).....	33 00	
	To damages to mess property.....	05	
	To laundry.....	4 15	
	To baths, shoe-black, &c.....	1 12	
	To barber.....	30	
	To confectioners.....		
	To policing barracks.....	1 63	
	To printing.....	24	
	To Dialectic Society.....		

Cadet ———, in account current with the treasurer, &c.—Continued.

Dr.

Date of order.	Authorized to receive the following articles from the Cadet Quartermaster's Department—	Amount.	Total.
	To gas fund	\$0 70	
	To dentist		
	To damages to Quartermaster's Department, U. S. A.		
	To damages to ordnance		
	To damages to library		
	To postage	05	
	To expressage		
	To periodicals		
	To miscellaneous	05	
	To oath of office	25	
	To cash		
	To amount paid to cadet quartermaster's department	41 13	
			\$90 76
	Balance in hands of treasurer		13 60

Cr.

1884.	By balance from last settlement		\$13 60
	By deposit		
	By equipment fund from July 1st, 1883		32 00
	By credit with cadet-quartermaster's department	\$11 50	
	By credit with Cadet Evans, E. W.	15 00	
	By credit with Cadet Lucas, E. W.	20 00	
			46 50
	By pay from March 1 to April 26, 1884, inclusive		84 00
			176 10

Dr.

	To equipment fund		
	To board to April 26, 1884 (57 days)	31 80	
	To damages to mess property		
	To laundry	4 36	
	To baths, shoe-black, &c.	1 15	
	To barber	38	
	To confectioners		
	To policing barracks	1 50	
	To printing	20	
	To Dialectic Society		
	To gas fund	60	
	To dentist		
	To damages to Quartermaster's Department, U. S. A.		
	To damages to ordnance		
	To damages to library		
	To postage	01	
	To expressage		
	To periodicals		
	To miscellaneous	05	
	To Army and Navy Register	2 00	
	To balance paid	7 67	
	To cash	125 00	
	To amount paid cadet-quartermaster's department	1 37	
			176 10
	Balance in hands of treasurer		
Mar. 27	26 stamps	40	
	Envelopes	14	
	Quitte note-paper	17	
	Pad	11	
			82
	Pants repaired		55

[Headquarters United States Military Academy, Office Treasurer, Quartermaster, and Commissary Cadets].

WEST POINT, N. Y., May 27, 1884.

Mailed this date to Mr. ———, P. O. box 105, ———, ——— County, ———, my check, No. 9296, on assistant treasurer United States in New York for seven dollars and sixty-seven cents.

WM. F. SPURGIN,
Captain 21st Infantry, Treasurer U. S. M. A.

Amount	\$1 37
Paid	1 37
Balance due	

E.

Physical examination of cadet graduating class of the United States Military Academy, West Point, N. Y., June 11, 1884.

[The heavier figures denote the result of the primary examination. Owing to the rickety condition of the apparatus for taking the head measurement they are evidently in some cases inaccurate. These measurements were also taken by two different surgeons, an interval of four years intervening.]

Date.	Number of candidate.	Name.	Nativity.		Age.	Height.	Weight.	Physical development.				Limbs, circumference.		Vaccination marks.	Use of tobacco.	Result of examination.	
			Born in—	Appointed from—				Antero-posterior (centimeters).	Bilateral (centimeters).	Facial angle (degrees).	Vision.	Expiration (inches).	Inspiration (inches).				Capacity (cubic inches).
	1	Hatch, Eward E.....	Me.....	Me.....	20	67.5	130	32	35½	32	35½	240	10	19			
	2	Sturgis, Samuel D., jr.....	Mo.....	Dak.....	18	68.5	143	31	34	31	34	240	10	20½			
	3	Gillette, Cassius E.....	N. Y.....	Pa.....	20	71.3	142	32	36	32	36	285	10	19½			
	4	Hatcheson, Grote.....	Ohio.....	Ohio.....	17	66.3	111	26½	32	26½	32	226	9	18			
	5	Stryer, Henry D.....	Pa.....	Pa.....	17	69.2	137	29	32	29	32	210	9	18			
	6	Ayer, Waldo E.....	Mass.....	Mass.....	20	66.3	130	31	33	31	33	240	10	19½			
	7	Bellinger, John B.....	S. C.....	S. C.....	18	67	140	32	33	31	33	221	11	19			
	8	Dentler, Clarence E.....	Pa.....	Pa.....	20	63	110	30	33	31	33	200	10	18½			
	9	Hale, Irving.....	N. Y.....	Pa.....	18	64.5	125	32	35	32	35	220	11	21			
	10	Gaillard, David Du B.....	S. C.....	Pa.....	20	65	130	32	35	32	35	230	11	21			
	11	Sanford, James C.....	N. Y.....	S. C.....	20	69	131	32	34½	32	34½	241	12	19			
	12	Benton, Elisha S.....	Mass.....	N. Y.....	20	65.5	107	29	31½	29	31½	250	12	20			
	13	Clarke, Powhatan H.....	La.....	Mass.....	21	66	123	31	34	31	34	200	9	18			
					17	68.5	127	31	33½	31	33½	230	11	22			
					11	71.1	142	32	35	32	35	257	11	20			

A. K. SMITH, Surgeon, U. S. A.

14	Hughes, James B.	N. C.	17	69.3	135	32	355	255	11	21
15	Noble, Robert H.	Md.	21	69.9	140	83	36	270	11	20
16	Gallagher, Hugh J.	Iowa.	18	68	140	84	36	252	10	20
17	Chittenden, Hiram M.	Canada	18	66.5	126	31	35	237	10	19
18	Knight, John T.	N. Y.	22	66.7	133	32	36	237	11	20
19	Corthell, Charles L.	N. Y.	21	69.5	138	31	34	250	10	19
20	Lewis, Isaac N.	Mass	6	69.6	135	32	35	212	10	19
21	Thompson, James K.	Va.	2	70.5	125	34	37	254	10	21
22	Simpson, Wendell L.	Pa.	2	71	180	28	31	200	9	17
23	Foote, Stephen M.	Iowa.	1	67.4	130	31	33	250	10	20
24	Cress, George O.	Iowa.	7	68.4	145	32	35	260	10	20
25	Palmer, Frederick L.	N. Y.	11	71	160	32	35	230	11	21
26	Richardson, Wilds P.	N. Y.	10	66.5	147	33	38	285	11	21
27	Sayre, Ferrand	Mich	4	68.3	150	34	37	300	11	21
28	Ladd, Eugene F.	Vt.	4	65	130	32	35	240	10	20
29	Cabell, De Roser C.	Ill	8	67.1	152	33	36	257	10	20
30	Sibert, William L.	Ark.	1	67.1	155	34	37	284	11	21
31	Cole, James A.	Ga.	3	65.5	134	32	36	240	11	21
32	Shanks, David C.	Tex.	1	68.6	154	36	39	243	12	22
33	Robbins, Ernest L.	Mo.	2	69.3	170	36	36	200	10	19
34	Conklin, John, jr.	Mo.	11	68.3	147	32	35	242	11	21
35	Morse, Benjamin C.	Vt.	9	66.5	143	32	35	215	10	21
36	Taylor, Harry	Vt.	9	68.8	160	35	37	224	12	23
37	Babbitt, Edwin B.	Ark.	9	62.5	108	33	35	225	10	18
		Ark.	11	63.3	116	32	34	252	10	18
		Ala.	8	70.3	160	34	36	285	11	22
		Ala.	23	70.8	185	36	38	260	11	22
		N. Y.	7	70.5	141	30	33	230	9	19
		Va.	2	60	172	31	34	250	10	20
		Va.	7	70	183	35	39	247	12	23
		Ind.	9	69	117	30	33	240	9	18
		Ind.	9	70.7	129	31	34	301	9	18
		N. Y.	9	68	138	33	36	301	10	20
		Mo.	8	64.5	120	31	34	200	10	19
		Mo.	8	64.6	120	32	35	231	9	18
		N. H.	10	67.5	120	30	33	210	9	18
		N. H.	12	68.1	142	32	35	244	10	20
		N. Y.	10	68.5	135	30	33	200	10	19
		Wash. Ter.	11	69	142	32	35	215	10	19

Correct copy from the hospital records.

REPORT OF FOURTH COMMITTEE.

The committee appointed to investigate public buildings, grounds, sewerage, roads, and improvements, reports that the buildings and grounds are generally in a most satisfactory condition. In most cases the buildings are adequate for their uses. The grounds are most appropriate for that combination of public park and the exercising grounds of a military school which are especial features of West Point.

The total reservation covers about 2,200 acres, much of it wild mountain land.

There are about $7\frac{2}{3}$ miles of interior roads and $5\frac{1}{6}$ miles of interior paths; also about 10 miles of exterior roads.

The accompanying map shows the arrangement of the grounds and buildings of the Academy.

The care exercised over both buildings and grounds is scrupulous, rigid, and incessant. There is nothing in this respect concerning which we can suggest an improvement on the existing methods.

There are a few special points to which we would ask the Board's careful attention.

HOUSE DRAINAGE AND SEWERAGE.

The systems of house drainage and sewerage as now existing are a great improvement upon those in vogue a few years ago. They seem to be constructed, in the main, on correct principles, and they seem to be well constructed, at least so far as the officers' quarters and the general scheme of sewerage are concerned.

We must except from this commendation the cadets' sink, which is in close connection with the barracks, and which is the only accommodation of the kind afforded for the use of the school when not in camp. This is antiquated and entirely unsuited to the requirements of the modern standard of safety and decency. It is about on a level with the ordinary latrine of a public school or a large railway station of ten or fifteen years ago. It would not be tolerated in connection with a well-controlled modern school, railway station, or hotel. It is filled with the odor of putrid urine, and in spite of the most thorough inspection and the most careful attention, it lacks very much of conformity with modern ideas on the subject. That under its present careful control it is a source of ill health is not to be supposed; but it is certainly not such an example as should be set before the young men who are hereafter to control and regulate similar details at the military posts throughout the country.

We earnestly recommend that the whole establishment, with the exception of the walls of the building, be entirely renewed, the most modern apparatus being used and the best approved aids to absolute cleanliness being adopted. Wood should form no part of the construction in any connection with the water closets or urinals. This part of the establishment should be made a model for imitation and not left as now, an example to be avoided.

The recent improvement made by abandoning the old pit, which was emptied and flushed from time to time, and substituting pipes for direct flow from the closets to the sewer was an excellent one, and in reconstruction this need not be disturbed. All that is needed is a proper renewal of the apparatus and of the interior of the building, including the floor, together with the introduction of means for securing an entire

absence of odor, or, in other words, the entire removal of waste matters, nothing being left to putrefy.

The camp sink, which is well arranged in a subterranean gallery, with light and ventilation from the hillside, was brought into use only on the last day of our visit. There was, therefore, no means of judging of its condition when in continued use. It has substantially the same defects of construction which have been noted in the case of the sink at the barracks, and it seems reasonable to suppose that like conditions will produce like results, so that the renewal of much of the apparatus and the renewal of wooden floors and partitions may properly be recommended.

The only serious criticism to be made concerning the sewers and the house drains leading to them relates to the man-holes and flushing-holes which have been placed at frequent intervals along the lines. On all the sewers, at short distances apart, man-holes have been built to give access to them and to facilitate flushing. These man-holes are at the bottom of large diameter. The floor is flat. The sewer, and generally the house-drain, flows into it, and the continuation of the sewer flows out of it at a somewhat lower level. The influent stream is always arrested and spread out over the flat bottom, distributing a considerable part of its solid matters at points where the ordinary flow has no depth. It is only when the man-holes are flushed with a hose that such deposits are washed away. So long as they remain they are a source of offensive odors, if not of dangerous emanations, and they should certainly be obviated.

A similar defect exists in connection with the drainage of each house where the discharge of the main drain is arrested by a flat floor to take a fresh start at the outlet pipe, which has its invert on a level with the floor.

In both cases the difficulty can be very easily overcome. All that is necessary is to connect each incoming channel with the outlet by semi-circular concrete channels of the same radius with the sewer or house-drain and laid on such a curve as to conduct the flow directly into the outgoing pipe. There will then be no retention of solid matters and everything will be carried on through the man-holes as securely as through the drains and sewers themselves. This will in no way lessen the utility of the man-holes for inspection or flushing.

In addition to this change, we should recommend in the sewerage system the abandonment of the present occasional hand-flushing, which is practicable only at too long intervals, and the substitution thereof of permanent automatic flush tanks, securing a much more frequent and more complete cleansing.

In house drainage, one very simple change may with advantage be made. The accompanying diagram shows the method adopted, almost without exception, for the simple plumbing works of the officers' quarters: Two outlets are provided in each case, one for the outflow of the kitchen sink and of the bath, and another for the water-closet discharge. The latter is ventilated by a through draft from the sewer to an outlet above the roof. The former has in an indirect way the same means of communication above the roof, but through a pipe too small to secure an efficient movement of air. This duplication is objectionable. In our opinion, the small pipe serving as an outlet for the bath and sink should be abandoned, and these fixtures should be connected with the main soil-pipe. The "brick-box" should be abandoned, as should the trap between this box and the sewer. There would then be a single

channel passing without a trap from the sewer to the top of the house, which would have the advantage of the more frequent flushing that would come of its use for all purposes. From this all fixtures in the house would be separated each by its own effective trap, and it would serve as a most effective ventilator for the sewer. With this simple and inexpensive change nothing further seems necessary to the correct arrangement of the flushing works of the quarters, save the substitution of proper water-closets in many cases.

Some of the quarters situated near the foot of the hill, by which the occupied portion of the reservation is bordered, are subject to excessive dampness of cellars and foundation walls. This constitutes a serious objection, and not only in those cases where there are kitchens and other occupied rooms in the basement. At certain seasons of the year dampness arising from this source pervades, to a greater or less extent, the whole atmosphere of the house. We recommend that a suitable catch-water drain to remove the ground water flowing from the hillside be constructed at the rear of all such houses as are now defective in this respect. This drain should be lower than the foundation walls of the houses and should be filled with gravel, or other porous material, nearly to the surface of the ground, being furnished at its bottom with a drain tile to afford a ready means of escape for the water which now works its way slowly to and under the foundations.

PUBLIC LATRINES.

The most conspicuous defect developed by our investigation is the entire absence of latrine accommodations for the great number of strangers who frequent the reservation during the summer months. Neither at the landing nor anywhere within the grounds are there retiring places save for those who are guests of the hotel. Until such accommodations are provided it will be impossible to maintain a decent condition of the more secluded parts of the grounds. We recommend as a matter of absolute necessity the construction of at least two cottages for each of the sexes.

BATHING FACILITIES.

Provision is made in a bill now before Congress for the construction of a gymnasium, and the regular appropriation bill provides for the erection of baths. In our judgment it would be best that these new baths should be built under the same roof with the gymnasium.

SUNDRY IMPROVEMENTS.

While the buildings on the plateau and elsewhere within sight in that portion of the reservation that is frequented by visitors are generally of an excellent character, there is considerable district lying under the hill toward the north containing a large number of shabby and very old wooden buildings. Some of these are used for shops and other public purposes, while others serve as quarters for the married enlisted men at the post. The conditions here are quite different from those usually found at a military post. Much of the labor of policing the grounds, cultivating gardens, &c., is performed by detailed enlisted men who have been in the service for many years and who have been identified with the Academy in some cases from their childhood. They constitute altogether a large and useful community, whose comfortable housing is important. Many of the small houses occupied by these men and their

families are of a character that would not be accepted as satisfactory in a manufacturing village. They certainly are entirely inappropriate to a well-kept Government institution like this. We recommend that these buildings be replaced by suitable substantial brick or stone quarters, and we recommend a similar substitution of proper structures for all of the tumble-down wooden shops and sheds above referred to. The existing condition has a most unsatisfactory and poverty-stricken look, and is without justification, even on the score of economy. If it is not desirable that the persons of the class referred to should be retained in the service of the Government, and if storage is not needed for the property that is now housed in the shops and sheds described, then the building should be entirely dispensed with; but if such accommodation is needed, it surely should be of a character suitable to the place.

One of the most useful elements of the economical part of the establishment is the excellent and well-equipped laundry, where the washing for the cadets is done. This building contains all of the machinery, &c., necessary, but the ironing-room is insufficient. In order to provide adequately for the needs of the case the building should be extended 20 feet to the northward.

Many of the cadets and a larger proportion of the enlisted men are of the Catholic faith. Others of the enlisted men belong to the different Protestant professions. For the accommodation of all of these there is only an antiquated and entirely inadequate chapel, which is used by Catholics at one time and by Protestants at another, and as a school-room during the week. In addition to this, its basement is used for a room for the practicing of the band. We recommend that a modest but sufficient chapel shall be constructed, and, while there is no objection to its use as a school, we recommend that it be not used at any time by the band.

The cavalry stable is in most respects well suited for its uses. It is large, light, and convenient. We have no improvement to suggest here, save in the flooring of the stalls and alley way. The latter especially, which is paved with very smooth granite blocks, is so slippery as to endanger the safety of the horses ridden or led over it. The injury done to horses by falling or slipping must be sufficient to compensate in a short time for the cost of suitable pavement.

It is proper to say that while some of the defects covered by the description herein given are of a serious character, they are much less serious in their effect on the well being of the population at West Point than they would be in a community governed by ordinary town or village regulations. The minute care and attention constantly given to every belonging of the Military Academy is so admirable that what would constitute a nuisance elsewhere is here very much mitigated. At the same time there is no good reason why even slight defects, and many of these enumerated are not slight, should be allowed to continue. There can be no question that the cost of the extra care required is much more than the interest on the necessary cost of securing a perfect condition at every point. It is doubtless due only to the relatively good condition secured by the military control that greater attention has not been paid by former Boards of Visitors to such shortcomings as are here noticed for the first time.

The water supply of the Military Academy is at most times ample. Provision has recently been made for replenishing the distributing reservoir from Round Pond, so that there seems no reason to apprehend a deficiency of water, even during prolonged droughts. The distribution is now somewhat defective by reason of the insufficient size of the main.

This is being enlarged, section by section, by annual appropriations made for the purpose, and after this year it is thought that the head, even at the most distant and most elevated houses, will be sufficient.

Your committee would suggest one modification of the present arrangement. The difference of elevation between the plateau, where the Academy buildings, cadet barracks, and officers' quarters are mostly placed, and the lower land near the river, where many of the enlisted men and others are lodged, is very great. Both are now supplied from the same head. It would be possible to increase the pressure on the general system, so as to give a sufficient pressure in all of the quarters; were it not that this would bring an extra strain on the water-pipes and fittings of houses under the hill, which are already subjected to quite as much pressure as they can bear. If the pipes supplying all of this lower district were separated from the pressure in the distributing main, and were connected with a small reservoir or tank filled from the main, this tank, placed at the top of the slope, would give an ample head for all the requirements of the lower district, relieving the whole of the lower system of its present inordinate pressure. The cost of this change would not be serious, and would soon be made up by the saving in repairs necessary under the present arrangement.

The gas works seem to be adequate, and to be well managed. The gas is of excellent quality, and is supplied under good pressure.

Concerning the grounds, which it was one of the duties of this committee to report upon, there is really no room for criticism or for suggestion. We would not recommend the filling up of the present depression in the grounds near the flag-staff. This depression is not offensive in its present condition, and it might easily and cheaply be made more ornamental in its character. Were it to be filled, bringing the whole plateau to one general level, the apparent distance from the quarters at the west of the plateau to Fort Clinton would be much reduced, which would be a disadvantage.

The new observatory, built from the amount paid by the West Shore Railroad Company for the privilege of tunneling under the point, is an admirable structure, well placed and well arranged for the excellent astronomical apparatus with which it is being provided.

The recommendation has been made by previous Boards of Visitors that the academic building be enlarged by the rebuilding of its roof and upper story. This suggestion we cordially indorse, urging especially the importance of adopting as nearly as possible fire-proof methods of construction in the new work, and so far as practicable in such renewals as may be desirable in the lower stories.

ESTIMATE OF COST.

Your committee is unable to submit within the time allotted for making this report, and with the data hastily collected, anything like an exact estimate of the cost of the various recommendations made. It is to be said, however, that the changes proposed are only such as seem to be really necessary to the reasonable perfection of this important institution, and that in no case do they call for any very large expenditure of money.

A competent board of survey would be able in a short time to prepare a reliable estimate, which, as already said, it is impossible for the committee to do.

Respectfully submitted.

GEO. E. WARING, JR.
HENRY HAYMOND.
GEO. W. HOUK.

Water-closets, sinks, &c., in the various buildings connected with the Military Academy, June, 1884.

	Water-closets.	Urinals.	Sinks.	Baths.
Twenty-five officers' quarters (each)	2	.....	1	1
Twenty-nine soldiers' quarters (each) .....	.....	.....	1	1
Six citizens'	1	.....	1	1
New hospital	8	2	2	2
Hotel	12	6	3	.....
Laboratory	2	2	1	1
Post offices	1	.....	1	1
Band barracks	12	.....	20	2
Cadet barracks	38	20	.....	13
Engineer barracks	8	.....	2	1
Artillery barracks	6	.....	1	1
Cavalry barracks	6	.....	1	1
Soldiers' hospital	3	.....	2	1
School-house for officers' children	1	1	.....	.....
School-house for soldiers' children	1	.....	.....	.....
Railroad station	1	1	.....	.....
Commissary of cadets	1	1	1	.....
Cemetery cottage .....	.....	.....	1	.....
Cavalry stables	1	1	.....	.....
South gate guard-house .....	(*)	.....	.....	.....
Cadet laundry	1	1	1	.....
Soldiers' bath-house	1	.....	1	10
Post sutler's store .....	.....	.....	1	.....
Livery stables	1	.....	1	.....
Cadet guard-house	1	.....	1	.....
Cadet camp sink	20	.....	12	.....
Ordnance instruction house	1	.....	.....	.....
Ferry house	1	.....	.....	.....
Total	131	35	55	36

* An earth closet.

NOTE.—The water-closets are generally iron-hopper closets, flushed with valves opened by the depression of the seat, the exception being the closets in the new hospital and one each in the officers' quarters, which are either pan closets or Jennings closets (valve flush).

Twenty new baths are now being constructed in connection with the cadet barracks.

REPORT OF FIFTH COMMITTEE.

[With papers attached, marked, respectively, A and B.]

The committee on fiscal affairs, cost of maintenance of the Military Academy, source of revenues, method of accountability for expenditures: (a) of quartermaster's fund, (b) of commissary fund, (c) of hospital fund, (d) of post fund, (e) of contingent fund, beg leave to report as follows:

The Academy derives its revenues exclusively from Congressional appropriations.

Estimates are made by the proper officers for their respective departments to the Superintendent, who makes the same to the Secretary of War; the Secretary of War submits such estimates to Congress. Upon the appropriation by Congress the amount appropriated is placed to the credit of the disbursing officer of the Military Academy in the United States subtreasury at New York, and is drawn out upon checks as required for use.

Each amount for which a check is given has to be certified by the chief officer of each department for whose use the money is drawn, and afterward finally certified by the Superintendent of the Academy.

The money appropriated for the pay of officers, professors, and cadets is disbursed through a paymaster of the Army in the same manner as it is to officers in the regular service. These moneys do not come

through the disbursing officer of the post, except the pay of cadets, which is placed to the credit of the treasurer of the Academy, and all this money is disbursed on the authority of the Superintendent.

As to the regulation in regard to method of disbursement, paragraph No. 1637 of the Army Regulations, provide that:

All officers or other persons who are charged with the safe keeping, transfer, or disbursement of the public moneys shall keep an accurate entry of each sum received and of each payment or transfer; and shall render distinct accounts of the application thereof, according to the appropriation under which the moneys may have been advanced to them. Every officer or agent who, having received public money which he is not authorized to retain as salary, pay, or emolument, fails to render his accounts for the same shall be deemed guilty of embezzlement, and shall be fined in a sum equal to the amount of the money embezzled, and shall be imprisoned not less than six months or more than ten years.

The subsequent sections of the Army Regulations up to paragraph 1674 inclusive, give further and complete details respecting the general rules for accounts, returns, and reports of public money, and are applicable to the disbursements at the Academy.

We submit a tabulated statement, marked A and made a part of the sub-report, showing the amounts appropriated by Congress on estimates made by the Superintendent for current and ordinary expenses, miscellaneous items and incidental expenses, and buildings and grounds, from 1837 to 1884 inclusive, and a statement of the amounts covered into the Treasury of the United States from 1862 to 1883 inclusive.

We also submit a tabulated statement, marked B, of the amounts paid cadets from 1st January, 1818, to 1st of May, 1884, with appended statement of Captain Spurgin, treasurer United States Military Academy.

Post fund.—There is a post fund, which is distinct from all appropriations, and is constituted of rents, as follows:

From hotel property	\$2,000
From post-office cottage	150
From confectionery store	150
From livery stable	200
Total	2,500

This amount is disbursed annually in keeping these buildings in repair and purchasing sheet music for the band, providing seats and conveniences for the grounds, and such other matters as may be needed, not otherwise specially provided for; also for hiring needed conveyances for Board of Visitors, Secretary of War, and such other official persons as visit the post on public business.

There is at this time in that fund a balance of about \$400.

Your committee have found at the post perfect order and regularity in the system of keeping all these accounts, and have no recommendation to make with any view to a change or any improvement.

We have been unable to learn that there ever has been the slightest deviation from integrity in the discharge of any duty here connected with the public funds during the existence of the Academy, a fact which testifies at once to individual and official qualifications and honesty, and to the tone of the Academy itself.

Very respectfully submitted.

GEORGE W. HOUK.
LEWIS BEACH.
F. W. PALFREY.

PAPER A.

Summary of Congressional appropriations, on estimates made by the Superintendent, for current and ordinary expenses, miscellaneous items, and incidental expenses, and buildings and grounds, for the support of the United States Military Academy from 1837 to 1884, inclusive, and statement of amounts covered into Treasury of the United States from 1862 to 1883, inclusive.

Year.	Amounts appropriated.	Covered into the Treasury of the United States.	Year.	Amounts appropriated.	Covered into the Treasury of the United States.
1837	\$71,466 94		1861-'62	\$61,500 00	\$188 79
1838	74,491 39		1862-'63	50,550 00	
1839	49,497 09		1863-'64	61,997 00	887 91
1840	28,486 95		1864-'65	79,820 00	1,135 37
1841	35,268 90		1865-'66	98,027 00	
1842	27,436 00		1866-'67	141,900 00	1,342 58
1843 to July 1	12,455 10		1867-'68	208,867 00	15,456 95
1843-'44	56,241 20		1868-'69	87,805 00	
1844-'45	28,769 00		1869-'70	83,630 00	4,472 87
1845-'46	22,000 00		1870-'71	102,850 00	4,649 91
1846-'47	37,000 00		1871-'72	87,494 00	12,072 09
1847-'48	20,000 00		1872-'73	103,163 82	3,943 85
1848-'49	31,655 00		1873-'74	123,938 06	3,592 10
1849-'50	36,900 00		1874-'75	102,835 00	2,656 98
1850-'51	34,884 00		1875-'76	129,740 00	4,258 51
1851-'52	30,635 00		1876-'77	63,465 00	5,177 48
1852-'53	37,100 00		1877-'78	62,425 00	2,997 56
1853-'54	54,780 00		1878-'79	85,726 00	3,340 20
1854-'55	69,865 00		1879-'80	112,755 00	3,578 51
1855-'56	50,370 00		1880-'81	96,640 00	3,705 70
1856-'57	64,880 00		1881-'82	99,347 84	2,603 61
1857-'58	67,165 00		1882-'83	147,724 54	119 47
1858-'59	66,068 00		1883-'84	101,225 00	
1859-'60	59,505 00				
1860-'61	62,135 00		Total	3,422,539 83	76,180 44

B.

HEADQUARTERS UNITED STATES MILITARY ACADEMY,
OFFICE TREASURER, QUARTERMASTER AND COMMISSARY CADETS,
West Point, N. Y., June 5, 1884.

SIR: I have the honor to submit the following, viz:

Statement of amounts paid to the United States corps of cadets as pay from the 1st of January, 1818, to 1st of May, 1884.

Date.	Amount.	Date.	Amount.	Date.	Amount.
From January 1 to July 1, 1818	\$31,819 11	For fiscal year ending June 30—		For fiscal year ending June 30—	
For fiscal year ending June 30—		1841	\$80,205 15	1865	\$127,486 94
1819	72,592 59	1842	80,235 19	1866	117,197 86
1820	83,028 21	1843	81,365 73	1867	148,643 46
1821	78,951 11	1844	73,805 78	1868	134,705 26
1822	78,185 49	1845	73,849 30	1869	153,737 33
1823	80,056 18	1846	64,975 43	1870	143,916 96
1824	85,374 61	1847	65,920 15	1871	129,753 20
1825	85,293 99	1848	69,047 60	1872	158,046 56
1826	87,394 64	1849	66,593 30	1873	136,187 87
1827	81,019 31	1850	66,355 20	1874	154,652 38
1828	78,158 10	1851	69,690 61	1875	156,645 71
1829	79,878 30	1852	67,239 20	1876	179,918 43
1830	83,017 93	1853	71,153 60	1877	157,021 32
1831	83,916 45	1854	64,096 80	1878	141,867 00
1832	80,220 61	1855	66,259 20	1879	154,606 50
1833	80,112 77	1856	64,911 80	1880	146,512 50
1834	87,268 71	1857	64,137 52	1881	128,202 00
1835	85,702 47	1858	79,364 00	1882	121,255 50
1836	78,751 09	1859	86,529 00	1883	135,624 00
1837	78,835 86	1860	92,269 25	From July 1, 1883, to May 1, 1884	130,470 00
1838	84,122 88	1861	85,708 00		
1839	84,459 14	1862	66,201 00	Total	6,439,890 08
1840	83,624 36	1863	74,839 00		
		1864	116,893 58		

There is nothing in the treasurer's office to show the monthly pay of cadets prior to 1828; the record from 1818 to 1828 shows the total sums paid but not the individual pay.

In 1828, and from that year until July 1, 1845, the pay of a cadet was \$16 per month plus 40 cents per day commutation of rations; from July 1, 1845, to March 1, 1857, the pay was \$24 per month.

For the months of March and April, 1857, each cadet was paid \$59.40. From the 1st of May, 1857, to the 1st of March, 1864, the pay was \$30 per month. For the months of March and April, 1864, each cadet was paid \$176.65. From May 1, 1864, to March 1, 1867, the pay was \$500 per annum. For the months of March and April, 1867, each cadet was paid \$166.39. From May 1 to July 1, 1876, the pay was \$500 per annum plus \$109.50 commutation of rations; from July 1, 1876, to the present time the pay has been \$540 per annum.

There are no records prior to 1818.

Respectfully submitted.

W. F. SPURGIN,

Captain Twenty-first Infantry, Treasurer United States Military Academy.

THE ADJUTANT OF THE MILITARY ACADEMY.

CONCERNING THE BAND OF THE ACADEMY.

Prior to 1821 the band (composed of 21 men) was included in the strength of the company of bombardiers stationed at West Point.

In June 1821 the bombardiers were disbanded and the band became musicians attached to companies of cadets.

Musicians allowed by act approved April 29, 1812.—Number allowed, "four to each company of cadets," number of companies of cadets not fixed. "As the corps of cadets, if for battalion exercises and instruction, composed of eight companies, the enlistment of 32 musicians is believed to have been authorized." (Letter of Paymaster-General to the War Department, dated September 9, 1821.) Each cadet was taxed 25 cents per month for pay of these musicians, but the amount so raised not being sufficient the Military Academy post fund was drawn upon for the "extra pay." This extra pay varied from \$2 to \$7 each per month, the regular pay being \$8 per month.

No change until 1854, when the pay of the musicians was increased to \$12 per month. Extra pay reduced accordingly.

The act of July 28, 1866, allowed a band of 24 men at West Point, N. Y., the musicians attached to the four companies being retained made a total of 40 men. This maximum was never reached. The nearest was in 1869, viz, band 21, musicians attached 12=33 men.

The act of March 3, 1875, allowed a band of 40 men. No musicians attached after this date. Strength reduced to 28 men in 1877 because of the reduced appropriations. The act of March 3, 1877, reduced the band to 24 men, at which number it has since continued.

Year.	Strength.		Pay.			Musicians attached.
	Allowed.	Present.	First-class.	Second-class.	Third-class.	
1821 to 1836..	32	19 to 22	None	None	None	\$8 per month; extra pay from \$2 to \$7 each.
1837 to 1854..	32	26	...do .....	...do .....	...do
1855 to 1865..	32	32	...do .....	...do .....	...do
1866.....	40	33	10 men; \$34 per month.	10 men; \$20 per month.	20 men; \$17 per month.	Increased to \$12 per month.
1870 to 1874..	40	28 to 32	...do	do .....	...do
1875.....	40	40	...do	30 men; \$30 per month.	.....
1876.....	28	28	6 men; \$34 per month.	6 men; \$30 per month.	16 men; \$24 per month.	
1877 to ..	24	24	...do	6 men; \$20 per month.	12 men; \$17 per month.	

[No. 50. June 17, 1884. 4.00.]

EXAMINATION IN ENGLISH GRAMMAR.

DIVISION I. (13.)

Time allotted: Two and one-half hours.

N. B.—Write the answers below, numbering each to correspond with the number of the question.

1. What is a verb? What are transitive verbs, and what are intransitive verbs? Give examples.

2. Give the comparison of the following adjectives: Good, bad, much, little, late, old, far.

3. Give the declension of the personal pronouns.

5. Give the whole of the present and past tenses of the verb to be.

(1) A verb is a word which denotes the action performed by a substantive in the nominative. A transitive verb is a verb which requires a substantive in the objective case. An intransitive verb is one that does not require a substantive in the objective case or has no substantive in the objective case, as: I love John=trans. Birds fly=intrans.

(2.)	<i>Positive.</i>		<i>Comparative.</i>		<i>Superlative</i>
	Good,		better,		best.
	Much,		more,		most.
	Late,		later,		latest, last.
	Far,		farther,		farthest, first.
	Bad,		worse,		worst.
	Little,		less,		least.
	Old,		{ older,		oldest.
			{ elder,		eldest,

(3.)		Singular.			Plural.	
	<i>Nom.</i>	<i>Poss.</i>	<i>Obj.</i>		<i>Nom.</i>	<i>Poss.</i>
	I,	my,	mine.		We,	our,
	Thou,	thy,	thine.		You,	yours,
	He,	his,	him.		They,	their,
	She,	her, hers,	her.		They,	their,
	It,	its,	it.		They,	their,

Passive.

(5.)		<i>Singular.</i>			<i>Plural.</i>
	Prest.	{ 1st. I am.			We are.
		{ 2d. Thou art.			You are.
		{ 3d. { He,			They are.
		{ She, it } is.			
	Past.	{ 1st. I was.			We were.
		{ 2d. Thou wert.			You were.
		{ 3d. { He,			They were.
		{ She, it } was.			

DIVISION II. (27.)

N. B.—In parsing, give no rules, declensions, comparisons, or principal parts. In other respects parse fully, being careful to give the subject of each verb, the governing word of each objective case, and to state precisely what each conjunction connects, between what words each preposition shows the relation, and to what each pronoun refers. Omissions will be taken as indicating ignorance. Write quite across both pages. Abbreviations that are intelligible may be used.

Parse the words in italics in the following sentence: Words are the common property of all men, *yet from words* those *architects* of immortality *pile up* temples that shall outlive *pyramids*; the *leaf of the papyrus* shall become a *Shinar*, *stately with towers*, round *which* the deluge of ages *roars* in vain.

Yet—conj.; connects preceding clause with what follows.

(3) *From*—prep.; shows relation between *architects* and *words*.

Words—n. c., neuter plur., 3rd per., obj. of preposition *from*.

Architects—n. c., mas. plu., 3rd per., nom., subject of *pile*.

Pile—verb, reg. active trans., ind., pres., 3rd pers., subject *architects*.

Up—adv., and modifies *pile*.

That—rel. pro., { antec. *temples*, 3rd sing.

{ plur. no., nom. case, subject of *shall outlive*.

Pyramids—n. c., neuter plur., 3rd, objective case, object of *shall outlive*.

Leaf—n. c., neuter sing., 3rd, nom., subject *shall become*.

Of—prep.; shows relation between *leaf* and *papyrus*.

Papyrus—n. c., neuter sing., 3rd pers., obj. of prp. *of*.

Shall—aux.; used with *become*.

(1) *Become*—verb, reg. active trans., 3rd sing., subject *shall become*.

(3) *Shinar*—n., proper, 3rd sing., object. case, object of *shall become*.

(3) *Stately*—adj., and qualifies *towers*.

(3) *With*—prep.; shows relation between *towers* and *Shinar*.

Towers—n. c., neuter plur., 3rd pers., obj. of prep. *with*.

(3) *Round*—prep.; shows relation between *which* and *towers*.

(2) *Which*—rel. pro., { antec. *towers*, 3rd plu.

{ obj. of prep. *round*.

Roars—verb, irreg. active intrans., 3rd sing., neuter gender, subject *Deluge*.

DIVISION III. (17.)

Correct all errors in the following sentences, including bad arrangement of words:

1. Six months' interest [are] (is) due.
2. [Who] (whom) do you take him to be?
- (2) 3. Jacob loved Joseph (the) more [than all] (of) his children.
- (2) 4. I never was, [n]or [n]ever will be, false.
- (2) 5. Adversity both taught you to think and to reason.
6. Let neither partiality [n]or prejudice appear; let truth be sacred.
7. The number of inhabitants [were] (was) not more than four millions.
8. [Every one] (each) of this grotesque family [were] (was) the creature[s] of national genius.
9. [Who] (whom) should I meet the other day but my old friend.
- (1) 10. Cleon was another [sort] (kind) of a man.
- (2) 11. Were you not [af]fright(en)ed, and [mis]took a spirit for a body?
- (2) 12. He never doubts but [that] (what) he knows their intentions.
13. She always appears very [amiably] (amiable).
- (2) 14. [Has] (have) either of your three friends arrived?
- (2) 15. Each of them [shall] (will) be rewarded in their turn.
- (2) 16. You will be too late without you do it soon.
17. Homer as well as Virgil [were] (was) translated and studied.
18. The people speak[s] but do[es] not write.
19. The whole need not a physician, but [them] (those) that are sick need a physician, but not the whole.
- (2) 20. Any word [that will] (which will) conjugate is a verb.
- (2) 21. But she [fell a laughing like] (laughed as) one out of their [right] mind.
- (2) 22. Gray might have [been able to have] rendered him more temperate in his political views.

A true copy:

ELI D. HOYLE,
1st Lieut., 2d Art'y, Adjutant, U. S. M. A.

[No. 92. June 19, 1884. 20 errors, 2 +.]

EXAMINATION IN ORTHOGRAPHY.†

A FRAGMENT.

It is toward the end of an afternoon in December, and a man is walking along a crowded street in London with his face turned Westward. A few moments ago and he was scarcely con[s]cious of where he was or where he wassent to go; he was walking m[a]chanically in a heavy stupor, through which there stole a haunting s[c]n[c]e of degr[e]dation and d[i]spair that tortured him.

Suddenly, as by magic, this has vanished [;], he seems to himself to have waked from a miserable day-dream to the b[o]u[n]ce of youth and hope. Temp[er]aments which are subject to fits of heavy and causeless depression have their compensations, sometimes in the very violence of the reaction which follows [;] the infesting cares [;] as in

NOTE.—Errors in corrections in black type; words stricken out in original are set in brackets; words substituted are in parentheses.

the poem "Fold their tents like the Arabs and as silently steal away," and with their retreat comes an exquisit[e] ex[h]il[ar]ation, which more e[c]quable dispositions can never experience.

It is true that he is not happy at the big place which he has just left. How should he be? He is dull, and crabbed, and uncouth, and knows too well that he is a general object of dislike. No one there cares to associate with him, and he makes no attempt to overcome their pred[j]udices, being perfectly aware that they are different from him, and hat[e]ing them for it.

POETRY.

Such songs have power to quiet
The restless pulse of care,
And comes like the benediction
That follows after prayer.

Then read from the treasured volume
The poem of thy choice,
And lend to the rhyme of the poet,
The beauty of thy voice.

- | | | |
|-------------------|----------------------|------------------|
| 1. Delegate. | 9. Jugular. | 17. Schemer. |
| 2. Honey. | 10. Capsize. | 18. Camel[li]an. |
| 3. Tongue. | 11. Mattress. | 19. Globular. |
| 4. Opposite. | 12. Synonym. | 20. Channel. |
| 5. Prof[er]gate. | 13. Pontiff. | 21. Conc[er]t. |
| 6. Contag[er]ous. | 14. Sne[er]ed. | 22. Sol[ar]tude. |
| 7. Dec[er]ve. | 15. Interfer[er]ing. | 23. Laudable. |
| 8. Catastroph[y]. | 16. Prest[er]ge. | 24. Millin[er]y. |

A true copy.

ELI D. HOYLE,
1st Lieut. 2d Art'y, Adjutant, U. S. M. A.

EXAMINATION IN GEOGRAPHY.

Time: 2½ hours.

Number the answers to correspond to the questions.

1. In geography, what is meant by great and small circles? Give examples of each.
2. How are latitude and longitude reckoned?
3. Define an archipelago; an isthmus.
4. What grand divisions of land lie mainly south of the equator? Name five of the largest islands in the southern hemisphere.
5. How are the waters of the Atlantic and Pacific connected with the Arctic Ocean?
6. Where are the following capes: Palmas, San Lucas, Race, Farewell, Hatteras?
7. What provinces of the Dominion of Canada adjoin the United States?
8. Bound the following States and Territories: Idaho, Arizona, Indian Territory, Wisconsin, Pennsylvania, Georgia. (In giving boundaries the States and Territories which adjoin the one under consideration must be given; it is not sufficient to give a river boundary.)
9. Name the States which are drained in part or wholly by the Ohio. Name the States and Territories drained in part or wholly by the Colorado of the West.
10. A straight line drawn from Raleigh, N. C., due west to the Pacific Ocean would pass through what States and Territories? A straight line drawn from Saint Paul due south to the Gulf of Mexico would pass through what States?
11. Name at least three of the political divisions of Mexico which touch the waters of the Gulf of Mexico.
12. Where is Bolivia? How is it bounded?
13. What countries border on the Baltic?
14. How is Italy bounded?
15. Where do the following rivers rise, what are their courses, and where do they empty: The Volga, the Vistula, the Loire?
16. Where are Liberia and Abyssinia? Name one of the adjoining divisions of the country in the case of each.
17. In going from Suez to Hong-Kong by water, keeping close to the shore, through what waters is it necessary to pass? Name them in order.
18. What large rivers empty into the Bay of Bengal?
19. Give the political divisions of Asia which touch Siam.
20. Bound New South Wales.

[No. 69. June 18, 1884.*]

1. Great circles are those which divide the earth into hemispheres. Example: The equator is a great circle; small circles are those which divide the earth into **any two parts**—ex., the Arctic circle.

2. Latitude[s] is reckoned from the equator. Longitude is reckoned from a certain meridian.

3. Archipelago is a group of islands. An isthmus is a neck of land joining two larger portions of land.

4. Australia, South America, and Africa. Australia, Africa, Madagascar, Borneo, and New Zealand.—

5. The Pacific is connected with the Arctic by the Berhing Strait, the Atlantic by Davis Strait.—

6. Saint Lucas, south of Lower California; Race, south of Newfoundland [**Cape Palmas omitted**]; Farewell, souther point of Greenland; Cape Hatteras, easter part of N. C. [2.4.]

7. Quebec and Ontario.— [1.0.]

8. Idaho is bounded on the north by British America, on the east by Montana and Wyoming, on the south by Nevada and Utah, on the west by Washington and Oregon. Arizona, north by Utah, east by New Mexico, south by Mexico, west by California and Nevada. Indian Territory, north by Kansas [**Col.**], south by Texas, west by Texas and a small portion of New Mexico [**east omitted**]. Wisconsin is bounded on the north by **Minnesota** & Lake Superior, on the east by Michigan and Lake Michigan, south by Illinois, west—Iowa and Minnesota. Pennsylvania is bounded on north by N. Y. [**L. E.**], on the east by New Jersey and **Delaware**, on the south by Maryland and Va. —, on the west by Ohio. Georgia is bounded on the north by N. C. and Tennessee, on the east by S. C. and the Atlantic Ocean, on the south by Florida, and on the west by Alabama. [2.0.]

9. On the north, Ohio, Ind., and Illinois; on the south, Kentucky and West-Va.—. By the Colorado are Texas and New Mexico. [—!!!] [9.0.]

10. Pass through N. C., Tenne., Arkansas, Ind. Territory, Texas, New Mexico, Arizona, and [**Nev.**] California. From St. Paul would pass through **Minnesota**, Iowa, Mo., Arkansas, and Louisiana. [12.0.]

11. **Veracruz, Mexico and Moham.** [1.0.]

12. Bolivia is in the **southern** part of S. America. It is bound on the north by Brazil, on the south by **Patagonia**, on the east by Paroguary and **Uruguay**, on the west by the—Pacific. [1.5.]

13. **Persia, Turkey, Switzerland, Prussia** (German Empire) [refers Black]. [1.0.]

14. Italy is bounded on the north **France**, on the south by **Greece**. [0.8.]

15. Volga rises in the norther part of **Asia**, takes the southerly course, and flows into the **Indian Ocean**. [**Rivers omitted.**] [0.0.]

16. Liberia is on the westeru **course** of Africa; is touched by Sierra Leone. Abyssenia is in the **southern** part of Africa, and is joined by **Zoolu** [1.4.]

17. Through the Red Sea, round through Sea of Arabia, Bay of Bengal.—. [2.5.]

18. **Bengal River**,—. [0.]

19. **Chinese Empire, Bloochington, and Arabia.**

20. —. [0.]

A true copy.

ELI D. HOYLE,
1st Lieut. 2d Art'y, Adjutant, U. S. M. A.

No. 70. June 17, 1884. 52.4.]

EXAMINATION IN HISTORY.

Time allotted: Two and one-half hours.

N. B.—Fill in number and date as indicated above. Write concisely and legibly, and number your answers according to the number of each question.

1. What did Americus Vesputius discover, and why were the continents named for him?

2. What explorations did Sir Francis Drake make?

3. Give an account of the New Haven Colony.

4. What was the colonial history of Maine?

5. How and when was slavery introduced into the Colonies?

6. Give an account of the Siege of Boston.

7. What were the circumstances and nature of the French Alliance, 1778?

8. Give an account of General Greene's campaign, 1780.
 9. Who entered Washington's first Cabinet, and what was the nature of their several offices?
 10. Under what circumstances was Ohio settled and admitted into the Union?
 11. Give an account of the capture of Forts Henry and Donelson, in 1862.
 12. Mention the principal events in the campaign of 1863.
- P. S.—Write the names of the text-books you used in preparing on this subject. Lossing's.

[No. 70. June 17, 1884.*]

1. In a **fraudulently** dated letter Americus Vesputius claimed the honor of the discovery of the western continent. A friend of his published the letter & proposed that the new continent should be named "America" in honor of him. Columbus was thus deprived of the honor of having the continent which he discovered bear his name. **1499. (4.0.)**

2. Sir Francis Drake explored the coasts of Oregon and California.

He sailed through the Straits of Magellan & made the second circumnavigation of the globe. **(5.9.)**

3. The New Haven colony was founded by emigrants from Massachusetts, **who, on account of their religious belief, were driven from the colony. (3.0.)**

John Westervelt was among these. **(R. I.)**

A great many emigrants flocked to this settlement because "every man was allowed to worship God according to the dictates of his own conscience."

4. Maine was comprised in the territory called New France by Verrazini. It was also called **Acadia**, and its inhabitants, although they were pious, hard working people, were thought to be in favor of the French. They were torn from their homes by the English & distributed among the colonies all along the eastern coast during the French and Indian war. This was considered to be one of the most cruel acts of the war. **(3.0.)**

5. Slavery was first introduced by Dutch traders.

It was first introduced into [**Massachusetts**] Va. in 1620.

The slaves were captured on the coast of Africa & sold to the colonists. **(5.0.)**

6. The siege of Boston was conducted by Washington. After Washington had made all preparations for the siege, and was about to commence it, the British quietly evacuated the city. This occurred in the war of the Revolution, in [**1775**] (**1776**). **(7.5.)**

7. The Marquis de Lafayette had previously helped the colonies without the consent of France. The French King **was interviewed** by Benj. Franklin and other prominent men that had been sent by the American Congress to try and get France to give substantial aid to the colonies. The French King seeing that the colonies were in earnest in the fight for liberty, finally made an alliance by which France and the colonies agreed to help one another in time of war. (**Saratoga?**) **(8.5.)**

8. General Greene succeeded General Gates after the battle of Saratoga. He had several engagements with Cornwallis in the South during 1780, and continued to harass him until 1781, when Cornwallis surrendered to Washington and the combined French and American armies and navies at Yorktown, Va.

(No narrative; no details; no battles. (6.0.)

9. Washington's Cabinet consisted of Thos. Jefferson, Sect. of State; [**Theo. Morris**] (**Hamilton**), Secretary of Treasury; (**Knox, War**); (**Randolph, Att'y-Gen.**). **(2.0.)**

10. Ohio was first settled after the French by the Ohio Company, who sent surveyors there, but they were captured by the French. After the French and Indian War the State came under the possession of Great Britain. **(No date of admission.) (4.5.)**

11. Forts Henry and Donelson were captured by the **confederates** after a desperate resistance, in 1862. **(All wrong.) (1.0.)**

12. Battles of Antietam, 2d battle of Bull Run, (**2d**) battle of Hampton Roads, battle of New Orleans, battle of Winchester. **(1.0.)**

A true copy.

ELI D. HOYLE,
1st Lieut. 2d Art'y, Adjutant, U. S. M. A.

EXAMINATION IN ARITHMETIC.

1. Which is the greater, and by how much, $\frac{7}{8}$ or $\frac{13}{14}$?
2. What number subtracted 88 times from 80,005 will leave .013 as a remainder?
3. What is the value of a pile of wood 127 feet long, 4 feet wide, and 3 feet 8 inches high at \$7 a cord?
4. Reduce 3 acres, 107 square rods, 27 square yards, 7 square feet, 23 square inches, to square inches.

NOTE.—Errors in corrections in black type; words in brackets were stricken out in copy.

5. Divide \$4.14 among Thomas, Richard, and Henry in such a way that Henry shall receive 3 cents for every 5 cents that Thomas gets, and Richard shall receive 2 cents for every 5 cents that Henry gets.

6. Reduce 272 liquid quarts to dry quarts. [One bushel = 2150.42 cubic inches.]

7. A pipe discharging 3 gallons 1 pint a minute fills a tub in 4 minutes 20 seconds. Another pipe discharges 83 quarts a minute. If both pipes discharge together into the tub, how long will they take to fill it?

8. Cork, whose weight is .24 of that of water, weighs 15 pounds per cubic foot. What is the weight of 14.4 cubic inches of oak, the weight of oak being .934 of that of water?

9. A, B, and C start together and walk round a circle in the same direction. It takes A $\frac{5}{6}$ hours, B $\frac{2}{3}$ hours, C $\frac{3}{4}$ hours to walk once around the circle. How many times will each go round the circle before they will all be together at the starting point?

[No. 52. June 18, 1884.]

EXAMINATION IN ARITHMETIC.

Time allotted: three and one-half hours.

57.

1.
(3.0) $\frac{7}{9} = \frac{56}{72}$

$\frac{19}{24} = \frac{57}{24}$

$\frac{3}{3} \frac{9}{8} = \frac{24}{8} \quad 3 \times 3 \times 8 = 72$

$\frac{57}{24} - \frac{56}{24} = \frac{1}{24}$

Therefore $\frac{19}{24}$ is the larger by $\frac{1}{24}$. Ans.

(Method right. Numerical errors. Ans. wrong).

2.
(7)

$\begin{array}{r} 80.005 \\ 013 \\ \hline 79.992 \end{array}$

$88)79.992(.909 \text{ Ans.}$
 $\begin{array}{r} 792 \\ \hline 792 \\ \hline 00 \end{array}$

3.
(10)

$\begin{array}{r} 127 \\ 4 \\ \hline 508 \\ 31\frac{3}{2} \\ \hline 338\frac{3}{2} \\ 1524 \\ \hline 1862\frac{3}{2} \end{array}$

$1862\frac{3}{2} = 1862.666 +$
 $128)1862.666(14552$
 $\begin{array}{r} 128 \\ \hline 582 \\ 512 \\ \hline 706 \\ 640 \\ \hline 666 \\ 640 \\ \hline 266 \\ 256 \\ \hline 10 \end{array} \quad \begin{array}{r} 14552 \\ \$7 \\ 14.552 \\ 14 \\ 35 \\ 35 \\ 28 \\ 7 \\ \hline \$101.864 \text{ Ans.} \end{array}$

4.
(12)

$$\begin{array}{r}
 160 \text{ rds. (sq.)} \\
 \underline{3} \\
 480 \\
 \underline{107} \\
 580 \text{ rds. (sq.)} \\
 \underline{30\frac{1}{4}} \\
 146\frac{3}{4} \\
 \underline{1761} \\
 17756\frac{3}{4} \text{ yds. (sq.)} \\
 \underline{27} \\
 17783\frac{3}{4} \text{ yds. (sq.)} \\
 \underline{9} \\
 6\frac{3}{4} \\
 \underline{160047} \\
 160053\frac{3}{4} \text{ sq. ft.} \\
 \underline{7} \\
 160060\frac{3}{4} \text{ sq. ft.} \\
 \underline{144} \\
 108 \\
 640240 \\
 \underline{640240} \\
 160060 \\
 \underline{23048748 \text{ sq. in.}} \\
 23 \\
 \underline{23048771 \text{ sq. in. Ans.}}
 \end{array}$$

5.
(12)

Thomas gets 5
 Henry " 3
 Richard " $\frac{2}{3}$ of 3 or 1.20 cts.
 $5+3+1.2=9.2$ parts.
 $9.2)4.14(.45$
 $\underline{368}$
 $\underline{460}$
 460

Thomas gets	.45 ×	5 =	\$2.25	}	Answers.
Henry	.45 ×	3 =	1.35		
"	.45 ×	1.2 =	.54		
				4.14	

6.
(0)

7

(3.)

$$\begin{array}{r}
 3 \text{ gals. } 1 \text{ pt.} = 12\frac{1}{2} \text{ quarts.} \\
 83 \text{ quarts} = 83 \\
 \hline
 95\frac{1}{2} \text{ quarts.} \\
 4 \text{ min. } 20 \text{ sec.} = 260 \text{ seconds.} \\
 95.5)260.00(2.722 \text{ seconds ans.} \\
 \underline{1910} \\
 6900 \\
 \underline{6685} \\
 2150 \\
 \underline{1910} \\
 2400 \\
 \underline{1910} \\
 490+
 \end{array}$$

Method all wrong.

8.

(10.)

$ \begin{array}{r} .934 \\ .24 \\ \hline .694 \\ \begin{array}{l} \left. \begin{array}{l} 15 \\ .694 \\ 60 \\ .135 \\ 90 \\ \hline 10.410 \\ 15 \\ \hline 25.410 \end{array} \right\} \text{Wrong} \end{array} \end{array} $	$ \left. \begin{array}{l} \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{array} \right\} \text{What one cu.} \\ \text{foot of oak weighs.} $	$ \begin{array}{r} 1728)25.410(.0147 \\ \underline{1728} \\ 8130 \\ \underline{6912} \\ 12180 \\ \underline{12096} \\ 84 \\ \underline{.0147} \\ 14.4 \\ \hline 588 \\ 588 \\ \underline{147} \\ .21.168 \text{ of a lb.} \end{array} $	$ \begin{array}{r} 16 \text{ oz.} \\ \underline{.2116} \\ 96 \\ 16 \\ 16 \\ \underline{32} \\ 3,3856 \text{ oz.} \end{array} $
---	--	--	--

Method generally correct.

9.

(0)

State the text-books on this subject you have studied.
 Felter's, Quackenboss & Robinson's.

A true copy.

ELI D. HOYLE,
 1st Lieut., 2d Art'y, Adjutant, U. S. M. A.



WEST POINT NEW YORK

Scale 4800

1883

Issued May 1883, J. E. HILGARD, Superintendent.
Verified R. D. Catta, Assistant in charge of Office.

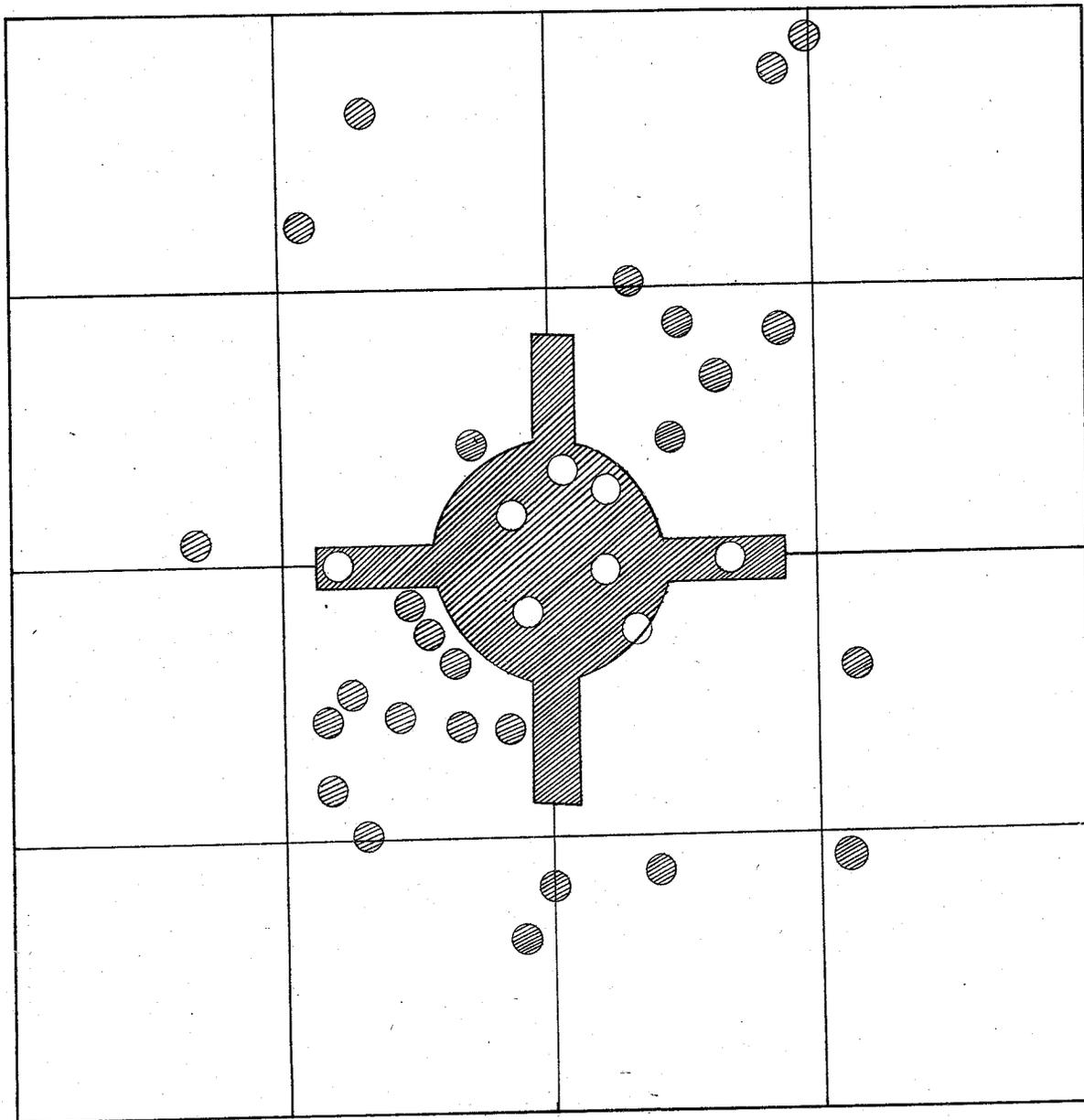
PRICE 25 CENTS

From a Plane Table survey under the direction of
181. Walling Assistant, by W. C. Holyoke Aid, in 1880

The curves of elevation are given for every 10 feet difference of level. Intermediate curves are shown by dotted lines.
The Datum line is High Water Mark.
The curves around D indicate depression.



Record of Firing with Large Guns.
 April 28th 1884.



Guns - 30-pdr Parrott

Projectiles - "Butter"

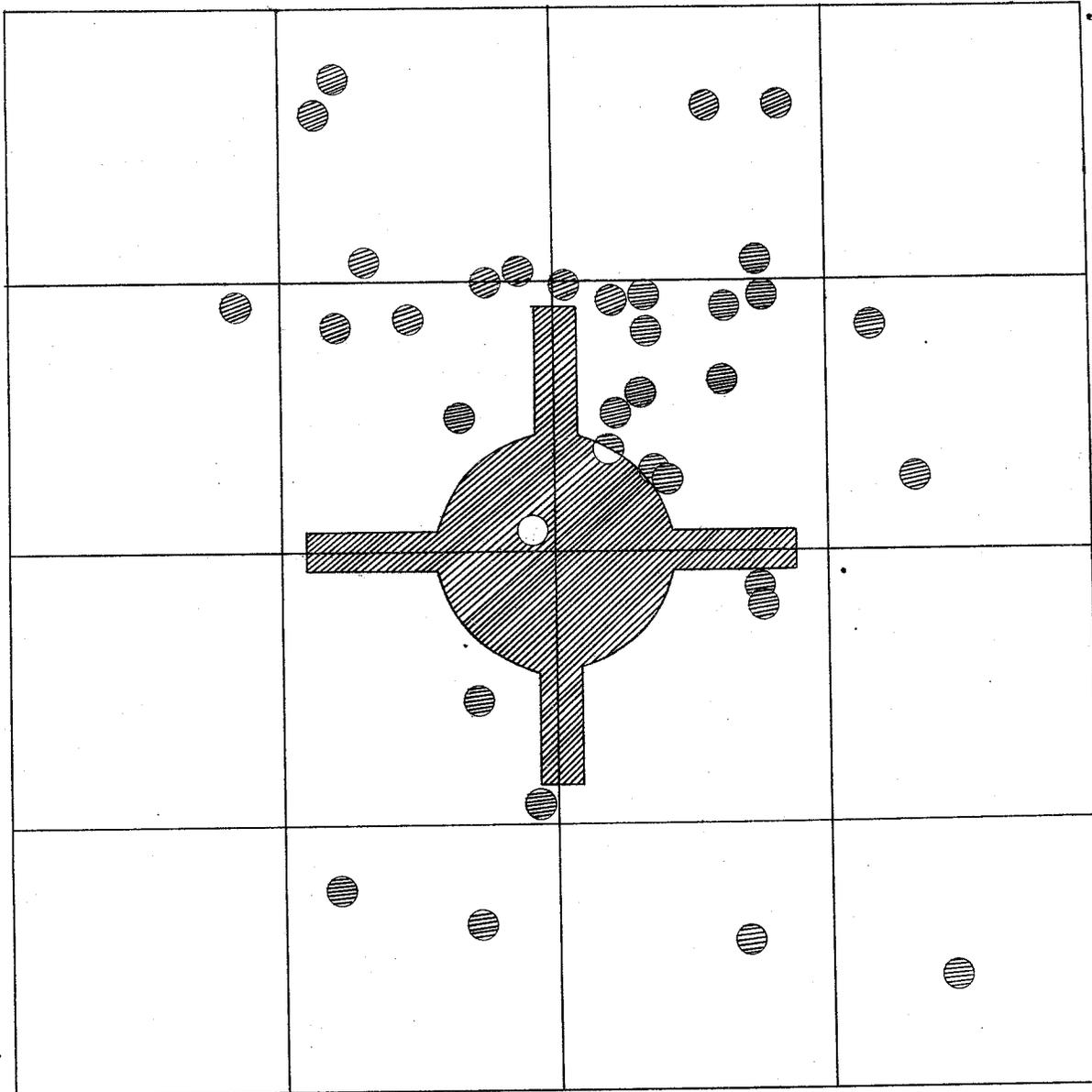
Rounds fired - 36

Hits recorded - 34

Target { Size - 16" x 16"
 Distance. About 1350 yds.

Charles H. Clark
 Chief of Ordnance

Record of Firing with Large Guns
June 3^d 1884.



Guns - 30-pdr Parrotts

Projectiles - "Butler"

Rounds - 48

Hits recorded - 36 { Two hits were not re-
corded in plot as pos-
sibly of the target was
fired 16' x 16' each side.

Target { Distance about 1350 yds.

Charles H. Clark,
Lieut. of Ordnance.

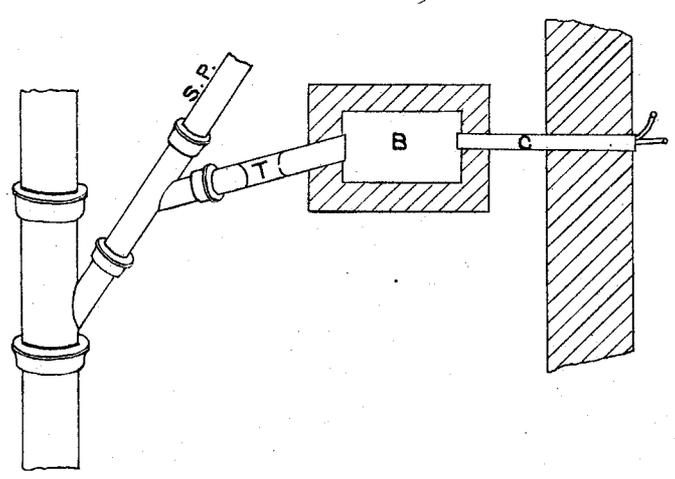
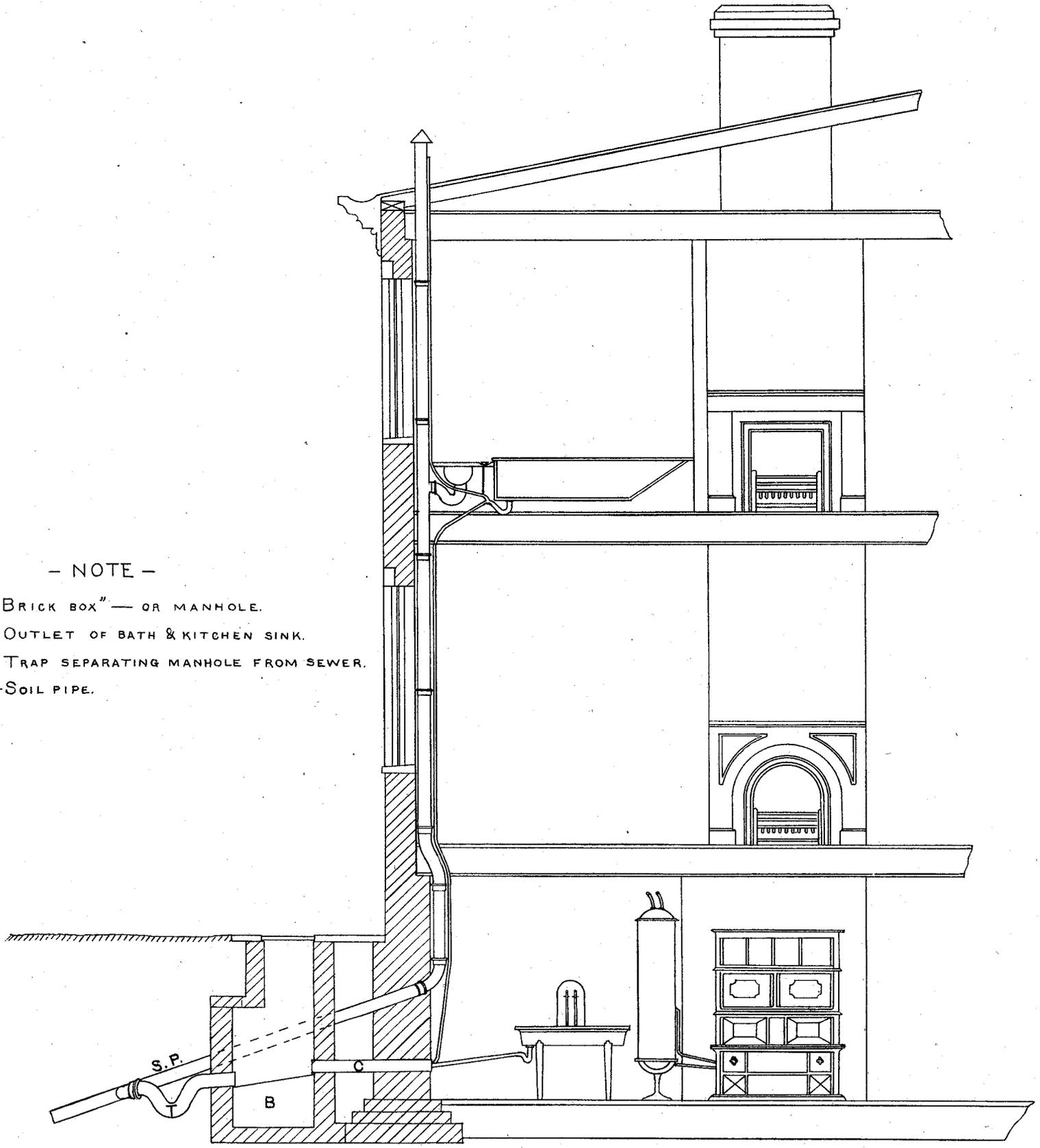
- NOTE -

B - "BRICK BOX" — OR MANHOLE.

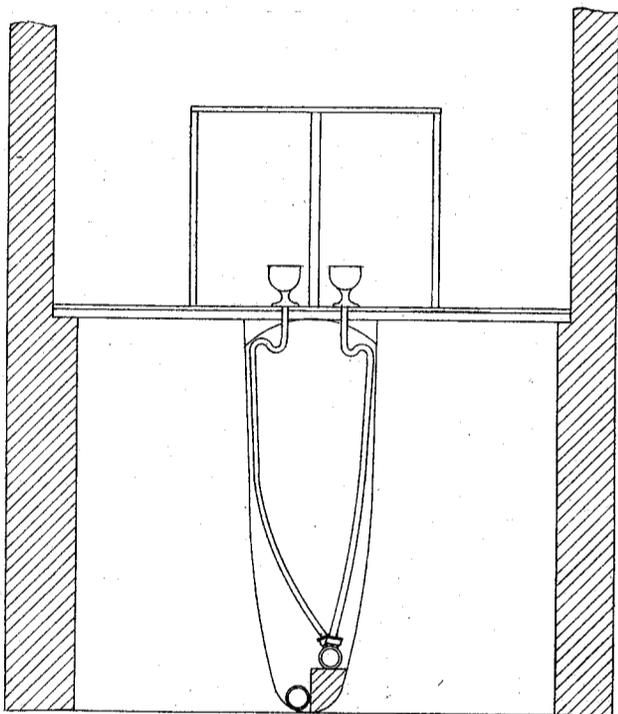
C - OUTLET OF BATH & KITCHEN SINK.

T - TRAP SEPARATING MANHOLE FROM SEWER.

S.P. - SOIL PIPE.



OFFICERS' QUARTERS
ARRANGEMENT OF PLUMBING

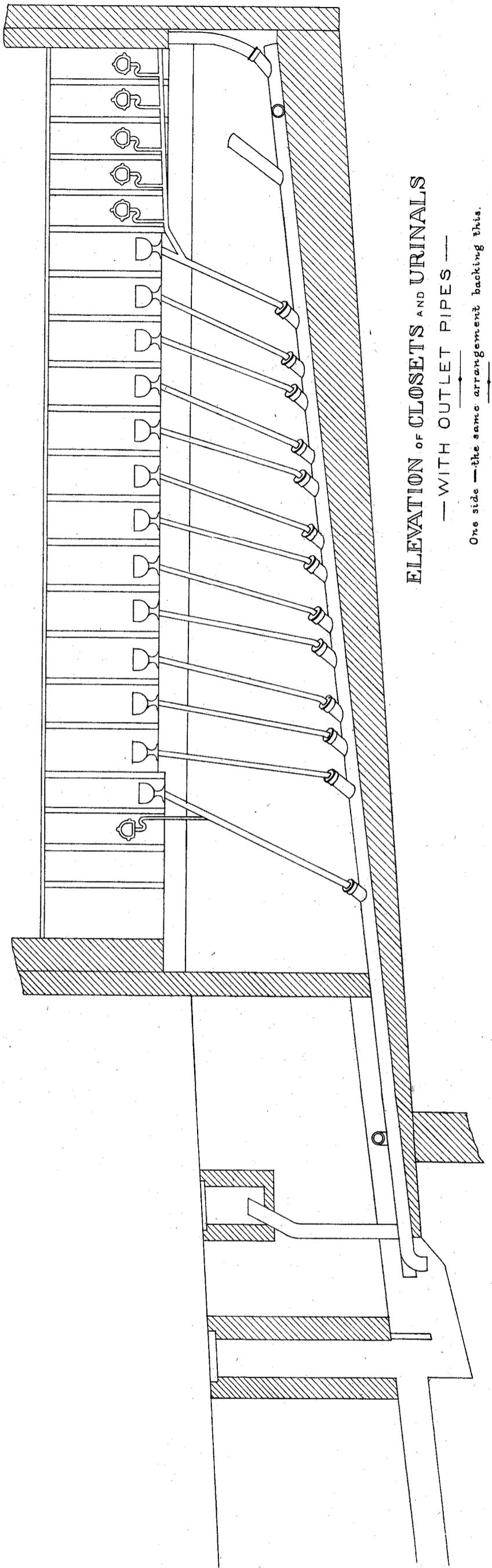


— CROSS SECTION —
THROUGH WATER CLOSETS AND OLD VAULT

Showing recent improvement

BY SUBSTITUTION OF DIRECT DISCHARGE PIPES.

CADET SINK



ELEVATION OF CLOSETS AND URINALS

— WITH OUTLET PIPES —

One side — the same arrangement backing this.

CADET SINK

