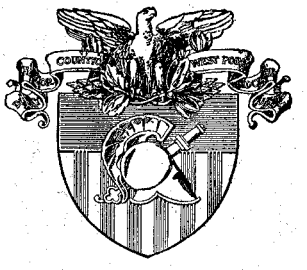
ANNUAL REPORT

OF THE

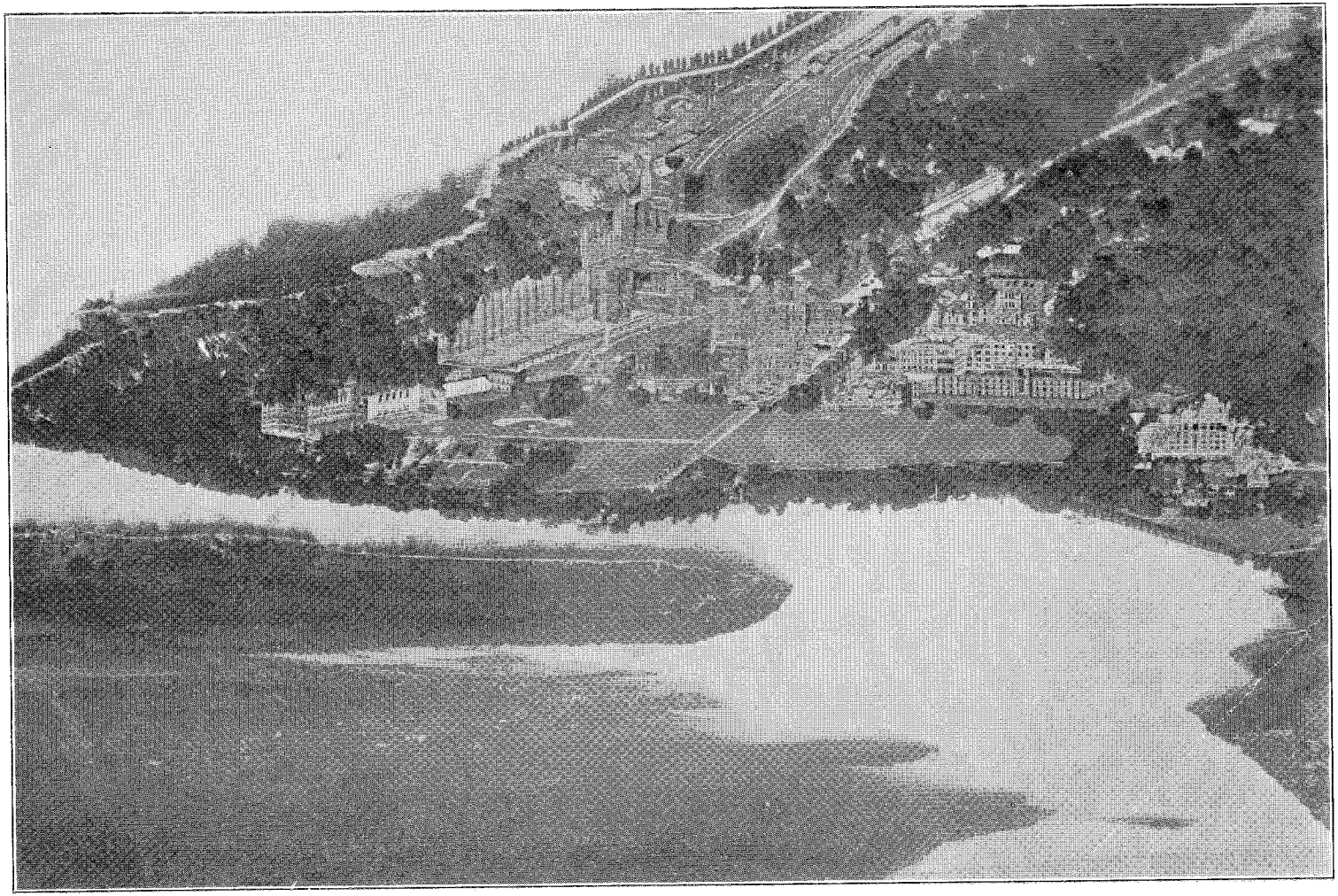
SUPERINTENDENT

UNITED STATES MILITARY ACADEMY



1920

WEST POINT, N. Y.
United States Military Academy Press



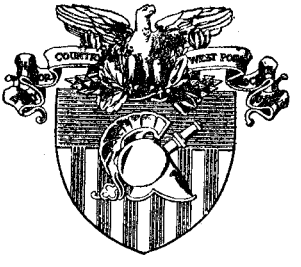
U.S. ARMY MILITARY HISTORY INSTITUTE

ANNUAL REPORT

OF THE

SUPERINTENDENT

UNITED STATES MILITARY ACADEMY



1920

PROPERTY OF US ARMY

ANNUAL REPORT OF THE SUPERINTENDENT OF THE UNITED STATES MILITARY ACADEMY.

Headquarters United States Military Academy,
West Point, New York, June 30, 1920.

From: The Superintendent, U. S. M. A.
To: The Adjutant General of the Army.
Subject: Annual Report of the Superintendent, U. S. M. A.

My assumption of the command of the United States Military Academy synchronized with the ending of an epoch in the life of this Institution. With the termination of the World's War the mission of West Point at once became the preparation of officer personnel for the next possible future war. The methods of training here have always been largely influenced by the purpose of producing the type of officer which the Army at large dictated. The excellence with which the Academy's mission has been carried out in the past has been testified on the battlefields of the world for a hundred years and more. The problem which faced the authorities was, therefore, this:—Have new conditions developed, have the lessons of the World War indicated that a changed type of officer was necessary in order to produce the maximum of efficiency in the handling of men at arms? West Point, existing solely as a source of supply and a feeder to the Army, if a new era faces the latter, West Point must of necessity train its personnel accordingly.

In meeting this problem those who were charged with the solution undertook the task with a full realization of its seriousness. It was well understood that it was no light affair to attempt even in moderate degree to modify a status which had proved itself so splendidly for a century and more. It was understood that change under the guise of reconstruction was destructive unless clearly and beyond question it introduced something of added benefit. It was recognized that reform to be effective must be evolutionary and not revolutionary. It was evident that many sources of help, in the nature of advice and consultation, lay outside of the Military Academy in the persons of distinguished officers of the Army at large and of professional educators throughout the country.

Careful analysis yielded the following conclusions:—Until the World's War armed conflicts between nations had been fought by comparatively a small fraction of the populations involved. These professional armies were composed very largely of elements which frequently required the most rigid methods of training, the severest forms of discipline, to weld them into a flexible weapon for use on the battlefield. Officers were, therefore, developed to handle a more or less recalcitrant element along definite and simple lines, and a fixed psychology resulted. Early in the World's War it was realized to the astonishment of both sides that the professional armies, upon which they had relied, were unable to bring the combat to a definite decision. It became evident, due largely to the elaborate and rapid methods of communication and transportation which had grown up in the past generation, that national communities had become so intimate, that war was a condition which involved the efforts

of every man, woman, and child in the countries affected. War had become a phenomenon which truly involved the nation in arms. Personnel was of necessity improvised, both at the front and at the rear; the magnitude of the effort, both of supply and of combat, was so great that individuals were utilized with the minimum of training. In general result, this was largely off-set by the high personal type of those engaged. Discipline no longer required extreme methods. Men generally needed only to be told what to do, rather than to be forced by the fear of consequence of failure. The great numbers involved made it impossible to apply the old rigid methods which had been so successful when battle lines were not so extensive. The rule of this war can but apply to that of the future. Improvisation will be the watchword. Such changed conditions will require a modification in type of the officer, a type possessing all of the cardinal military virtues as of yore, but possessing an intimate understanding of the mechanics of human feelings, a comprehensive grasp of world and national affairs, and a liberalization of conception which amounts to a change in his psychology of command. This standard became the basis of the construction of the new West Point in the spirit of Old West Point.

To hold fast to those policies typified in the motto of the Academy—"DUTY, HONOR, COUNTRY", to cling to **thoroughness** as to a lode star, to continue to inculcate the habit of industry, to implant as of old the gospel of cleanliness—to be clean, to live clean, and to think clean,—and yet to introduce a new atmosphere of liberalization in doing away with provincialism, a substitution of subjective for objective discipline, a progressive increase of cadet responsibility tending to develop initiative and force of character rather than automatic performance of stereotyped functions, to broaden the curriculum so as to be abreast of the best modern thought on education, to bring West Point into a new and closer relationship with the Army at large, has been the aim and purpose of my administration throughout the past year.

The details of the changes that have been brought about in conformity with the above policy are to be found in the report of the Academic Board on a change in the curriculum and in the reports of the various heads of bureaus, which I incorporate in the body of this report.

The results have transcended my most sanguine expectation; they will be felt throughout the Army at large with the graduation of the classes now under tuition.

The problem which I have discussed above, important as it is, dwarfs into insignificance before the real question of reconstruction that confronts this Institution. **It is one of quantity rather than quality.** The Reorganization Bill of June 4th practically doubled the size of the officer personnel of the Regular Army, but failed utterly to provide any increase in the supply thereof. The Military Academy was left with the same authorized strength of 1334 cadets that it had had previously. It cannot now supply more than one-third of our officers even in times of peace. In contrast with this condition I invite attention to the fact that the Brigade of Midshipmen has now an authorization of 3,136 members to supply a commissioned personnel of the Navy of approximately five thousand. I regard a commensurate increase in the Corps of Cadets as the most necessary and constructive feature of a sound military policy that confronts the Nation to-day. I have recommended elsewhere legislation designed to double the strength of the Corps of Cadets, the increase to be assimilated in four annual increments, the necessary construction

to be undertaken in consonance therewith. The cost of the new installations entailed thereby would amount to approximately $12,000,000.00, to be appropriated at the rate of $3,000,000.00 for four years. In making this recommendation I wish to emphasize the comparatively small appropriations that have been made for construction at this Institution since its foundation in 1802. The total sum is something less than twenty million dollars. Many of our State institutions, relying entirely on taxation within their own States, have more than doubled this amount during a much shorter life. I am informed that the yearly budget of many is more than twice that of the Military Academy. When I draw attention to the fact that the University of Chicago has from one beneficiary received more than fifty million dollars in his life time, that within the last year fifteen million dollars has been left by one bequest to Princeton University, some idea will be obtained of the comparative indigence with which this school has been faced. The press has recently stated that two hundred and twelve million dollars is being sought for this year by the universities of the country for still further expansion of plant.

I bespeak a broad and mature consideration of the question lest a condition may ultimately result which will be paid for in the bitterness of American blood.

Report of the Academic Board Upon the Reorganization of the Curriculum for the Four-Year Course.

§1. The Act making appropriations for the support of the Military Academy for the fiscal year ending June 30, 1921, contained the provision that "The course of instruction at the United States Military Academy shall be four years." Immediately after the presidential approval of this bill March 30, 1920, the Academic Board began its consideration of the nature and content of the four-year course.

§2. Appreciating the extent to which conditions in the military service have been changed as a result of the World War, and recognizing the direct bearing of such change upon the requisite attainments of the officer personnel, the Board undertook the consideration of the entire curriculum at the Academy. Through a long series of exhaustive discussions the Board endeavored to give proper weight to all phases of the life and activities at the Academy, and to evolve finally a logical coherent schedule adapted to meet the requirements of modern conditions.

§3. As a fit basis for the general consideration, the Board formulated a statement of the function of the Military Academy. In discussing this function, the members of the Board took into account the fact that the Academy, founded as a school for the Engineer and Artillery branches exclusively, has for many years past had its graduates commissioned in all branches of the Service.

Estimating the situation as it exists to-day, the Academic Board approves the following statement of the function of this institution: **The function of the Military Academy is to give, in addition to that character-building for which it has long been fomous, and in addition to the necessary military and physical training, such a combination of basic general and technical education as will provide an adequate foundation for a cadet's subsequent professional career.**

The Board invites attention at this point to the fact that the function thus stated sharply differentiates the Military Academy from other institutions of

collegiate grade. The Military Academy is intended to impart a specialized training for a specialized purpose, and this purpose is not the same as that of any civil institution. West Point cannot justly be compared with the liberal arts schools of the universities, for such schools offer general educational courses for general educational purposes. The student in West Point is being trained for one and only one purpose—for success in the military profession; the student in the civilian institution is receiving basic general education which will qualify him for any of a dozen careers—for admission to a professional school, as of Medicine, Law, Theology, or for entrance into the world of business. And again, the nature of the specialized purpose of West Point differentiates the Academy from technical or professional schools. The Massachusetts Institute of Technology offers courses to prepare men for various branches of the Engineering profession; Johns Hopkins University is famous for its Medical School; the Union Theological Seminary gives a training for clergymen;—each of these is a specialized institution for a specialized purpose, but the purpose is obviously so different from that of West Point that comparison is not apt. The Military Academy does not, of course, because of this specialized function intend to turn out men versed in military matters and ignorant of all else, any more than does the Engineering School or Medical School intend to turn out men narrowly educated to be engineers or physicians without further general training. Its specialized function, however, does justify a course of instruction which stresses this purpose while at the same time it imparts a general education. The problem of framing a course for West Point is, therefore, unique, and can be solved only by giving due recognition and weight to all the different factors in its peculiar function.

§4. **Moral Training.**—It is the intention of the Academic Board to do everything in its power to encourage the same high standards of character which have distinguished the cadets in the Corps in the past. To a very large extent, these standards are maintained by the traditions of the Corps, handed on from class to class, and carefully fostered by the officer personnel of the Post. The noble ideals of personal and official **honor**, the flexible will to perform faithfully and conscientiously any assigned **duty**, the undeviating loyalty to **country**, are the essential elements which constitute this character. In his letter of May 17, 1920, to the Chairman of the Committee on Military Affairs in the House of Representatives, the Secretary of War has justly emphasized "the inculcation of a set of virtues admirable always but indispensable in the soldier." He has written as follows: "Men may be inexact, or even untruthful, in ordinary matters, and suffer as a consequence only the disesteem of their associates, or the inconveniences of unfavorable litigation, but the inexact or untruthful soldier trifles with the lives of his fellow-men, and the honor of his government; and it is, therefore, no matter of idle pride, but rather of stern disciplinary necessity that makes West Point require of her students a character for trustworthiness which knows no evasions." In the final analysis of the West Point product, character is the most precious component.

The Superintendent is increasing the opportunities for character-forming influences in the training at the Academy. He has inaugurated a system by which, as cadets progress from class to class, a greater measure of personal and official responsibility is placed upon them. Self-reliance and self-discipline will be encouraged both in the individuals and throughout the classes. Such

discipline, coming from within rather than imposed from above, subjective rather than objective, is adapted to qualify men with a strength of character which will make them natural leaders among their fellows.

And the system of thus imposing increasing personal and official responsibilities upon cadets as they progress from class to class has the added merit of making the transition from cadetship to lieutenancy less sharp and abrupt. During his training in the Academy, the cadet will be given the opportunity to accustom himself in such measure as is possible to those responsibilities of command which will be his after graduation. The habits formed in West Point will thus be a great asset to the new officer. With them as a foundation, he will be able readily and naturally to meet the wider and more important duties of his rank.

§5. **Military Training.**—The military training included in the West Point schedule is, of course, a most important factor. To appreciate its nature, however, it is essential to gain a clear understanding of its purpose and its place in the education of the prospective officer.

(a) Purpose.—The purpose of the Military training at West Point is to give to all cadets a broad general conception of all branches of the service and of the function of each branch in the organization of the division, corps, or army. Attention is invited to the fact that this training is elementary, fundamental, and general. The tactical work is not intended to produce glorified drill sergeants, or to qualify the cadet to be a subaltern officer in one particular branch of the service. As stated, the training is planned to impart a general conception of all branches and of the special function of each branch.

(b) The Place of West Point in the System of Training.—A better understanding of the justification of this interpretation of the purpose of the West Point military training will be gained by considering the place which the West Point course occupies in the educational system planned for the prospective army officer. The West Point course is but the first stage in this system; it is intended by the War Department to impart merely the general fundamental principles upon which may be based advanced technical training in the detailed work of the separate branches. After graduation from the Military Academy, the officer combines experience in subaltern command with further education in (a) basic courses at special service schools; (b) unit schools; (c) advanced courses at special service schools; and (d) general service schools. The object of the entire school system is to provide systematic and progressive courses of instruction and training which will prepare each officer to perform the highest duties of command and staff commensurate with his ability. In the whole system, West Point, is, as stated, the first stage.

(c) The Time Available.—Under the proposed four-year course of instruction at the Military Academy, the Department of Tactics is allotted the following time for theoretical and practical instruction and for athletics.

A. Fourth Class Year.

(a) Summer—July 1 to August 28, incl.

(b) Academic Year—Sept. 1 to June 1, incl.

1. Eighteen lectures, Saturday mornings.
2. Physical Training, daily, Saturdays and Sundays excepted for ¾ hour immediately after recitation in Mathematics.
3. 3:50 to 6:20 Mondays, Tuesdays, Thursdays and Fridays, Sept. 1 to June 1.

B. Third Class Year.

(a) Summer—Graduation to August 28.
(b) Academic Year—Sept. 1 to June 1, incl.
1. Forty-seven attendances, 1:50 to 3:50 p. m. daily, except Saturdays and Sundays, Nov. 1 to March 31.
2. 3:50 to 6:20 Mondays, Tuesdays, Thursdays and Fridays, Sept. 1 to June 1.

C. Second Class Year.

(a) Academic Year—Sept. 1 to June 1, incl.
1. 3:50 to 6:20 p. m., Mondays, Tuesdays, Thursdays and Fridays, Sept. 1 to June 1.
2. Half class daily, Saturdays and Sundays excepted for Equitation, 1:50 to 3:50 p. m., less 30 attendances for Hygiene.

D. First Class Year.

(a) Summer—Graduation to August 28.
(b) Academic Year—Sept. 1 to June 1, incl.
1. 3:50 to 6:20 p. m., Mondays, Tuesdays, Thursdays and Fridays.
2. Half class daily, Saturdays and Sundays excepted for Equitation, 10:30 a. m., to 12:15 p. m.
3. Professional lectures, Saturdays, 11 a. m., to 12 noon.

(d) On the approved recommendation of the Athletic Board, drills and supervised athletics will be continued throughout the academic year on the basis of two attendances at each per week for cadets of all classes. In the fourth class year, during the winter, 9 to 18 attendances at dancing, and in the third class year, one attendance per week at equitation from October 1 to April 30, will be taken from the time allotted to supervised athletics.

The following plan, therefore, is submitted for the utilization of the time allotted:

A. FOURTH CLASS YEAR.

Summer.

The first summer, July 1 to August 28, will be spent at West Point. This entire time, which is immediately subsequent to the admission of the cadet to the Academy will be spent in elementary training. It will be divided into three periods of twelve instruction days each, the periods to be followed by a progress inspection. The last week will be devoted to a practice march.

Academic Year.

The lectures, fourth class year, will be as follows:

Psychology of command	6
Hygiene	8
Organization	4

The physical training will be under the supervision of the Director of Physical Training.

B. THIRD CLASS YEAR.

Summer.

The summer training in this year will be at one of the large Army Camps or Cantonments and will be so arranged as to bring the cadet in close touch with, and understanding of, the routine of the Army and the life of the enlisted man.

The program of this period will vary with the facilities at the camp. In general, the instruction will comprise the following:

(a) First lessons in equitation and horsemanship.
(b) Range practice, rifle and pistol.
(c) Field Artillery, service firing.
(d) Minor tactics.
(e) Combat exercise.
(f) Communications.
(g) Use of aircraft.
(h) Maneuvers with troops.

Academic Year.

From Sept. 1 to Oct. 31, and April 1 to June 1, inclusive, the attendances from 1:50 to 3:50 p. m. (45 per cadet) will be given to the Department of Practical Military Engineering.

The attendances from Nov. 1 to Mar. 31, from 1:50 to 3:50 p. m. (47 per cadet) will be used as follows:

12—Psychology of Command. 8—Field Service Regulations.
15—Infantry Drill Regulations. 12—Hippology.

C. SECOND CLASS YEAR.

Summer.

Class on furlough.

Academic Year.

Instruction in equitation will be given one-half the class daily, Saturdays and Sundays excepted, 1:50 to 3:50 p. m., throughout the year, less 30 attendances given to hygiene.

D. FIRST CLASS YEAR.

Summer.

This time will be spent with the Third Class in one of the large Army Camps or Cantonments.

The program of this period will vary with the facilities at the camp. In general, the instruction will comprise the following:

(a) Acting as officers and coaches, range work, third class.
(b) Acting as officers, field artillery, range firing.
(c) Machine guns and special infantry weapons.
(d) Equitation.
(e) Communications; liaison; airplanes and balloons.
(f) Demonstrations, chemical warfare service.
(g) Visit to Ordnance Proving Ground.
(h) Acting as officers in combat exercises and in maneuvers with troops.
(i) Exercises in preparation of terrain, offensive and defensive, including practical work in communications and liaison.

Academic Year.

Instruction in equitation will be given one-half the class daily, Saturdays and Sundays excepted, 10:30 a. m. to 12:15 p. m., throughout the year. During April and May this will consist of cavalry drill.

Professional lectures will be given each Saturday 11 to 12 throughout the year. These lectures will cover the following:

(a) All special services and arms, their organization and functions.
(b) Lectures on officers uniforms and equipment and on customs of the service.

(e) Military Efficiency Ratings.—During the past year, the Department of Tactics, adopted and put into use, a system for rating the soldierly qualifications and efficiency of cadets, similar in many respects to the system in use by the War Department. The object in view was the adoption of a merit system upon which to base all appointments of cadets as officers and non-commissioned officers in the Corps organization. The value of such a system lies in the fact that soldierly attributes are emphasized and given due importance, and that cadets recognize and fully appreciate the fact that merit alone, not favoritism, counts in the award of chevrons.

In June of this year all appointments of cadet officers and non-commissioned officers were made strictly in accordance with the order in which names appeared on the merit roll in Military Efficiency. The results seem to have been satisfactory beyond expectation.

The Academic Board, having studied and considered the system, have approved it in form as follows:

Rating in Military Efficiency and Conduct, to count on graduation standing, 25 in fourth class year, 50 in third class year, 75 in second class year, and 100 in first class year: Total 250.

Each year ratings will be based on the following items:	%
(a) Scholarship	30
(b) Military bearing, neatness and soldierly appearance	9
(c) Leadership and personality	15
(d) Military instruction, including efficiency at all drills, equitation and marksmanship in rifle, pistol and artillery	15
(e) Athletics	15
(f) Cadet activities, including all extra-curriculum activities such as choir, Y. M. C. A., Hundredth Night, class affairs	6
(g) Demerit record	10
Total	100

Ratings will be made twice a year in December and June, as in all academic departments, and the general merit roll will be published to the Corps.

§6. Physical Training.—The Military Academy is justified by the nature of its special function in laying great emphasis upon physical training. Its graduates must be physically fit in time of peace or in time of war to endure the strain of the service, and to stand forth as the leaders in their commands.

The importance of this physical training has been recognized in the past. The ideals before those intrusted with this work have been far higher than those at the ordinary educational institution. The Board has been liberal in allotting time for the necessary exercises. As a result, the system which has been established and maintained at West Point has received unqualified praise from all who have studied it, and served as the model in the training of many thousands of young men in the great encampments during the war. The Board highly commends the existing system and recommends its retention.

In one respect, a better check upon the result of this training can be made. Early in a cadet's course at the Academy, a physical efficiency record may be

made, and each year thereafter physical efficiency tests applied to determine development. Wherever such records or such tests disclose individual weaknesses, corrective exercises may be prescribed. Such an addition to the existing system will, it is believed, be valuable, and is recommended by the Board.

The experience of the World War has shown, however, that along two lines further development in physical training is advisable. In the first place, the course of training should be planned not only to fit men physically for the rigors of military service, but also to qualify them as physical directors and instructors in their respective commands. And in the second place, the teaching of athletics should receive formal recognition in view of its value to the officer in the performance of his duty with troops.

The necessity at present of requiring the officer, especially the subaltern officer, to supervise the physical conditioning of his troops demands that, in addition to his own physical development, he receive training as a physical director or instructor. He must learn, not only how to perform the necessary exercises himself but how to teach these exercises to others. He must understand the means by which he can most speedily and most efficiently bring his group of men to the necessary physical condition. He must appreciate the practical details of physical instruction. He must be qualified to stimulate and inspire his men in order to obtain the quickest and best results. Thus will he increase his efficiency as an officer and his value to the service.

And again, the place of athletics in the curriculum must be given formal recognition. In the old course, athletics was a voluntary activity in the institution. Only those men engaged in athletic sports who were spurred by the ambition to gain a place on a "team", or who played games for pleasure. The experience of the war has revealed the value of organized group athletics in creating and maintaining morale among troops. Games of aggression, agility, and skill, when encouraged and properly supervised, played an important part in keeping the American soldier mentally and physically fit. Realizing this fact, the Board approves allotment of time for organized group sports at the Military Academy, the object being to impart to each cadet a practical knowledge of the technique of a number of games. Thus equipped, he will be qualified as an officer to organize and supervise training in his command in such sports as track contests, baseball, basketball, football, lacrosse, and tennis.

A special board appointed for the purpose has considered these problems connected with physical training. Time has been allotted in the schedule for the necessary exercises and sports. The plan proposed is, in general, as follows:

The work of the summer camp at West Point will be so planned as to give two periods a day to physical training. The morning period will consist of setting-up exercises of the familiar type, intended to condition the cadet physically. The afternoon period will be devoted to voluntary and supervised athletics.

During the period from September 1 to June 15, the Fourth Classmen will have forty-five minutes of gymnastic work each morning directly following the Mathematics recitation, and will be given two periods a week (exclusive of Wednesday and Saturday) for supervised and voluntary athletics. During these afternoon periods, each cadet will receive instruction, not only in boxing, wrestling, swimming, fencing, and gymnastics, but also in all the various

games of competitive sport, such as baseball, football, track events, basketball, soccer, lacrosse, tennis, handball, etc.

The system begun in the fourth class year will be continued throughout the other years, except that the amount of time spent in gymnastic work will be less than required in fourth class year. After the cadets have been well conditioned physically, it is unnecessary to keep up the same amount of purely gymnastic training. In the conduct of supervised athletics, however, it is considered desirable to have each cadet instructed in the method of play of a number of different sports. It is necessary, therefore, to continue a liberal allowance of time throughout all four years.

§7. **Mental Training.**—Under this heading comes the consideration of the course of study. At the beginning of the discussions, the Board recognized the fact that some changes were advisable in the subjects taught, in the amount of time assigned to the subjects, and in the coordination between the work of the departments handling the theoretical and applied subjects. The deliberations therefore covered exhaustively the entire field of the academic curriculum.

The limits of the problem were definitely fixed by conditions beyond our immediate control. The entrance requirements marked the average degree of education we could expect as a foundation for the course; two and a half to three hours per day constituted the total time we could legitimately expect for classroom recitations, exclusive of laboratory work; and the mental training necessary to qualify a man to meet the responsibilities of an officer in time of war or of peace formed the product desired. The Board was confronted therefore with the task of selecting such subjects, coordinating such material, arranging such a time schedule, and providing such methods of instruction, as could reasonably be expected under the conditions of admission and hours of attendance to produce the required result.

(a) **Appointment of Candidates.**—The designation of candidates for admission to the Military Academy is one of the factors in the educational problem which is beyond the immediate control of the Academic Board. * * * * *

The Academic Board has long been of the opinion that the method outlined above is not the one adapted to furnish the best material for admission to the Academy. Recommendations for cadetships are too often made without careful scrutiny of the candidates' mental qualifications for successfully completing the required course. The result is that an unduly large proportion fail to meet the requirements for admission, thus leaving many vacancies in the number of authorized cadetships, or that a number of cadets after having been admitted, prove each year to have had inadequate preliminary instruction and are discharged for deficiency in studies. The direct loss to the government is thus considerable, both from the vacancies in the Corps of Cadets and from the expenditure of time, money, and effort in the attempt to carry on cadets who have had insufficient preliminary education.

To prevent this waste the Academic Board recommends two measures: 1st, that state-wide and district-wide preliminary competitive examinations be encouraged to determine candidates for Senatorial and Representative appointments; and 2d, that provision be made that hereafter, whenever all vacancies at the Military Academy shall not have been filled as a result of the regular entrance examinations, the remaining vacancies in each State shall be filled by admission from the whole list of alternates of that State, selected in their order of merit established at such entrance examinations.

The chief argument for state-wide and district-wide preliminary competitive examinations for appointment as candidate lies in the undeniable desirability of providing a means whereby the Country and the Service may offer the great opportunities of a West Point training to the best qualified youths of the country. The prospect of a good education and of a commission as an officer in the United States Army would certainly prove an attractive inducement to such young men if the road to the appointment were open. Under existing conditions, however, many excellent and well-qualified youths either never are informed of the opportunity or are definitely refused the appointments.

The second measure, proposed to fill any vacancies remaining after the regular annual entrance examinations, may contain a proviso crediting such cadets to the at-large list and thus not interfering with or affecting in any manner whatsoever any appointment authorized by existing law. Furthermore, in order to prevent the increase of the corps beyond the authorized number, an additional proviso may be inserted that whenever by the operation of this law the Corps of Cadets reaches its authorized maximum strength the admission of alternates as thus prescribed shall cease until such time as the Corps may be reduced below its authorized strength. The operation of this proposed measure would within a few years serve to maintain the number in the Corps constantly near its maximum authorized strength, and would thus be a great factor in utilizing this institution to its capacity.

(b) Entrance Requirements.—The entrance requirements are adequately stated in the Bulletin of Information, as follows:

Admission by Examination.—On the first Tuesday in March of each year candidates selected for appointment shall appear for mental and physical examination before boards of Army officers to be convened at such places as the War Department may designate.

Each candidate must show by examination that he is well versed in algebra, to include quadratic equations and progressions, and in plane geometry, English grammar, composition and literature, and general and United States history.

Admission by Certificate.—The Academic Board will consider and may accept in lieu of the regular mental examination:

(1) A properly-attested certificate (Form 1) that the candidate is a regularly enrolled student in good standing without condition in a university, college, or technical school accredited by the United States Military Academy, provided that the entrance requirements of the course he is pursuing requires proficiency in subjects amounting to not less than 14 units of the list given below.

(2) A properly-attested certificate (Form II) that the candidate has graduated from a preparatory school or public high school accredited by the United States Military Academy, provided that he has in his school work shown proficiency in subjects amounting to not less than 14 units of the list given below.

If a scrutiny of the certificate submitted shows evidence of low grades or of graduation at an irregular date, the certificate will be rejected.

(3) A properly-attested certificate (Form III) from the College Entrance Examination Board that the candidate has shown proficiency in the examinations set by the board in subjects amounting to 14 units from the list given below. If a scrutiny of the certificate submitted shows low grades, the certificate will be rejected.

The list of subjects and the corresponding weights in units are as follows:

(a) REQUIRED.

Every certificate must show evidence of proficiency in the following subjects:

	Units		Units
Mathematics, A1	1	History, A, B, C, D, E, F — any two	2
Mathematics, A2	1		
Mathematics, C	1		
English, A	1½		
English, B	1½		
			8

(b) OPTIONAL.

The remaining 6 units may be supplied from among the following subjects and no others:

	Units		Units
Mathematics, B	½	Greek, A1	
Mathematics, D	½	Greek, A2	½
Mathematics, E	½	French, A	1
Mathematics, F	½	French, B / French, BC — Either one, but not both	2
History, A	1	German, A	1
History, B	1	German, B / German, BC — Either one, but not both	2
History, C	1	Spanish	1
History, D	1	Physics	1
History, E	1	Chemistry	1
History, F	½	Biology	1
Civil Government	1	Botany	1
*Latin, 1	1	Physical Geography	1
Latin, 2	2	Drawing, Freehand or Mechanical	1
Latin, 3	1	Zoology	1
Latin, 4	1	General Science	1
Latin, 5	½		

Any not submitted among required subjects

* Only 4 units will be credited for Latin studies.

Approximately three-quarters of the cadets are admitted by qualification on certificate. The certificates of candidates are very carefully scrutinized by a special committee appointed for the purpose and high academic standards are required. Failure in one or more subjects in the candidate's previous scholastic record is sufficient to cause rejection of his certificate. Also, general low grades in academic work are sufficient to cause rejection.

The Board in this connection desires to emphasize that these certificate requirements are equal to, if not superior to, those of the average civilian institution of college grade. Drawing the material from the same sources (i. e., the high schools and preparatory schools), the Military Academy requires the same number of entrance units and demands higher standards in scholastic work than does the average civilian institution. Where such institutions will commonly accept a man deficient in one or more subjects, and carry him on with **conditions**, the Military Academy insists upon proficiency in all subjects. And again, where such institution will commonly accept certificates showing merely passing grades in preparatory school work, the Military Academy insists upon grades well above the passing mark.

Under existing conditions of designation of candidates, the Academic Board approves the present requirements for entrance. These are such as to meet the varied educational conditions in the good high schools and preparatory schools throughout the country; they are as great in quantity as those required by the average institution of college grade; their standards are in no wise lower

than those maintained by the average institutions of college grade. In general, they are such that any young man may in the regular public school system throughout the country qualify himself by diligent study for entering and completing successfully the course in the Academy.

(c) The Course of Study.—The most careful consideration was given to the subjects of instruction to be included in the academic curriculum. In this connection especially did the Board consider the place and importance of each study in forming the desired product for the service.

(i) Preliminary to the actual decision upon the courses and their content, it was necessary to determine the academic time available. In making this computation it was necessary, of course, not only to make allowances for the drills and exercises of the Tactical Department, but for study, meals, and recitation. On the basis of previous practical experience with the schedule, the academic hours were set from 8 a. m. to 12:15 p. m., and from 1:50 to 3:50 p. m. It was further considered practicable in general in these time limits to require three classroom attendances daily by each cadet. The time not accounted for in the classroom during these hours was, in addition to the evening period daily from 7:30 to 9:30, available for study.

The above-outlined schedule allowed for three full courses each year, i. e., for three courses requiring daily attendance. In cases where a subject could be covered by recitation periods on alternate days instead of daily, such subject occupied a half-course time. Using the half-course as the unit, then the Board had twenty-four half-courses available.

It was recognized at the beginning, however, that it was impracticable and undesirable to have all these recitation periods devoted to purely academic subjects requiring study preparation. Such a schedule would be unduly difficult, especially in the fourth class year. The Board, therefore, in accordance with previous experience and practice, allotted two one-half courses in fourth class year to gymnastics, one one-half course in second class year (less 30 periods to hygiene) to riding, and another one-half course in first class year to riding. Deducting these four half-courses from the twenty-four half-courses of time, the Board had available only twenty half-courses for the purely academic work.

(ii) In order to gain a clear understanding of the nature and value of the various courses advocated for inclusion in the curriculum, the Board considered the scope of each subject before making its decision. In this consideration, members of the Board reported to the Board as a whole, not only outlining courses given in the old schedule, but stating what modifications would be introduced if the time allotments were lengthened or shortened, and giving summaries of the new courses proposed.

The several courses considered were as follows: Mathematics, languages, English, political history, drawing, natural and experimental philosophy, chemistry and electricity, tactics, law, military art and military history, military engineering, practical military engineering, logic, psychology, sociology, economics, government, ordnance and gunnery, moral philosophy, hygiene.

(*a*) **Mathematics.**—This course includes the subjects of algebra, geometry, trigonometry, plane analytical geometry, solid analytical geometry, descriptive geometry, calculus (and, for the most proficient students the theory of least squares).

The course in algebra covers the entire subject as generally taught in colleges, but the student is expected to have already mastered elementary algebra

to include the progressions and the solution of the quadratic equation. The course in elementary geometry includes the books that relate to the plane and those that relate to space, but the student is expected to have mastered the former. Plane and spherical trigonometry includes the complete solution of the plane and spherical triangles. The course in analytical geometry includes the discussion of the general equation of the second degree in the plane and the particular forms of the equation of the second degree in space.

Descriptive geometry includes the orthographic projections of the right line, the plane, ruled surfaces and surfaces of revolution, tangent planes and intersections of surfaces. It also takes the subjects of shades and shadows, perspective, isometric projections and spherical projections.

The course in differential and integral calculus covers the ground of the usual college text-book, including briefly the subject of ordinary differential equations.

Text-books.

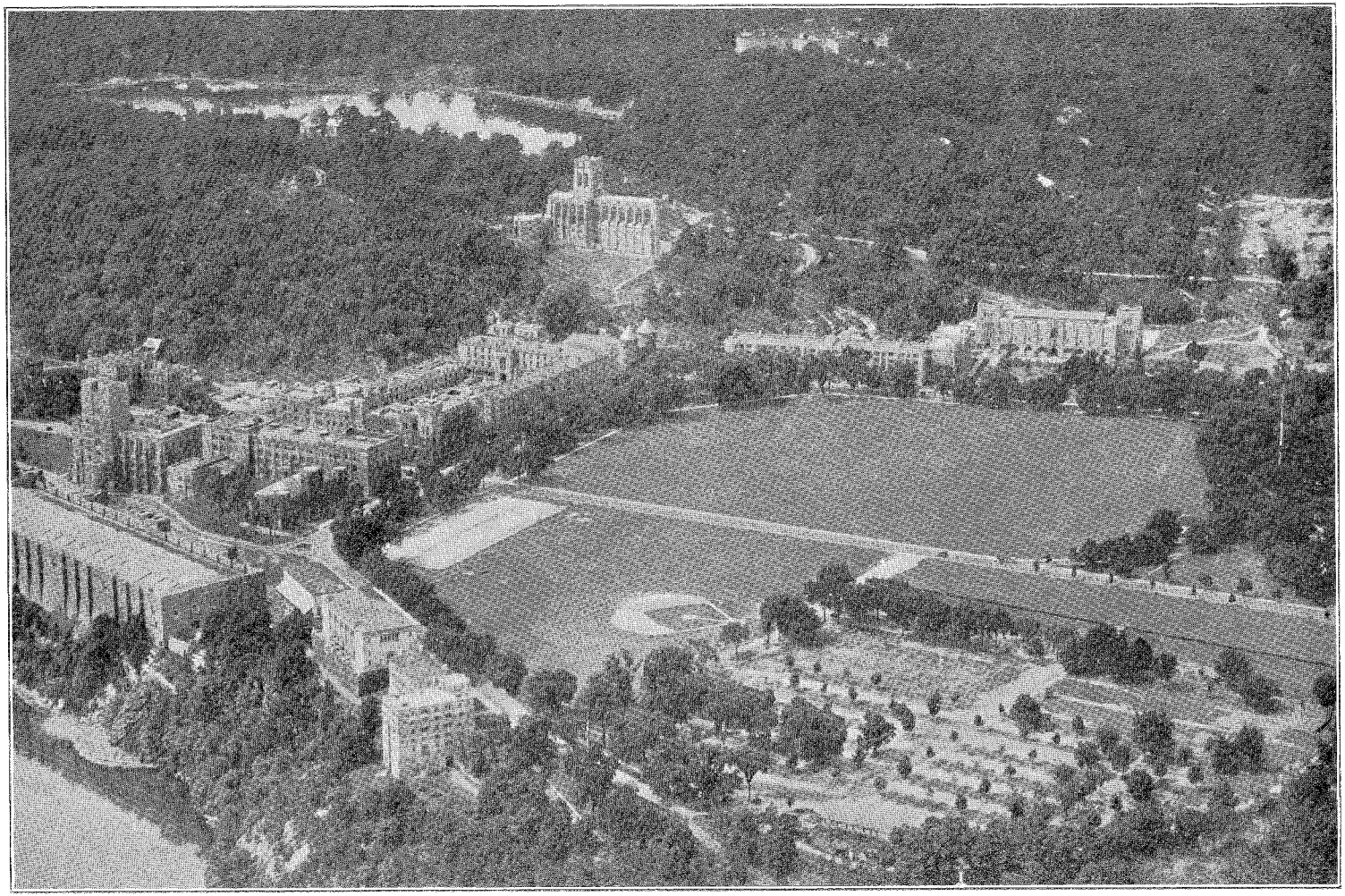
Elements of Geometry. Phillips and Fisher.
Advanced Course in Algebra. Wells.
Quadratics and Beyond. Fisher and Schwatt.
Elements of Plane and Spherical Trigonometry. Crockett.
Logarithmetic Tables. Newcomb.
Conic Sections, Coordinate Geometry. C. Smith.
Coordinate Geometry. Fine and Thompson.
Elements of Analytical Geometry (Solid). Smith and Gale.
Descriptive Geometry. Church.
Linear Perspective. Pillsbury.
Differential and Integral Calculus. Granville.
Integral Calculus. D. A. Murray.
Differential Equations. D. A. Murray.
Method of Least Squares. Johnson.

The field of study outlined above is that of the mathematical course in the old four-year schedule. This course was recommended by the Professor of Mathematics, and for its efficient completion, four half-courses were requested (less 33 recitation periods for surveying). It was stated that, if the Board decided to reduce the time to three half-courses, the subject of descriptive geometry would necessarily be omitted, and the surveying recitations should be taken from other time.

(*b*) **Languages, French.**—The purpose of the instruction is to provide a sufficient foundation in reading, writing, and speaking French to enable a graduated cadet profitably to go on alone or with a teacher.

In its instruction, the department possesses the great advantage of having two native French assistants. The range of the course is sufficiently set forth by the list of text-books, as follows:

Martins French Verbs. Grammar. The New Chardenal.
Essentials of French Pronunciation. Martin. Bercy's La Langue Francaise.
At West Point—French Composition. Martin and Russell Merimee's Colomba.
About's Rio des Montagnes. Dupont's En Campagne.
Countes Choisis de Daudet. Pattou's Causeries on France.
Rostand's Cyrano de Bergerac.
French Conversation Exercises. Military Reading.



The field outlined above is that of the French course in the old four-year schedule. This course was recommended by the Professor of Modern Languages, and for its proper conduct two half-courses were requested.

Spanish.—The purpose of the instruction in Spanish is similar to that in French—to provide a sufficient foundation in reading, writing and speaking Spanish to enable a graduated cadet profitably to go on alone or with a teacher.

In its instruction, as in the teaching of French, the Department of Modern Languages has the assistance of two Spanish-speaking instructors. The range of instruction is shown by the list of text books, as follows:

Spanish Grammar, Olmsted and Gordon. A Spanish Reader, Bransby.
Crawford's Spanish Composition.
A trip to South America. Waxman.
Spanish Conversation and Idioma, Department of Modern Languages, U. S. M. A.
Scientific and Technical Spanish Reader. Willcox.
Lectures Modernas. Charles Alfred Downer.

The course as outlined above is that given in the old four-year course. This course was recommended by the Professor of Modern Languages and for its proper conduct two half-courses were requested. It was stated that, if this allotment of time were reduced to one half-course, the department could teach the rudiments of the Spanish language, and no more.

(*c*) **English.**—The aim of the English work is to accomplish three ends: (1) To form habits of clear, concise, and correct written expression; (2) To stimulate interest in good reading, especially in the field of contemporary prose; and (3) To give practice in oral expression.

The work is planned to include a thorough review of the main principles of English grammar; a study of the principles of composition; frequent practice in composition with special attention to the writing of reports; the study of selected examples of modern literature with special emphasis upon prose reading; oral exercises conducted with a view to developing self-possession, command of language, and good delivery in speaking before an audience; and study and practice in the forms of military correspondence.

The time requested for English was two half-courses. The time allotted in the old four-year course was one half-course. If the time were continued at one half-course, less practice in composition, less reading in contemporary prose, and very few oral exercises, could be given.

(*d*) **Political History.**—The purpose of the course in political history is to give to the student a good general knowledge of the course of political and international events affecting the chief status of the modern world from the outbreak of the French Revolution to the present day.

The text-book lessons, supplemented by lectures and by informal talks upon current conditions, trace the course of events through the period outlined above. The division of time is planned as follows:

French Revolution to the Congress of Vienna.....	24 lessons, 10 reviews.
Congress of Vienna to Bismarck (1862).....	19 lessons, 8 reviews.
Bismarck to 1914.....	35 lessons, 16 reviews.

The field outlined above is that covered by the former four-year schedule. The time requested for this subject was one half-course.

(*e*) **Drawing.**—The course in drawing, as given in the former four-year schedule, included the following:

Preliminary instruction and practice in the use of drawing instruments.
Study and practice in lettering; exercises in lettering were continued throughout the entire course.
Problems in isometric and geometric projections.
Problems in building construction drawing.
Problems in third angle projection.
Problems in machine drawing.
Assembly and working drawings from models.
Map reading, topographical sketching, and drawing.

The time used to complete the above work has been two half-courses (with two-hour periods of attendance).

(*f*) **Natural and Experimental Philosophy.**—This course includes the following:

Elementary mechanics, properties of matter, wave motion, sound, light, the slide rule, precision of measurement, graphical methods, technical mechanics, including also fluid mechanics, hydrostatics, and hydraulics, applied mechanics, applied optics, general astronomy.

Text Books.

A text-book of Physics—Duff, fourth edition.
Precision of Measurements and Graphical Methods—Goodwyn, 1919 edition.
Technical Mechanics—Maurer, fourth edition.
Text-book on Hydraulics—Russell.
General Astronomy—Young.

The time requested for this course was two half-courses—the same as for the old four-year course.

(*g*) **Chemistry and Electricity.**—The course of instruction in the Department of Chemistry embraces the subjects of (a) chemistry, (b) electricity. Along with the subject of chemistry are given some twelve or more elementary lessons in heat.

The course in chemistry begins with a brief study of the fundamental chemical principals, succeeded by a descriptive portion in which are taken up the commoner gases, non-metals, metals and inorganic compounds, and a concluding portion dealing with organic chemistry and laying most stress on the commoner hydrocarbons, carbo-hydrates and the explosives made therefrom. This is supplemented by some 20 laboratory periods in which the cadet is given instruction in the simpler processes and manipulations involving preparation of apparatus, precipitation, filtration, color, flame tests and the determination of metallic salts in solution.

The subject of heat is taken in conjunction with chemistry. The lessons in heat are elementary, covering the subjects of thermometry, calorimetry, the laws of expansion of solids, liquids and gases and a final lesson in thermodynamics on the determination of the mechanical equivalent of heat.

The course in electricity follows the customary subdivisions of static electricity, magnetism and voltaic electricity, under this last head considering E. M. F., resistance, Ohm's and Kirchoff's Laws, induction, electro-dynamics, electrical measuring instruments and electrical machines, generators and motors, concluding with a brief consideration of alternating currents and of transformers and alternating current generators and motors. Laboratory

exercises are planned at appropriate points in the progress of the theoretical course to show in concrete form the correctness of the theoretical deductions of the text. At the conclusion of the above, a few lessons are taken in high potential, the passage of current through vacua, and electric oscillations. It is proposed to expand this last so as to give in more detail the principles of wireless telegraphy.

The time requested for this subject was two half-courses, the same as in the old four-year course.

(*h*) **Tactics.**—This course includes study in cavalry, infantry and artillery drill regulations, field service regulations, hippology, and military psychology and leadership.

The time requested was one half-course.

(*i*) **Law.**—This course is planned to lay a foundation for the understanding of three essential subjects: (a) elements of law, including criminal law and evidence; (b) constitutional law, largely on the Bill of Rights; and (c) military law, largely on the Manual of Courts-Martial and Moot Courts.

The time requested for the study of law was two half-courses. The time allotted in the old four-year schedule was one half-course.

(*j*) **Military Art and Military History.**—This course is similar to that formerly included in the scope of the Department of Civil and Military Engineering and the Art of War. As now planned, it includes:

Historical development of the art of war.

Army reorganization.

Elements of strategy.

Study of selected modern campaigns.

The time requested for this subject was one half-course.

(*k*) **Military Engineering.**—This course is similar to that formerly included in the scope of the Department of Civil and Military Engineering and the Art of War. As now planned, it includes the mechanics of engineering, engineering materials and tests, applications to design of framed structures, bridges and roof trusses, construction of roads, water supply and sewerage, fortifications, military bridges, and other military works.

The time requested for this subject was one half-course.

(*l*) **Practical Military Engineering, Military Signaling and Telegraphy.**—This course includes the fundamentals of plane surveying: practical instruction in military field engineering, comprising the siting of battle positions and trenches, method of construction of trenches, shelters, emplacements, screening and camouflage, types of floating bridges, pontoon material, crossing streams by improvised means, fixed bridges, maps, map reproduction, photography, camps, roads, searchlights, blocks and tackle, field derricks, moving of weights, demolitions, engineer equipment and its uses, field water supply; instruction in military signaling and telegraphy, embracing visual signaling (flags, lamps, pyrotechnics, panels), buzzer practice, codes and ciphers, homer pigeons, wire communications (wire and splices, dismounted line work, transmission of messages), wire section drill (mounted), instrument troubles and remedies, radio telegraphy and telephony, earth telegraphy, exercises in liaison and command. Much of the above work is planned for the summer camp period and for drill time after 3:50 p. m. Academic time requested consisted of thirty-three periods in fourth class year and forty-five periods in third class year.

(*m*) **Logic.**—This proposed course was intended to include the study of the formal laws of reasoning. After a general introduction to the terminology of science, the course would proceed to the consideration of the several kinds of propositions, the primary laws of thought, the rules of syllogism, the moods and figures of the syllogisms, conditional syllogisms, logical and material fallacies, reasoning by induction and by deduction.

The time necessary for such a subject would be one half-course.

(*n*) **Psychology.**—This proposed course was intended to include the systematic description and explanation of the phenomena of consciousness. After a general introduction to explain the scope of the study, the course would proceed to a consideration of the processes of mental activity, such as consciousness, attention and discrimination, sensation and feeling, conation and movement, ideation; the development of mental life, as through impulse, instinct, and desire, through sense perception, memory, and imagination; and through primary inference and judgment, and thought and language; and the concepts of space, time and causation, the formation of will and character, the relations between body and mind.

The time necessary for such a subject, dealing merely with fundamental principles, would be one half-course.

(*o*) **Sociology.**—This proposed course was intended to include the study of the welfare of men in their social relations. After explanation of the general field and of the historical development of the science, the course would proceed to a consideration of the family, the rural group, the village, the town and city, the life of society, social consciousness, social morality and law.

The time necessary for adequate treatment of the essential elements of this subject would be one half-course.

(*p*) **Economics.**—This course includes the study of the following subjects: Wealth, labor, capital, corporate organization of industry, value, laws of demand and supply, money and exchange, banking, international trade, and commerce, tariffs, taxation, population, trade unions, and problems of economic organizations (such as railway problems, public ownership, trusts and monopolies).

The time requested for this subject was one half-course.

(*q*) **Government.**—This subject includes a general introduction to the principles of government followed by a study of government as applied to the United States. Sub-topics will be: nature and purpose of government; forms of government; sovereignty; organization of government; branches of government; the electorate; political parties, local government; colonial government; necessary and optional functions of government; nature of the federal state; the federal government, its powers, methods, and operation; relations between the federal government and state governments; character and methods of local government in the United States.

The time requested for this subject was one half-course.

(*r*) **Ordnance and Gunnery.**—The course of study covers the principles involved in the construction and use of war material. It is broadly divided into three parts—the theoretical, the descriptive, and the practical. The theoretical part includes the study of the action of explosives, the study of interior and exterior ballistics, the theories of gun and carriage construction, and the principles of gunnery.

The descriptive part of the course covers the processes of manufacture of powders, guns, projectiles, and armor; and describes the small arms, cannon, machine and rapid-fire guns in use in the United States service, with the carriages, ammunition, and accessory appliances required for their services.

The practical part of the course covers the operation of machines and appliances used in the fabrication of modern ordnance, the latter work being in effect a short but valuable course in manual training.

The time previously allotted to this subject was one half-course.

(*s*) **Moral Philosophy.**—This proposed course was intended to include an introduction to the fundamental problems in the field of mental and moral philosophy. After presenting an historical background of the chief modern philosophical systems from the Renaissance to Kant (including Descartes, Spinoza, Leibnitz, Locke, Berkeley, Hume, and Kant), special attention would be paid to the tendency of modern thought upon a few selected issues, such as the coordination of the principles of human knowledge, philosophy and religion, the knowledge of the absolute.

The time necessary for any adequate development of such a subject would be two half-courses.

(*t*) **Hygiene.**—This course will include the subjects of personal hygiene, first aid, communicable diseases, care of troops, and practical field sanitation.

The time desired was sixty periods. distributed as follows:

Fourth Class	20 periods.
Second Class	30 periods.
First Class	10 periods.

Half of this instruction will be given by lectures and demonstration methods without any study time being required.

(iii) With the above general facts concerning the proposed course before it, and with the knowledge that only twenty half-courses of time were available, the Board proceeded to consider the subjects which should be placed in the schedule and the allotment of time which could be given to each subject.

In its consideration, the Board was guided by its conception of the function of the Military Academy under present conditions. The members recognized the value of the traditional emphasis upon the more technical branches of study in the formation of habits of precision and accuracy and rigid reasoning, but appreciated also the need for the future of increasing the relative time and stress given to less technical subjects having general educational value. The Board desires to maintain those same standards of mental discipline for which the institution has so long been famous, but at the same time to expand the range of the cadet's training to an extent which would bring it, so far as consistent with its unique function, into line with the tendencies in modern education.

After extended discussion, the Board decided upon the following subjects, with the course-time indicated for each:

Mathematics	3 ½ courses
Languages, French	2 ½ courses
Languages, Spanish	1 ½ courses
Natural and Experimental Philosophy	2 ½ courses
Chemistry and Electricity	2 ½ courses
Military Engineering	1 ½ course
Ordnance and Gunnery	1 ½ course

English	2½ courses (less 33 recitations)
Practical Military Engineering (Surveying) 33 recitations, from English time.	
History (Political)	1 ½ course
Law	1 ½ course
Economics and Government	1 ½ course
Military Art and History	1 ½ course
Drawing	1 ½ course
Tactics	1 ½ course

(less 45 periods for Practical Military Engineering).

A comparison of the time allotments in the above table with those of the previous course and those requested will show that some subjects were given the course-time of the old four-year course and requested in the new, that some other subjects were reduced below the ocurse-time of the old four-year course and below the course-time requested, and that still other subjects were newly admitted to the curriculum or were largely expanded from the course-time allotted in the old four-year course. Those which received course-time corresponding to that requested and that allotted in the old four-year course will include in their instruction the matter outlined for them as submitted for the consideration of the Board. The other courses will have to be modified, either by contraction or omissions, or by expansion and additional work, to adapt themselves to the time allotted.

The subjects which received the amount of course-time corresponding to that in the old four-year course and to that requested were as follows:

Political history,
French,
Natural and experimental philosophy,
Chemistry and electricity,
Military art and military history,
Military engineering,
Practical and military engineering,
Ordnance and Gunnery,
Hygiene,
Tactics.

The subjects which were reduced below the course-time of the old four-year course and below the course-time requested were as follows:

Mathematics, Spanish, Drawing.

The subjects which were newly admitted to the curriculum, or whose course-time was largely expanded were:

English, Economics and Government.

One subject, law, was given the course-time corresponding to that in the old four-year course, but only one-half of that requested.

Plans for the necessary modifications have not, of course, been completed in detail. As outlined by the members of the Board concerned, however, these modifications may be indicated as follows:

(*a*) **Mathematics.**—The new schedule provides that the subject of mathematics shall be limited to one and one-half courses. Previously it has had two full courses It is necessary, therefore, to plan how this loss of time shall be met.

The periods assigned to various sub-divisions of the course in the past, and not considered too great, were as follows:

Plane (review only) and solid geometry..... 45 periods
Algebra..... 88
Plane and spherical trigonometry..... 31
Plane and solid analytical geometry..... 83
Descriptive geometry, shades, shadows and perspective 69
Differential and integral calculus (and least squares) 102

From this schedule 80 periods must be deducted.

The entrance requirements remain unchanged. Solid geometry, therefore, cannot be omitted; nor is it advisable to omit the review of the first portion of the algebra on account of the unevenness in preparation of the mass of cadets on entrance.

The analytical courses, algebra, trigonometry, analytical geometry, lead step by step to the calculus and no step can be altogether omitted. The final subject must still be calculus in order to prepare for the subsequent courses at the academy and at the graduate schools A percentage reduction of periods for each subject would tend to make the training much less thorough in each. The alternative is to omit entirely the subject of descriptive geometry from the course in mathematics and to apportion the additional loss to the final subjects of the course, analytical geometry and the calculus.

This alternative was presented to the Academic Board during the preparation of the new schedule as the most logical consequence of the time reduction in the course in mathematics. The approval of the schedule is taken as the decision of the Board to adopt this alternative.

With this understanding, the new course in mathematics will, therefore, be planned to consist of the following subjects:

Plane and solid geometry..... 45 periods
Algebra..... 88
Trigonometry 31
Plane and solid analytical geometry and calculus..... 173

(*b*) **Languages.**—The time allotted to the study of languages is three half-courses, of which two are to be devoted to French and one to Spanish.

The Board discussed fully the problems involved in the study of languages at the Military Academy. Under present conditions, with unusually intimate relations with the French and with close contact with Spanish-speaking peoples in the Philippines, Mexico, and Central and South America, the desirability of imparting a mastery of both written and spoken French and Spanish is manifest. In the time available, however, the Board recognized that such a degree of proficiency is impossible. Three hours a week in a foreign language are insufficient to accustom ear and tongue to the strange pronunciation and idioms. In teaching French and Spanish, West Point can do no more than can the civilian colleges, i. e., give a foundation for future study and practice.

Whereas the graduates of a civilian college, however, may never need a knowledge of the spoken French or Spanish, such knowledge has become a necessity for the officer in our Army. On the one hand, we have formed intimate relations with the French, and desire to do all in our power to foster these most cordial relations in the future. And on the other hand we still maintain close contact with Spanish-speaking peoples in the Philippines, and in Mexico and Central and South American states. Our graduates, therefore, must be placed in a position to supplement their Military Academy language-training with such a course of study as will make them proficient in the spoken tongue.

The Board is of the opinion that such supplementary course of study should be pursued abroad under the direction and supervision of officers appointed for the purpose by the War Department. Only by a study in France and in Spain, where the student is continuously in touch with the language as spoken by the natives, can he obtain the necessary training of tongue and ear to acquire proficiency. The course as now given at the Military Academy serves sufficiently as a basis, but only as a basis; for the absolutely necessary degree of proficiency, the student must be given the opportunity to supplement the Military Academy course with supervised study in France and in Spain.

The Board therefore recommends that newly graduated cadets be sent abroad to pursue under the direction of the War Department their studies in French for two months in France, and their studies in Spanish for two months in Spain, their graduating furlough to take place after this.

(*c*) **English.**—The time requested for English was two half-courses; the time allotted was two half-courses less thirty-three periods for surveying. The time in the old four-year course was only one-half course, so that the time now allotted is materially greater than before. The modifications will, therefore, be in the nature of expansion, rather than contraction. It is planned to expand the practice of composition, the reading of good modern prose, and the drill in oral expression. Had the full amount of time requested been allotted, it was planned to extend the work in general literature. The division of time is planned as follows:

Review of grammar, 5 lessons and 2 reviews (with continual practice throughout the course).
Review of principles of composition, 8 lessons and 4 reviews.
Practice in composition, 30 lessons and 10 reviews.
English prose reading, 24 lessons and 12 reviews.
Oral exercises, 30 periods.
History of English Literature, 6 lessons and 2 reviews.
English poetry, 12 lessons and 4 reviews.
English drama, 9 lessons and 4 reviews.
Official correspondence, 10 lessons and 3 reviews.

(*d*) **Drawing.**—The time allotted to drawing was one half-course. This is a reduction by one-half from the time allotted in the previous four-year course.

The proposed course in drawing will include instruction in the following subjects:

1. Drafting room methods and the use of instruments.
2. Standard methods of representation.
3. Lettering.
4. Elementary mechanical, architectural, and topographical drawing.
5. Hasty methods of reproduction.
6. Topographical sketching.
7. Types of military maps, their preparation, uses, and supply to forces in the field.

The general nature of the course will remain the same as that under the old four-year course, the reduction in time from two half-year courses to one half-year course being accomplished by a general simplification and shortening of tasks rather than by any material omissions.

The new matter to be included will be in relation to the subjects of military maps and hasty methods of reproduction. It will be covered largely by

lectures and demonstrations in a minimum of time and based upon the experiences of the American forces in the World War.

The objects of the proposed course will be:

1. To give cadets a reasonable amount of skill and practice in the use of drafting instruments and the employment of drafting-room methods.
2. To prepare cadets to intelligently perform such drafting work or interpret such working drawing as they may encounter in subsequent courses at the Academy or as officers in the service.
3. To qualify cadets for intelligently using topographical maps in the pursuit of military studies or employment of troops in the field.

(*e*) Law.—The time requested was two half-courses; the time allotted was one half-course, the same as in the old four-year schedule. The time allotted will suffice for only an abridged elementary course in law. The curtailment of time involved the omission of the treatment of certain fundamental notions of the nature of law, of certain facts relating to its history and development, and of certain principles which underlie its efficient administration. The course as allotted, however, will serve to give to the cadets, in as simple and non-technical form as the nature of the subject will permit, some of the essential principles of American law and its administration insofar as military service is concerned. This course will serve as the basis of the legal knowledge necessary for a competent, efficient army officer, and should be supplemented after graduation by outside study or instruction in one or more of the service schools. The division of time is planned as follows:

(a) Elements of law, 21 lectures and 7 reviews.
(b) Criminal law, 15 lectures and 5 reviews.
(c) Evidence, 12 lectures and 4 reviews.
(d) Constitutional law, 12 lectures and 4 reviews.
(e) Manual of courts-martial, 10 lectures and 3 reviews.
(f) Moot courts, 4 exercises.

(*f*) **Economics and Government.**—The time requested for each of these subjects was one half-course; the time allotted was one half-course for the two subjects, economics has not been taught at the Military Academy, and only a dozen lessons in the general principles of government taught to the upper sections in the history course. It is proposed in the periods allotted to devote the fall term to the study of government and the winter-spring term to the study of economics. In the available time, it will be possible to introduce the student merely to the most important general principles. The division of time is planned as follows:

General principles of government, 13 lessons and 5 reviews.
United States Government, 16 lessons and 6 reviews.
Fundamental principles of economics, 40 lessons and 14 reviews.

(iv) Weights.—In order to determine accurately the relative standing of cadets throughout their course and upon graduation, each course is weighed according to its time allotments, its place in the schedule, and its difficulty as compared with other subjects. Cadets are given in each subject that proportional part of its assigned weight which their actual marks bear to the maximum possible marks. The total of a cadet's proportional parts of the weights assigned to the several subjects determines his relative standing upon the graduating merit roll.

The weights assigned in the old four-year course were as follows:

Fourth Class.		
Mathematics	175	
English	75	
History	75	
Surveying (P. M. E.)	40	
Drill regulations	25	
Conduct (not counted on graduation merit roll)	50	440
Third Class.		
Mathematics	250	
French	175	
Drawing	50	
Hygiene	25	
Drill regulations	20	
Conduct	75	595
Second Class.		
Philosophy	300	
Chemistry	225	
Spanish	50	
Drawing	75	
Drill regulations	40	
Conduct	100	790
First Class.		
Engineering	300	
Ordnance	150	
Law	150	
Spanish	100	
Drill regulations (hippology)	15	
Reconnaissance (P. M. E.)	10	
Conduct	125	850
Grand Total		2675

The changes in this four-year course, such as the reduction or increase in certain subjects, the introduction of new subjects and the equalizing of the periods of recitation, required a reconsideration and readjustment of these weights. After discussion and deliberation, the Board agreed upon the following table of weights, and recommends that it be approved:

4th Class Year.		
Mathematics	225	
French	90	
English	75	
Surveying	40	
Military efficiency and conduct	25	455
3d Class Year.		
Mathematics	150	
French	100	
English	100	
History	100	
Drawing	100	
Tactics	25	
Military efficiency and conduct	50	
P. M. E.	25	650

2d Class Year.

Philosophy	300	
Chemistry	250	
Spanish	100	
Hygiene	40	
Military efficiency and conduct	75	765

1st Class Year.

Military engineering	150	
Law	150	
Military art and history	150	
Ordnance and gunnery	150	
Economics and government	150	
Military efficiency and conduct	100	850
Grand Total		2720

(v) Coordination of Work.—With the subjects and their scope determined, the Board proceeded to a consideration of the coordination of the work throughout the Academy in such a way as to produce the best results.

(*a*) **Coordination by Time.**—It was recognized at once that the very nature of certain subjects required that they should be undertaken previous to other subjects:—for example, theoretical mathematics should be studied before its application in the courses of natural and experimental philosophy, chemistry and electricity, and engineering; and French should be learned before the study of Spanish was begun. Thus, logically, mathematics, English, tactics, drawing, and French fell into the first two years of the course, and philosophy, chemistry, military engineering, ordnance and gunnery, and Spanish into the last two years. This natural division left only the subjects of history, economics and government, and law unaccounted for. Law has for good and sufficient reasons always been a subject for the fourth or last year at the Academy. It is a most practical subject, one which is especially useful to the officer immediately after graduation. It was agreed, therefore, that law should be placed in the fourth or last year. Of the two remaining subjects, political history logically should be completed before the course in economics and government and also before the course in military art and military history. The decision was made, therefore, to place history in the second (or third class) year, leaving economics and government for a place in the fourth (or first class) year.

By such process of reasoning the academic work was coordinated as follows:

1st Year at the Academy (4th Class).

1 course in mathematics,
½ course in English (less time for surveying, 33 periods),
½ course in French,
1 course in gymnastics. Total: 3 full courses.

2d Year at the Academy (3d Class).

½ course in mathematics,
½ course in English,
½ course in drawing,
½ course in French,
½ course in history,
½ course in tactics (less time for P. M. E., 45 periods). Total: 3 full courses.

3d Year at the Academy (2d Class).

1 course in philosophy,
1 course in chemistry,
½ course in Spanish,
½ course in riding (including time for hygiene, 30 periods). Total: 3 full courses.

4th Year at the Academy (1st Class).

½ course in military engineering,
½ course in law,
½ course in military art and history,
½ course in riding,
½ course in ordnance and gunnery,
½ course in economics and government. Total: 3 full courses.

(*b*) **Coordination by Content.**—With the course thus coordinated in relative time, it was necessary to consider further the coordination in content. After general discussion on this matter to make clear the ideas of the Board as a whole, the following standing subcommittees of the Board were designated:

1. Committee on Pure Mathematics:
   Professor of Mathematics,
   " " Philosophy,
   " " Chemistry,
2. Committee on Physical and Technical Science:
   Professor of Philosophy,
   " " Chemistry,
   " " Ordnance and Gunnery,
   " " Engineering (Civil).
3. Committee on Military Art and Engineering:
   Professor of Engineering (Military Art),
   " " Practical Military Engineering,
   " " Drawing,
   " " Hygiene,
   Commandant of Cadets.
4. Committee on Modern Languages:
   Professor of Modern Languages,
   " " English.
5. Committee on Political Science:
   Professor of Law,
   " " Political and Social History,
   " " Economics and Government.

The ideal of coordination of the content in related courses is an arrangement by which each course develops progressively from the material of the preceding course or courses and at the same time prepares definitely for the material of the later course or courses. Insofar as the plans for a course of study fail to provide for such close coordination, they fail to ensure on the part of the student that perception of the fundamental relations between the branches of human knowledge, and between the theory and practice within each branch, which is so essential an object of his general education.

The only way by which this ideal may be approached is by the closest personal cooperation between the heads of the departments. Such cooperation involves three main policies: (a) the intimate acquaintance of each professor

with the work done in departments having related studies; (b) conference between professors before planning the course for the academic year; (c) conference between professors at the conclusion of the academic work of the year.

(a) Professors' knowledge of work in related subjects should be complete and specific, and not merely general in nature. This knowledge should under ideal conditions extend to the content of individual lessons, to the method of instruction, and to the degree of emphasis laid upon each of the several parts of the subject taught. Only by such full and intimate acquaintance with the related work in other departments will professors be in a position to give and to receive the necessary concrete suggestions for modifications.

(b) The conference between professors before planning the course for the next academic year should be for the purpose of advising each other of any contemplated changes in their courses and discussing the effect of, or the preparation for, such changes in the work of other departments. By means of such a conference, professors can agree from year to year upon such modifications of their respective courses as shall maintain a high degree of coordination.

(c) The conference between professors at the conclusion of the academic work of the year should be the purpose of gaining information concerning methods of increasing the effectiveness of teaching any parts of the subject in which sections of the classes had proved inadequately prepared. The frank and cordial interchange of opinion while the experiences of the past academic year are fresh in mind, should be of the greatest assistance to the professors concerned.

The Board is aware that no approach to this ideal of coordination is made in the average civilian college or university of the present day. In such institutions, the departments are commonly separate and distinct, and occupy themselves in instructing their respective subjects each as a single and complete entity. Relations between branches of knowledge, or even between theoretical and applied elements in the same branch, are not specially emphasized. The general covering of the field in one subject is presumed to be adequate preparation for advance to the next subject.

The Board sees in the possibility of further coordination at West Point an educational opportunity for this institution. With the single well recognized function which the Military Academy has, West Point should set an example of coordination and should be able to achieve notable results in the efficiency of its system. The Board therefore recommends the measures taken for furthering such coordination.

The opportunities for effective coordination between courses in the Military Academy are especially noteworthy in (a) the mathematical subjects, (b) the theoretical and practical military training, and (c) certain of the general educational subjects. These opportunities have been recognized hitherto and advantage taken of them. The standing sub-committees have as their function for the future the maintenance of the highest and most efficient degree of coordination practicable.

(i) The Mathematical Subjects. — Algebra, geometry, trigonometry, analytical geometry, the calculus, pure and applied mechanics, interior and exterior ballistics, theoretical and applied electricity and magnetism, and engineering, form one continuous field in which departmental division lines exist purely for administrative reasons. It may be said also that these division lines furnish convenient stepping stones which enable the student in his progress to direct his attention temporarily toward a well-defined intermediate object

leading to the ultimate goal. The instruction at the Military Academy, in accordance with the effort of modern teaching, is directed toward the treatment of these subjects in such a way that the student is well aware that any division lines are purely artificial.

The sub-divisions of the field constituting the course in pure mathematics form a continuing scheme leading up to and through a thorough course in the elements of calculus. The text-books used in each subject abound in references to those which preceded them. In the first year's work, the alternation of algebra first with geometry and then with trigonometry enables the interrelation of these subjects to be taken advantage of in demonstrations and problems. The trigonometry course is planned to precede by a sufficient interval its most immediate application to theoretical and practical surveying. In the second year's work, the course in mathematics, having been allotted only one-half course instead of a full course, will be forced to omit descriptive geometry, Mathematics in this year will therefore consist of the completion of the solid analytical geometry, begun near the end of the preceding year, and of the calculus. The course in cauculus ends with the subject of approximate integrations and a very brief review of differential equations. These are required early in the courses in mechanics, electricity, engineering, and ordnance and gunnery, so that the passage from one department to the other may be regarded as practically continuous. The Department of Mathematics gives in calculus only the simplest exercises in velocity, acceleration, center of volume and moment of inertia that serve to illustrate the mathematical formulae, leaving to the Department of Mechanics and Engineering the more exhaustive theoretical treatment from the physical point of view.

A certain amount of repetition and overlapping in the several courses is not only necessary and unavoidable, but actually is valuable as giving a broader view and a perspective of the subject more comprehensive as it is viewed from different angles. For example: in chemistry are taught the laws of gaseous expansion, the composition of explosives, the resulting gases and temperature produced by their explosion, whence is calculated the pressure produced by any weight of any given explosive fired in any given volume. Thus some material is handled again in the course in ordnance in the subject of gun construction and of interior ballistics, bringing out the effect upon the gun of the rate of production of pressure and of the variation in this rate produced by form and size of granulation.

(ii) Theoretical and Practical Military Training.—The work of the Department of **Tactics** is planned throughout the entire four years of the course to take advantage of the opportunities of coordination with the theoretical military studies. Thus in fourth class camp, in coordination with the initial physical drills, the Department of **Military Hygiene** gives ten periods of instruction in personal hygiene and ten periods in first aid. During the same period, the Department of **Drawing** gives preliminary instruction in map reading. In first class camp and during the third class academic year, the Department of **Practical Military Engineering** coordinates with the Department of **Tactics** by giving instruction in signal communications, visual signaling, wire communication, pigeons, and liaison. During third class academic year the Department of **Drawing**, in order to coordinate with the field problem work of the Department of **Tactics**, will teach the methods of constructing, reproducing, and supplying military maps in the field. From the beginning of second class academic year to the end of the course, the Department of **Practical**

Military Engineering, in order to coordinate with the practical exercises planned for the Department of **Tactics**, gives instruction in the making of light field bridges, the use of tackle in the field, signal communications, radio telegraphy and telephony, earth telegraphy and wire communication, and in the first class camp, the Department of **Hygiene** conducts ten periods of instruction in practical field sanitation.

(iii) **General Educational Subjects.**—The most notable of the opportunities for coordination among the general educational subjects occur between the work in political history and that in military history, and between the work in government and that in constitutional law.

The course in political history covers the field of history, with special emphasis upon international diplomacy, from the outbreak of the French Revolution to the World War. It thus includes a study of the political causes which led to the wars whose campaigns are studied in the later subject of military history. Political history is taught in the third class year; military history in the first class year.

The study of the general principles of government with supplementary consideration of the application of these principles in the government of the United States is a direct preparation for the course in constitutional law. The study of government is completed during the first term of the first class year; the study of constitutional law begins immediately thereafter under the conduct of the Department of **Law.**

(vi) Length of Recitation Period.—According to the system followed in the past at the Academy, certain subjects have been allotted recitation periods of one hour and twenty-five minutes. For example: the subjects of mathematics, natural and experimental philosophy, and engineering have had the longer periods and French, Spanish, English, history, ordnance and gunnery, and law, have had the shorter periods.

In the discussion of the general system of education at the Academy, the question was raised concerning these differences in recitation periods. Arguments were advanced in turn for maintaining the old system, for having a flat hour period for all recitation subjects, and for having an hour and a quarter recitation period for all recitation subjects. Diagrams were presented for each proposed arrangement, showing how the subjects could be accommodated in the schedule.

After thorough consideration and discussion, the Board decided that the hour and fifteen minute period should be adopted as the standard recitation period. The time available in the afternoon (1:50-3:50), and the number of subjects taken in first class year (6), forced a few exceptions to this standard. These exceptions may be noted in the following schedule.

(vii) The Academic Schedule as arranged in accordance with this decision is as follows:

Fourth Class.

Mathematics, daily, "A" half of class 8:00– 9:15
"B" half of class 9:15–10:30
English, and French, daily, except Sats., alternating, "A" half of class... 11:00–12:15
"B" half of class... 2:35– 3:50
Surveying, replacing English last 33 recitations, takes English periods.
Gymnasium, daily, except Sats., "A" half of class 9:15–10:00
"B" half of class 10:30–11:15
Lectures, Saturdays only 11:00–12:00

Third Class.

Mathematics, and French, daily, alternating, "A" half of class 8:00– 9:15
"B" half of class 11:00–12:15
English, and history, daily, alternating, "A" half of class 11:00–12:15
"B" half of class 8:00– 9:15
Drawing, and tactics, alternating halves of class 1:50– 3:50
(Including P. M. E.) no study time required, daily, except Sats.

Second Class.

Philosophy, daily, "A", half of class (laboratory, 8–10) 8:00– 9:15
"B", half of class (laboratory, 10:15–12:15) 10:30–11:45
Chemistry, daily, "B", half of class (laboratory, 8–10) 8:00– 9:15
"A", half of class (laboratory, 10:15–12:15) 10:30–11:45
Spanish, and riding, daily except Sats., alternating, halves of class .....
1:50–2:50; 2:50– 3:50
Hygiene, replacing riding for 30 recitations, takes riding time.

First Class.

Military engineering, and law, daily, alternating, "A" half of class 8:00– 9:00
"B" half of class 9:00–10:00
Military art and history, and riding, daily, except Sats., alternating, "A" half of class 10:15–11:15
Military art and history, and riding, daily, except Sats., alternating, "B" half of class 11:15–12:15
Ordnance and gunnery, and economics and government, daily, except Sats., alternating, "A" half of class 1:50– 2:50
Ordnance and gunnery, and economics and government, daily, except Sats., alternating, "B" half of class 2:50– 3:50
Professional lectures, whole class, Saturdays only 11:00–12:00

(viii) In order to present graphically the difference between the old four-year schedule, the following table is presented. This table gives the subjects, the relative number of periods, the relative amount of time, and the gain or loss of time.

Comparative Statistics.

Subject	No. of periods previous course	No. of periods proposed course	Length of periods previous course (in hours)	Length of periods proposed course (in hours)	Total time previous course (in hours)	Total time proposed course (in hours)	Changes in time (in hours)
Mathematics	417	337	1 5/12	1 1/4	590 3/4	421 1/4	−169 1/2
French	219	206	1	1 1/4	219	257 1/2	+38 1/2
English	94	173	1	1 1/4	94	216 3/4	+122 1/4
Surveying	33	33	1 5/12	1 1/4	46 3/4	41 1/4	−5 1/2
History	94	112	1	1 1/4	94	140	+46
Drawing	188	94	2	2	376	188	−188
Tactics	72	50	1	1	72	50	−22
Nat. and Exp. Philosophy	221	225	1 5/12	1 1/4	313 1/2	281 1/4	−31 5/8
Chemistry	219	225	1 5/12	1 1/4	237 1/4	281 1/4	+44
Spanish	176	94	1	1	176	94	−82
*Riding	146	156	1	1	146	156	−10
†Military Engineering	95	112	1 5/12	1	137 7/12	112	−22 7/12
Law	110	112	1 5/12	1	110	112	+2
†Military Art and History	126	94	1	1	178 1/2	94	−84 1/2
Ord. & Gun.	94	94	1	1	114	‡	‡
(Shop Work)	10		2	2			
Economics & Government	—	94	—	1	—	94	+94
Hygiene, Sep.1	13	30	1	1	25	30	+5
Hygiene, Oct.	6	—	2	—	—	—	—
§Prac. Mil. Engineering (exc. Surv.)	—	45	—	1	—	45	+45
Prof'l Lects.	—	36	—	1	—	36	+36

*This heading accounts only for such riding as is taken in academic time, i. e., in the hours between 8 a. m. and 3:50 p. m.

†These subjects, military engineering and military art and history, were combined previously in the course given by the Professor of Civil and Military Engineering.

‡The course in ordnance and gunnery is under revision. The total time depends upon the number of two-hour periods used in laboratory and shop-work.

§These practical military engineering exercises formerly came from tactics time after 4 p. m.

(d) Method of Instruction.—Four basic factors in the method of instruction at the Military Academy are: (i) the division of the class for purposes of instruction into small sections; (ii) the adoption of a form of recitation calculated to require each cadet each day to give satisfactory evidence of his mastery of the material in the assigned lesson; (iii) the inclusion in each course of a series of written reviews; and (iv) the arrangement of the cadets in sections according to their relative proficiency in the subjects taught.

(i) For purposes of academic instruction, the classes are divided into sections of not more than twelve cadets each. These small sections have long been the envy of educators in the civilian colleges and universities. By this sub-division, the instructors are enabled on the one hand to gain an intimate personal acquaintance with the capabilities of each individual cadet, and on the other hand to give attention and instruction to each member of the class. The Academic Board is unanimously of the opinion that the system of sub-division of the classes into small sections for purposes of instruction should be continued.

(ii) The form of recitation adopted for instruction and for testing each cadet's proficiency upon his daily work is that popularly known as "the front-

board recitation method." A typical recitation conducted according to this method proceeds as follows:

> After the twelve cadets of the section have taken their seats, ample opportunity is given for questions concerning points which have not been clearly understood in the assigned lesson. At the beginning of each hour, moreover, the instructor explains such principles enunciated in the lesson as he desires especially to emphasize, and correlates the matter in the lesson when necessary with that in preceding lessons.
>
> At the close of these preliminary explanations, nine or ten of the cadets in the section are sent to the blackboards with assigned demonstrations or exercises from the lesson. While they are working these problems, the remaining members of the section are questioned orally upon the matter in the review lesson.
>
> When the cadets have finished their assigned exercises at the board, they are called upon to recite, other members of the section following the recitation and being required to be ready to answer questions upon any phase of the problem presented.
>
> At the close of each recitation, the instructor takes the opportunity to give such further comment, explanation, or instruction as may be demanded by the nature of the exercise and of the recitation.

This method of instruction is, as was said, typical. It is not, however, to be considered as binding in subjects which do not lend themselves readily to it. For example, in the teaching of law, the combination of textbook assignment and lectures has been used with success. In the teaching of the modern languages, great emphasis has been laid upon oral drill and exercises. In the teaching of English, after the fundamental principles of composition have been mastered, extensive practice in written expression is required. In the teaching of natural and experimental philosophy and chemistry, recitations are combined with laboratory periods given over to experiments illustrating previous lessons or preparing for subsequent lessons.

As a typical method of instruction in subjects adapted to it, however, the Board heartily approves of it. The Board knows of no other method which so successfully inculcates those habits of careful preparation, of continuous mental application, and of thorough understanding, which are so essential for success in the military profession. Its combination of elasticity in providing time for questions, explanation, and instruction, with rigidity in requiring daily evidence of the mastery of assigned lessons, is peculiarly suited to the period of mental growth and development of young men between the ages of seventeen and twenty-four.

(iii) In planning the work of each course, it is customary to allot a period for a series of written general reviews covering the main part of the advance lessons. Usually the review assignments cover two advance lessons.

These written general reviews constitute, 1st, an opportunity for the cadet to gain a broad general view of the subject which he has been studying piecemeal, and to coordinate in his own mind the related parts thereof; and, 2d, an opportunity for the department to observe how thoroughly each cadet has assimilated the work of the preceding periods.

In actual practice, these reviews have operated successfully. The Board approves of them and recommends the continuance of this factor in the method of instruction.

(iv) As soon as the relative capabilities of the cadets under instruction can be approximately determined, the cadets are arranged in sections in each subject according to their order of merit therein. (See U. S. M. A. Regulations, paragraph 86). By frequent transfers from section to section as the work in the courses progresses, this arrangement in sections according to order of relative merit is maintained as closely as possible.

This system has two positive advantages. In the first place, it allows the instruction to be modified in the different sections for the special needs of cadets according to their varying capabilities. Thus, a special effort can be made with men who fall into the lower sections to see that they master the fundamental principles of the course. In the second place, it affords the departments an opportunity to widen the range of their courses of instruction by giving to the upper sections material beyond that given to the lower sections. Thus in all the major departments of instruction, after the relative capabilities of the cadets are determined, two or three courses are offered to the cadets. Those cadets in the upper or middle sections of the class consequently progress further in the subjects in which they excel than those in the lower sections. The course of study at the Academy is therefore not rigid, not the same for every cadet, as is so often stated, but is actually varied to suit the abilities of individual cadets as evidenced by their academic records.

The Board considers the advantages which result from arrangement in sections according to order of relative merit to be important in maintaining elasticity both in methods of instruction and in subject matter of courses. The Board therefore recommends that this system be continued.

(v) **The Marking System.**—The work of cadets at the Military Academy is graded on a scale of 3.0. Upon this scale of daily merit, 3.0 = thorough, 2.5 = good, 2.0 = indifferent, 1.5 = bad, 1.0 = very imperfect, 0.0 = complete failure. The grade of 2.0 is the accepted dividing line between proficiency and deficiency. Sheets showing the grades of each cadet in each subject studied are posted Saturday of each week during the academic year. No cadet need ever be ignorant, therefore, at any time of his record in his studies.

Some kind of grading system to indicate satisfactory or unsatisfactory progress in the subjects studied exists, of course, at all institutions. These systems vary from mere indication of proficiency or deficiency to precise decimal systems similar to that at West Point. Many colleges or universities, recognizing the undoubted difficulty of assigning an exact number of tenths for any single recitation have adopted a letter system, whereby each letter covers a considerable range in percentages: as A = 90 - 100; B = 80 - 90; C = 70 - 80; D = 60 - 70; E = below 60 and unsatisfactory. Few of the institutions of collegiate grade post the marks at frequent intervals, but issue "warnings" from time to time to such students as are reported as doing unsatisfactory work, or at designated periods in the total course publish lists of the students grouped according to relative merit. The only real difference between the system at West Point and at civilian institutions then, lies in the fact that the Military Academy authorities publish for the information of the cadets weekly reports of their marks.

The system of publication of marks at frequent intervals has decided advantages. Such publication is a constant inspiration to the excellent student in a class in that it shows them that their efforts and their abilities are being recognized and rewarded by the authorities. It is an encouragement to the average students in the class in that it keeps them informed constantly of the progress

they are making in their work. It is a spur to the laggards, the indifferent, the careless, or the poorly equipped students, in that it reveals the nature and extent of their deficiencies as judged by the ordinary scholastic standards. The system need have no deterrent effect upon the attitude of the natural student who is sincerely striving to master his subject for the purpose of education: under this system of marking as under any other such a man will develop through the course to the full extent of his efforts and abilities. On the other hand, it will force that considerable proportion of every undergraduate body which regrettably lacks this attitude to assimilate the material of his course more thoroughly than he would otherwise do.

One particular phase of West Point's problem renders the system especially necessary here. Under the existing laws, the graduates of the Academy are commissioned into the United States Army in their order of merit upon graduation standing. The competition for relative rank in the army, therefore, begins at the cadet's admission to the institution and continues daily until his graduation. Where competition is so keen and the reward of comparative success so important, it is only just to the competitors to keep them informed at frequent intervals of their progress. The publication of the weekly report serves this purpose.

Undoubtedly the administrative burden of the system, magnified in the large colleges and universities by the number of students and the diversity of courses, is so weighty that these institutions prefer not to adopt it. At West Point, however, heavy as the burden is, the system has been continued in successful operation even with the large increases of the corps of cadets in recent years. In view of its proven advantages in general, and of its particular adaptability to the specialized function of this Academy, the Board recommends its continuation here.

(e) Officer Personnel. (i) **Professors.**—Two classes of professors serve at the Academy: (1) the "permanent" professors; and (2) the detailed professors. Permanent professors, commissioned by the President with the advice and consent of the Senate, are at the head of the following departments:—Engineering, Natural and Experimental Philosophy, Chemistry and Electricity, Drawing, Mathematics, Modern Languages, English and History. Detailed professors, ordered to the Military Academy by the Secretary of War, are at the head of the following departments: Tactics, Law, Military Hygiene, Ordnance and Gunnery, Practical Military Engineering.

The distinction between the permanent professorships and the detailed professorships is based on the nature of the work in the departments. The fact is recognized that close contact with service conditions is essential, and can best be maintained, not only by having a Superintendent detailed, but also by having professors detailed to the head of those departments handling subjects most directly connected with service conditions. For example, as progress is made in tactical exercise, the Commandant of Cadets is in a position to introduce the latest developments: as changes occur in the administration of military justice, a member of the Judge Advocate General's Department is at the head of the Department of Law to put them into effect in the teaching at the Academy; as the experiences of a war illustrate what practical knowledge of hygiene is necessary for the army officer, the surgeon, appointed from the Medical Corps, is on hand to insert the new material. The scope of the subjects taught in the departments with permanent heads, however, is such that it does not vary fundamentally with changes in military conditions, and such that it requires the

life-work of the professor to master. The teaching of the principles of theoretical mathematics, for example, is not a problem whose elements vary with service conditions, and is a task which requires the specialization of the professor over a number of years for its efficient accomplishment.

The Board believes that the present method of selecting the heads of departments is satisfactory, and recommends that it be continued.

(ii) **Instructors.**—With few exceptions, the instructors at the Military Academy are detailed for a period of four years from officers who are graduates of the institution of at least four years' standing. These details are made from lists presented by the heads of departments to the Superintendent and forwarded by him to the War Department. The professors base their selections upon the academic record of the officer and upon what they can learn of his subsequent efficiency in the service.

The training of officers for their duties as instructors is accomplished by systematic conferences with the professor or assistant professor in their respective departments. At these conferences the material in the lesson assignment is carefully gone over, questions answered and difficulties cleared up, and the method of conducting the instruction fully outlined. Thoroughness and uniformity in the conduct of the classroom recitations are thus maintained. After a year of experience in teaching and concentrated study of the subject taught, the Board has no hesitation in asserting that these officers are at least the equal in efficiency of the average junior instructors in civilian institutions.

Indeed, though superficially the Military Academy system of procuring instructors may seem peculiar to itself in that it does not seek professional educators, as a matter of fact it operates to give the same general quality of instructor that exists for the vast majority of the teaching work of the civilian college or university. The junior instructors in such colleges or universities are drawn mainly from the ranks of the institutions' recent graduates and are young men with no more teaching experience than the average of officer instructors at the Military Academy. Furthermore, in the civilian college or university this civilian instructor personnel is constantly shifting and changing as the young instructors seek and find other teaching opportunities, whereas at the Military Academy the young instructor, after his first year's training and experience, remains continuously at the institution as instructor for three more years. Thus in the case of the instructor, the Board believes it demonstrable that at the Military Academy he actually is on the average a man of more teaching experience and greater permanency of position than at civilian institutions.

It is regrettable, however, that for instructors little opportunity has in the past been given for familiarizing themselves with the material and the methods of instruction in parallel courses in colleges and universities. Officers detailed to the Military Academy are commonly ordered to report at West Point in late August, less than ten days before the opening of academic work. Their initial preparation consists of the background of the course as given to them as cadets and of the conferences on the work with head of their department. Occasionally, it is true, individual instructors in a laudable effort to equip themselves more thoroughly for their tour of duty here, have at their own expense attended summer school at a university, but these instances are infrequent. With the best of intentions, the difficulties in the matter of expense, travel, and time are ordinarily too great to be overcome.

The Board is of the opinion that these conditions should be changed. It believes that the Military Academy instruction would benefit materially if the officers detailed as instructors could spend one year, preliminary to reporting at the Military Academy, in a civilian institution preparing for their work at West Point. At such institution they could pursue a course laid down by the head of their department at the Military Academy, and could familiarize themselves with the methods of the classroom.

The Board therefore recommends that sufficient provision of officers as instructors at the Military Academy be made to allow officers to spend the first year of their tour at a civilian college or university pursuing a course of study and preparation laid out by the head of their department.

The relief of instructors at irregular times during the course of the academic year, such as was the case during the operation of the detached service law, is very detrimental to efficiency of instruction. The new officers detailed to fill the resulting vacancies lack the background of previous study during the year, which background is so essential, and the continuity of instruction suffers accordingly. Moreover, officers reporting as instructors at such irregular times cannot at first devote their entire attention to taking up the threads of the course. Of necessity, they must also occupy themselves with questions of quarters and household arrangements, considerations which, for these instructors reporting at the customary date in August, have, by the time academic work is commenced, in great measure been settled.

The Board therefore recommends that insofar as practicable the tour of duty as an instructor at the Military Academy be four years; and that, as far as consistent with requirements of the service, or except for cause, no instructor be relieved during academic year.

The number of instructors in any college or university, as at the Military Academy, far outnumbers the number of assistant professors and professors, and these instructors handle the major portion of the actual instruction in the institution. When we pass to the ranks of assistant professors and professors, we find conditions at the Military Academy comparing favorably again with those at other institutions. The assistant professors are normally chosen from officers who have already served one or more tours at the Military Academy:—they are thus teachers who have previously had at least four years of teaching training and experience in their respective departments. The permanent professors are chosen from officers who have had previous experience during one or more tours at the Academy, and who have shown conclusive evidence in the service of their abilities in the field covered by their respective departments. And after a professor has been appointed, his professorship becomes his life-work. We need but cite from the list of former professors the names of Davies, Church, and Bass in Mathematics, Bailey and Tillman in Chemistry, Bartlett and Michie in Natural and Experimental Philosophy, Mahan in Engineering, and Weir in Art, to show how eminent officers have become in their respective fields.

In connection with this question of instructors, the Board desires to emphasize again the fact that the Military Academy is a specialized institution with a specialized function. The field for choice for instructors in West Point is limited by its nature and its function. Members of the Academic Board have no objection to the selection of non-graduates for instructors providing these men are of such character, training and experience as will enable them to adjust themselves to this specialization. Indeed, within recent years, three of

the professorships at the Academy have been held by non-graduates—Law, Military Hygiene and English and History. And further, a large percentage of the professors, assistant professors, and instructors at West Point are officers who have had the advantage, not only of the Military Academy training, but also of college education. The Board has recognized in the past, however, and still believes, that the best field for the large majority of instructors, assistant professors, and professors is to be found among the qualified graduates of the Academy who by training and experience are familiar with the nature, traditions, and purposes of the institution.

(f) Relations with Other Institutions of Collegiate Grade.—It has been the policy of members of the Board to maintain close and cordial relations with colleges and universities, both in order that West Point's ideals and methods may be better appreciated elsewhere, and that the Military Academy may progress in step with its sister institutions. To carry out this policy, professors from other colleges have been in normal years invited to come to West Point, and professors from the Military Academy have visited other colleges. Thus in recent years West Point has had the advantage of lectures from men on the faculty of Harvard, Princeton, Yale, Columbia, Massachusetts Institute of Technology, and other institutions within easy access. And professors from West Point have extended their visits to include, not only all the colleges mentioned above, but also colleges of the middle west, as the University of Michigan, University of Kentucky, Ohio State University, University of Chicago, etc.

In the belief that the contact with sister institutions thus gained and maintained is of great value to West Point, the Board recommends that at such times as he can best be spared from his routine duties at the Academy, each professor be ordered by the War Department annually to visit not less than three colleges, universities, or technical schools for the purposes of observation, study and liaison. The number of institutions of the highest grade within easy access of West Point makes it possible to arrange a schedule of visits which shall cover a wide range and should prove of immense value. As the policy becomes firmly established, the range of these visits can be widened, until it shall include the leading institutions of higher education in all sections of the country.

(g) General Lectures.—Outside of the schedule or purely academic work, it is the policy of West Point to give its cadets opportunities to gain and maintain touch with contemporary conditions through lectures or informal talks by men who have achieved distinction. The isolation of West Point, both to its location and to the necessities of its curriculum, tends to narrow the cadets' intellectual interests. They are liable during their four years of training, if this tendency be not combatted, to lose touch with the currents and movements in the national life about them. It is to prevent this narrowness of interest that distinguished men are invited to West Point to talk to the Corps upon various phases of contemporary affairs. In the past, the Academy has been fortunate in having heard such men as William H. Taft, ex-President of the United States, Simeon E. Baldwin, ex-Governor of Connecticut, and Arthur T. Hadley, President of Yale University. In the future, it is proposed to increase the number of these lectures. It is hoped that members of the cabinet, governors of States, distinguished members of the Senate and of the House of Representatives, and leading men of affairs may

visit West Point and talk to the Corps. The Board heartily recommends that every effort be exerted to carry out this policy.

8. In conclusion, the Board submits below a detailed analysis of the proposed course year by year, both in its allotment of academic time, and of tactical time. This analysis presents in the most concrete and complete form the full nature of the schedule recommended as it will occupy the time of any one cadet.

4th Class Year.

(a) Summer Period, July 1-August 28.

Divided into three periods of twelve instruction days each, and time spent in the following forms of elementary instruction: Administration; Infantry Close Order Drill; Military Customs and courtesies; Manual of Arms, Cleaning Rifle, etc.; Progress Inspections; Guard Duty; Ceremonies; Lectures; Maps, and Map Reading; Minor Tactics; Physical Drill; Competitive Drill; Parade, and Supervised Athletics.

(b) Academic Year, September 1-June 4.

Mathematics, including a brief review of plane geometry and elementary algebra; completion of algebra in alternation first with geometry and then with trigonometry; completion of plane analytical geometry; beginning of solid analytical geometry; 1 recitation each day, 6 attendances a week.....1¼ hrs.

French, beginning with drills in the rudiments of the language and proceeding through easy prose reading, with continual practice in speaking, 1 recitation on alternate days, except Saturdays, 5 attendances a fortnight.....1¼ hrs.

English, beginning with a review of grammar, and proceeding through the study of the principles of composition,practice of composition, prose reading, and dramatic and poetic literature, 1 recitation on alternate days, except Saturday, September 1 to March 8, 5 attendances a fortnight.....1¼ hrs.

Surveying, will cover the fundamentals of plane surveying. 1 recitation on alternate days, except Saturdays, March 8 to June 4 (replacing English), 5 attendances a fortnight.....1¼ hrs.

Gymnasium, setting-up exercises, body building, and elementary drill with apparatus, 1 attendance each day, except Saturdays, 5 attendances a week.....¾ hr.

Lectures, divided among Tactics, French, and English, Saturdays only, 1 attendance a week.....1 hr.

Practical Military Engineering, including signal communications (visual signaling, as by flags, lamps, pyrotechnics, panels) and buzzer practice.....from the drill time.

Drills, including infantry close order drill and parade, extended order, training for marksmanship (to include gallery and range practice), field artillery instruction, examination, and qualification as gunners, coast artillery materiel and duties of cannoneers, 2 attendances a week throughout the year.....4:05-5:30 p. m.

Supervised Athletics, 2 attendances per week, September 1 to December 4, and May 1 to May 31; 1 or 2 attendances a week, December 5 to April 30.....4:05-5:30 p. m.

Dancing, instruction until proficient, 1 attendance a week, December 5 to April 30.....1 hr.

3d Class Year.

(a) Summer Period, June 16-August 28.

Instruction will be conducted at one of the large Army Camps or Cantonments and, with variations corresponding to the camp facilities, will include: First lessons in Equitation and Horsemanship; Range Practice, rifle and pistol; Field Artillery, service firing; Minor Tactics; Combat Exercises; Communications, exercises in liaison and command; Use of Aircraft; Maneuvers with Troops; and Supervised Athletics.

(b) Academic Year, September 1-June 4.

Mathematics, completing solid analytical geometry, and taking up and completing calculus and least squares, 1 recitation on alternate days, 3 attendances a week.....1¼ hrs.

French, advanced prose reading and writing, dramas, military French reading, writing, and speaking, French conversation exercises, 1 recitation on alternate days, 3 attendances a week.....1¼ hrs.

English, prose reading, practice in composition, report writing, oral exercises, military correspondence, 1 recitation on alternate days, 3 attendances a week.....1¼ hrs.

Political History, beginning with the French Revolution, and proceeding with the study of European History to the outbreak of the World War, 1 recitation on alternate days, 3 attendances a week..1¼ hrs.

Drawing, including instruction in drafting-room methods and the use of instruments; standard methods of representation; lettering; elementary mechanical, architectural, and topographical drawing, hasty method of reproduction; topographical sketching; types of military maps, their preparation, uses, and supply to forces in the field, 1 recitation on alternate days, except Saturdays, 5 attendances a fortnight.....2 hrs.

Tactics, including psychology of command, infantry drill regulations, field service regulations, and hippology, 1 recitation on alternate days, except Saturdays, without requirement for study time, November 1 to March 31, 5 attendances a fortnight.....1 hr.

Practical Military Engineering, including siting of battle positions and of trenches; methods of construction of trenches, shelters, various types of emplacements, entanglements, and other such works; elementary instruction in screening and camouflage; the various types of floating bridges, the ferrying of troops, the transportation of pontoon material, and the crossing of streams by improvised means; the signal communications (visual signaling, homer pigeons, wire communications), 1 recitation on alternate days, except Saturdays, without requirement for study time, September 1 to October 31 and April 1 to June 1, 5 attendances a fortnight.....1:50-3:50 p. m.

Drills, including infantry close order drill and parade; field artillery, battery drill and training of drivers; signal communications, visual signaling, wire communications, pigeons, liaison; machine guns, one-pounder; automatic rifles, Stokes mortars, grenades, etc., and pistol practice, preliminary and range, 2 attendances a week throughout the year.....4:05-5:30 p. m.

Equitation, instruction in riding and horsemanship, 1 attendance a week, October 1 to April 30.....1 hr.

Physical Training, or Supervised Athletics, 2 attendances a week, September and May, and 1 attendance a week, October 1 to April 30.....4:05-5:30 p. m.

2d Class Year.

(a) Summer Period, June 16-August 28.

Furlough.

(b) Academic Year, September 1-June 4.

Natural and Experimental Philosophy, including instruction in elementary mechanics, properties of matter, wave motion, sound, light, the slide rule, precision of measurements, graphical methods, technical mechanics (including fluid mechanics, hydrostatics, and hydraulics), applied mechanics, applied optics, and general astronomy, 1 attendance each day, 6 attendances a week.....1¼ hrs. (Laboratory 2 hrs.)

Chemistry and Electricity, including descriptive general chemistry, a short comprehensive elementary course in heat, a brief exposition of the leading electrical phenomena and their relations to each other (including general principles and typical machines, generators, motors, and transformers), and a short course in internal combustion engines, 1 attendance each day, 6 attendances a week.....1¼ hrs. (Laboratory 2 hrs.)

Spanish, beginning with the fundamentals of pronunciation and grammar and proceeding with reading, translation, writing and conversation exercises designed to impart a knowledge of the rudiments of the language, 1 recitation on alternate days, except Saturdays, 5 attendances a fortnight.....1 hr.

Riding, drill in Equitation, 1 attendance on alternate days, except Saturdays, September 1 to December 23, and March 22 to June 4, 5 attendances a fortnight.....1 hr.

Hygiene, 1 attendance on alternate days, except Saturdays, January 2 to March 22, 5 attendances a fortnight.....1 hr.

Practical Military Engineering, including fixed bridges (foot bridges, spar bridges, trestle bridges, I-beam bridges, etc.); lectures on maps, map reproduction, photography, camps, roads, searchlights, etc.; blocks and tackle, field derricks, moving of weights, etc.; and signal communication (visual signaling, codes and ciphers, and wire section drill), one-sixth of class daily during September, October, April, and May, 12 attendances altogether for each cadet.....4:05-5:30 p. m.

Drills, including infantry close order drill and parade; extended order; problems in minor tactics; field artillery, fire control instruments, duties of battery detail, determination of firing data, 2 attendances a week throughout the year.....4:05-5:30 p. m.

Physical Training, or Supervised Athletics, 2 attendances a week throughout the year.....4:05-5:30 p. m.

1st Class Year.

(a) Summer Period, June 16-August 28.

Instruction will be conducted at one of the large Army Camps or Cantonments and, with variations corresponding to the camp facilities, will include: Service as officers and coaches over the range of work of the Third Class; Service as officers of Field Artillery in range firing; machine guns and special infantry weapons; Equitation; Communications, liaison, airplanes, and balloons; Demonstrations in Chemical Warfare Service; visit to Ordnance proving ground; Service as officers in combat exercises and in maneuvers with troops; and Supervised Athletics.

(b) Academic Year.

Military Engineering, comprising the mechanics of engineering, engineering materials and tests, application to design of framed structures, bridges and roof trusses, construction of roads, water supply and sewerage, fortifications, military bridges, and other military works, 1 recitation on alternate days, 3 attendances a week.....1 hr.

Law, including elements of law, criminal law, evidence, constitutional law, Manual of Courts-Martial, Moot court, 1 attendance on alternate days, 3 attendances a week.....1 hr.

Military Art and Military History, including historical development of the Art of War, army organization, elements of strategy, and the study of selected campaigns, 1 recitation on alternate days, except Saturdays, 5 attendances a fortnight.....1 hr.

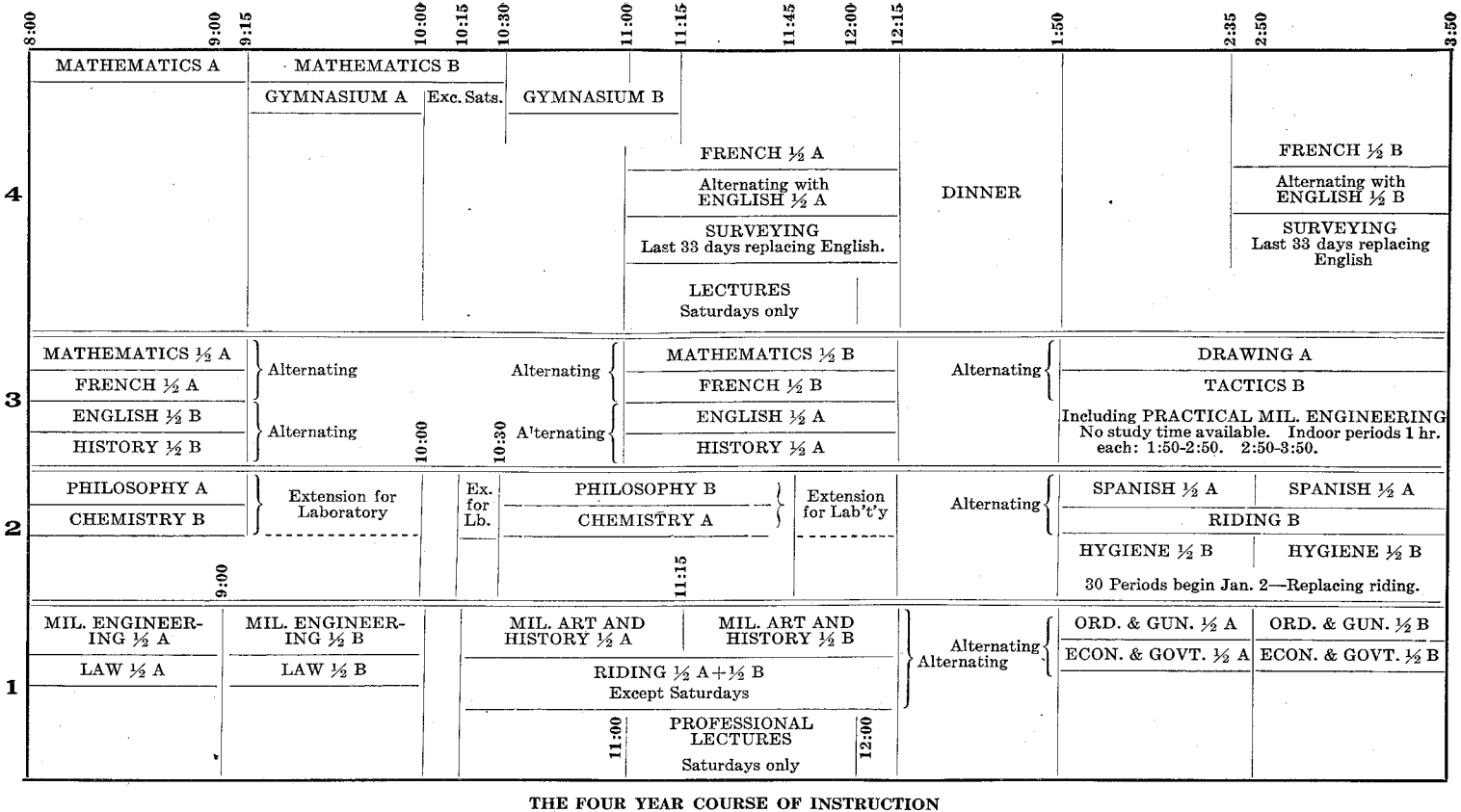
Riding, advanced instruction in riding, including cavalry drill, 1 recitation on alternate days, except Saturdays, 5 attendances a fortnight..1 hr.

Ordnance and Gunnery, a theoretical, descriptive, and practical course including study of the action of explosives, study of interior and exterior ballistics, theories of gun and carriage construction, the principles of gunnery; the process of manufacture of powders, guns, projectiles, and armor, the small arms, cannon, machine and rapid-fire guns now used, and the operation of machines and appliances used in the fabrication of modern ordnance, 1 recitation on alternate days, except Saturdays, 5 attendances a fortnight.....1 hr.
(Laboratory 2 hrs.)

Economics and Government, including the study of the general principles of government, the study of the nature, organization, and functions of government in the United States, and the study of the fundamental principles of economics, 1 recitation on alternate days, except Saturdays, 5 attendances a fortnight.....1 hr.

Professional Lectures, on all special services and branches, their organization and functions, on officers' uniforms and equipment, and on the customs of the service, 1 attendance a week, Saturdays only.....1 hr.

Practical Military Engineering, including demolitions, duties of engineer officers and troops in garrison and in the field, engineer equipment and its uses, estimate for building construction, lecture on field water supply, road maintenance, etc.; and signal communi-



THE FOUR YEAR COURSE OF INSTRUCTION

cations (instrument troubles and their remedies, radio telegraphy and telephony; earth telegraphy, exercise in liaison and command), one-twelfth class daily during September, October, April, and May, 6 attendances altogether for each cadet, from drill time .....4:05-5:30 p. m.

Physical Training, or Supervised Athletics, 2 attendances a week throughout the year.....4:05-5:30 p. m.

Extracts from the Reports of the Heads of Departments.

Extracted report of the Commandant of Cadets, Lieut. Colonel R. M. Danford, U. S. A.

Officers and Organization.—With the Corps increasing from year to year, and approaching its authorized strength of 1334 cadets, the complications and complexities of supply, administration, and tactical instruction, have greatly increased. The Corps can no longer be administered and instructed as a company or a battalion, but must be handled as a regiment.

The officers in command of cadet companies should be officers of maturity and experience—those who have had service with troops and who have developed and acquired leadership ability above the average.

Discipline.—The discipline of the Corps is excellent. With respect to the administration of discipline many important developments have been made during the past year. Tactical officers have been assigned offices with their respective companies in barracks. Delinquencies are handled as in the service —through personal interview between the delinquent cadet and his company commander, demerits or punishment being awarded to fit the offense and the intent of the offender. Written explanations are called for by the company tactical officer only in case the offense is regarded by him so serious that it cannot be handled under the limits of punishment imposed by him.

This plan has met with very great success. Cadets are really instructed in the disciplinary measures they are later to employ as company commanders. Punishment is not automatic and heartless, but personal and corrective; cadets have the example of how a company commander must be a calm, unimpassioned, exacting judge, guarding zealously the tone and spirit of his group by holding all, with justice and impartiality to the high standards of conduct in the service. Sound, healthy discipline is built more upon arousing a man's pride, and natural desire to excel, than it is on his fear of punishment. This is especially so with a group of boys as intelligent and as spirited as the Corps of Cadets. This idea of discipline is being kept constantly in mind, and studied effort is being made to get away, and keep away from constant, overshadowing, dispiriting threat of punishment.

Under the above system the number of reports have been reduced within the past year by over fifty per cent. and this reduction has been accompanied by a corresponding improvement in discipline.

Efforts are being made for company tactical officers to keep in mind and to judge between delinquencies that merit punishment and those which should receive demerits. Under the regulations, demerits are not considered punishment. This idea is correct. A cadet's demerit record is analogous to his marking in any academic subject—it should measure and mark his attention to details, his attention to duty. "Dirty gloves at inspection", "Floors not

properly swept", "Dress coat not hung in locker as required", etc., are delinquencies for which demerits should be awarded, while a wilful disregard of some order or regulation is an offense which should meet with some punishment such as deprivation of privilege, confinement, punishment tours, or even court-martial.

Punishment for exceeding a monthly limit of demerits has been abolished.

Instruction.—The instruction in the Department of Tactics during the past year was not satisfactory. This was due to the uncertainty and the non-uniformity of the length of the course for the different classes. Schedules as a result were too much on the spur of the moment to be systematic and thorough. This matter is now settled through a return to the four-year course. Based on this course, the instruction of the department has now been planned so as to be systematic, progressive, and thorough. The lessons of the course are in process of being worked up in the greatest detail so that relief of old or assignment of new officers to the department will not adversely affect the work.

Under the new schedule of instruction each cadet will have two drills and two attendances at supervised athletics or physical training per week throughout the year. Close order disciplinary drills covering the school of the soldier, squad and company, together with ceremonies will be held in September and May. The remaining months of the academic year will be devoted to the special drills such as Cavalry, Field Artillery, Coast Artillery, Gallery and Range practice with rifle and pistol, machine guns, and special Infantry weapons, signal communications, Practical Military Engineering, Minor Tactics, etc.

The summer instruction is this year being held at Camp Dix, N. J. This is a departure from established custom that promises marked progress and improvement. The instruction has been so arranged as to bring the cadet in close touch with, and understanding of the routine of the Army and the life of the enlisted man.

Ratings in Military Efficiency and Conduct.—I am particularly gratified over the action of the Academic Board in approving a system for the Tactical Department to use in rating all cadets in their military attainments and qualifications. Under this rating, scholarship will count 30%; military bearing, neatness and soldierly carriage and appearance, 9%; leadership and personality, 15%; efficiency at drills, 15%; athletics, 15%; cadet activities such as choir, Hundredth Night, Y. M. C. A., etc., 6%; demerit record, 10%. The appointment of cadet officers and non-commissioned officers will be made strictly in accordance with the merit roll in this rating. Cadets will thus learn that chevrons are awarded strictly as a reward of merit, and not through favoritism. Under the system, military attainments and qualifications are dignified and emphasized, and cadets are brought more effectively to the realization that these things are worth effort to acquire.

Extracted report of the Professor of Civil and Military Engineering, Colonel G. J. Fiebeger.—In the two-year course pursued by the class which graduated in June of this year, the time assigned to this department was a half class daily, except Saturdays, from the middle of April to June. This time was devoted to the course in military art and consisted of lectures on the organization of the armies and the military operations of the World War. The cadets were required to make notes and submit a resume of the matter contained in the lectures. There was no examination in the course and no weight was given for it in the general merit roll.

Extracted report of the Professor of Natural and Experimental Philosophy, Lieut. Colonel C. C. Carter.—The course of instruction during the first term, ending December 31, 1919, covered the following subjects:

The Slide Rule,

Elementary Mechanics and Properties of Matter—Duff's Physics,

Precision of Measurements and Graphical Methods—Goodwin.

After instruction had been given in the slide rule, its use in the department of philosophy was obligatory. This saved much time in the solution of problems and permitted the expenditure of a greater portion of the time on instruction.

During the second term of the academic year, beginning January 2, 1920, the following subjects of instruction were covered:

Wave Motion—Duff's Physics,

Sound—Duff's Physics,

Light—Duff's Physics,

Technical Mechanics—Maurer, 17 lessons only.

Generally the work in the department throughout the year was satisfactory. Laboratory work was considerably curtailed and the short experiments given were necessarily of such a nature as to be of no great value because the laboratory periods were only one hour and twenty-five minutes.

This condition has been remedied in the proposed schedule for the new four-year course and will doubtless prove of great assistance in laboratory work.

Extracted report of the Professor of Mathematics, Colonel Chas. P. Echols. The regular third class (lowest class) began its academic work on September 1st and pursued the standard first year course of instruction in algebra, geometry and trigonometry. A change in the usual schedule occurred in the Spring term. Instead of the usual 66 days' alternation with surveying, daily recitations in mathematics were continued throughout the year. The class, therefore, was able to complete the course in plane analytical geometry, a portion of which is usually deferred to its second year's work.

This class was the largest that ever entered the Academy, beginning its studies in September with 481 members. For convenience in administration it was, after a general transfer in October and again after the examination in December, divided into four classifications, A, B, C, and D, which remained distinct during the portion of the term following. In these four classifications the usual three graded divisions—upper, middle, and lower, were maintained with separate courses.

During the past year the emergency work of the department due to the dislocation by the War was multiplied even beyond that of the session of 1918-1919. Three classes were again under supervision and instruction, but the number of cadets involved was greater than before. Numerous new schedules were required—at times involving a new text.

The policy has been continued of having separate divisions of the classes with distinct schedules adopted to the capacity of each group.

The results have, on the whole, been satisfactory and would have been en-entirely so except for the anomalous cases arising from the unusual displacement of individuals where cadets, turned back or reinstated, acquire temporarily a position in a higher division than that to which they are entitled by their innate ability. Those cases are especially troublesome to follow as the classes become larger and have to be watched with care. In the third class

during the current year after the semi-annual examination, there were still thirteen percent of the class who had been members of a previous class.

The most valuable change in the past year was the resumption of the two-period per day schedule instead of the three-period schedule. This has made the conferences possible and has immensely benefited the quality of the instruction.

Extracted report of the Professor of Chemistry, Mineralogy and Geology, Colonel Wirt Robinson. The available time for instruction being halved, the class of 1920 attended recitations in chemistry and electricity by halves on alternate days.

This reduction of time forced the exclusion of geology and mineralogy, and also made necessary a very material shortening of the remaining subjects of chemistry and electricity, there being a reduction in the amount of subject matter taken in the text and also omission of all laboratory work.

With the return to the four-year course, the laboratory work will be restored and amplified and it will be possible to devote some time to the very important subjects of internal combustion engines and radio communication.

Through the courteous cooperation of the officers of the American Chemical Society, lectures were delivered to the class as follows:

(a) Dr. William H. Nichols, President of the American Chemical Society—"Sulphuric Acid, the Pig Iron of Industry".

(b) Dr. Charles L. Parsons, Secretary of the Society and recently of the Bureau of Mines—"Nitrogen Fixation".

(c) Dr. William H. Walker, Massachusetts Institute of Technology (late of the Chemical Warfare Service)—"Toxic Gases and Their Large Scale Production".

(d) Dr. Charles L. Reese of the E. I. duPont de Nemours Company—"Modern Explosives".

These gentlemen declined all remuneration for their services and put before the class matters of the greatest interest and value.

Extracted report of the Professor of Modern Languages, Colonel C. DeW. Willcox.—The department had under instruction during the academic year just closed, only one class, the second. This reduction in the number of classes was due to the war, and, of course, disappears with the resumption of normal conditions.

Shortly after the opening of the course, September 1, 1919, it was decided to divide the class into two branches, French and Spanish. This was done partly to reestablish Spanish in the course, suspended since the entry of the United States in the World War, and partly in order that a few at least of the members of the class should have a knowledge of a language so important to the Army as Spanish is believed to be.

Administratively, therefore, the class was divided into ten sections, French, 99 cadets; and into four sections, Spanish, 40 cadets. These numbers were reduced at the close of the term, due to casualties in other departments, to 88 and 35, respectively. The usual standard of instruction was maintained, and no cadets were found deficient. It is pertinent to remark that the department derived the greatest benefit from the tour of duty in France last Summer of some of its members. The maintenance by the War Department of the policy of sending French and Spanish instructors to France and Spain,

respectively, during the suspension of academic duties, cannot fail to be productive in the future as it has in the past, of positive advantage to the department, and through it to the cadets under its instruction.

Extracted report of the Professor of Military Hygiene, Colonel F. P. Reynolds, Surgeon.—The course in military hygiene was given during the year to both first and second classes. In addition, the third class attended five lectures and three recitations.

Instruction to the first class was given during the month of September, 1919, one-half of the class reporting daily for two afternoon periods. A total of twenty-two hours' instruction was given to each cadet. The course was arranged as follows:

Communicable diseases	6 hours
Personal hygiene	1 "
Care of troops	5 "
Field sanitation	4 "
First aid	5 "

Instruction was carried on by lectures, oral reviews and demonstrations, in which charts, lantern slides and motion pictures were extensively used. The class was supplied with Keefer's "Military Hygiene" for reference use. Lesson sheets and outlines and copies of official publications bearing on various aspects of sanitation, such as Special Regulations, General Orders, Bulletins, and Memoranda which have been issued from time to time by the War Department and Headquarters, A. E. F., were used by the class. First Aid was taught by short talks, followed by demonstrations and practical work, for which the class was divided into small sections. All medical officers on permanent duty at West Point acted as instructors in First Aid.

Instruction to the second class was given during the month of April, 1920, one-half of the class reporting for two afternoon periods. Each member of the class received twenty hours instruction. The arrangement of the course and the methods of instruction were similar to those used in the course given to the first class. One illustrated lecture was given by Dr. Eugene LaF. Swan of Brooklyn on the subject of "Venereal Diseases", and one lecture was given by Professor Hans Kinsser of Columbia University, formerly Sanitary Inspector of the Second Army, A. E. F., on the subject of "The Relation of the Line Officer to Sanitation".

Five lectures were given to the third class as follows:

Communicable Diseases—By the Professor of Military Hygiene,
Field Sanitation—By the Professor of Military Hygiene,
Personal Hygiene—By Professor Haven Emerson, Cornell University,
Mental Hygiene—By Dr. Thomas W. Salmon of the National Committee for Mental Hygiene,
Venereal Diseases—By Dr. Eugene LaF. Swan of Brooklyn, N. Y.

The class also attended three recitations in the subject of "Care of Troops", using Keefer's "Military Hygiene" as a text-book.

Extracted report of the Professor of English and History, Colonel L. H. Holt. — Owing to the plan adopted in 1919 for a three-year course, the time allotted to the department of English and history was shortened to the period between September 1 and May 8. Subsequently, the necessity for gaining time for instruction in Hygiene before the Summer encampment caused the Board to recommend the further reduction of English and history by one

week. The class was, therefore, actually under instruction only during the period from September 1, 1919, to May 1, 1920.

The course of study up to the Christmas holidays was not radically changed from that of recent years.

In **English**, the entire class was given a review of grammar and of the essential principles of composition. After one month of work, including many written exercises, the class was divided into an upper course and a lower course. The lower course included intensive study of and practice in English composition, with individual criticism and instruction, and the reading of model prose extracts. The upper course included a wide variety of prose readings, treated both to show the development of the author's ideas and to illustrate good prose style. Frequent written exercises were required in order to maintain proficiency in expression. After a month and a half of work, a few cadets who showed marked proficiency were given an upper course of study, consisting chiefly of the intensive study of a few of Shakespeare's plays.

An important innovation, begun at the end of the first month and continued with all three courses through the entire academic year, was the introduction each fortnight of an oral exercise. At the beginning, these exercises were based upon assigned reading in a text of prose selections. Later, each cadet was required to prepare material for original talks, submit this material in written form, and deliver the talk in the classroom. In general, the purpose of this part of the course was to develop self-confidence, fluency in the choice of words, and ease in delivery, in speaking before an audience. The degree of success attained in the relatively few exercises leads me to hope that time may be found for an extension of this work in future years.

In **History**, the study began as in recent years with the outbreak of the French Revolution, and proceeded during this Fall term through general European history up to the time of Bismarck. By systematic partial reviews emphasizing the salient features of the period, the department endeavored to construct for the cadets a lasting framework which should serve them for their future historical reading.

The curtailment of the course during the Spring term caused radical readjustments in the subject matter taught. Instead of having one hundred and nine periods from January to June, the department had at its disposal only eighty-two.

In the regular course in English, the department was forced to omit all of the usual study in the drama. The course, therefore, consisted of prose reading, frequent applications in written exercises of the principles of composition studied during the previous term, and a few readings in XIXth century poetry. In addition, the best work in the oral exercises was accomplished during this term. It was unfortunate that the work in literature, all too short in the course as it existed before, had to be cut down.

In History, the department was forced to omit entirely the lessons it has previously given in the study of government. The course as presented during this Winter and Spring term carried the class from the beginning of the Chancellorship of Bismarck through modern European history up to the outbreak of the World's War. Continued systematic partial reviews served to fix the framework of the period in the mind of the student.

The Saturday morning hour during the months of December, January, and February, devoted in recent years to talks to the class by outside lec-

turers, was under the three-year schedule assigned to the Department of Drawing. We have therefore had to omit such lectures from the course during the year. During the Winter-Spring term, however, informal talks were given to the sections at frequent intervals on contemporary conditions and problems, especially those affecting the chief countries of Europe.

Extracted report of the Professor of Drawing, Lieut. Colonel R. G. Alexander.—First Class Course. The first class pursued a special course in map making during the summer encampment of 1919. During the academic year 1919-1920 it pursued a course which gave it the essentials of the regular third and second class course as approved for previous classes.

Second Class Course.—The second class pursued the regular third class course as approved for previous classes.

Third Class Course.—The third class pursued a special course on Saturday mornings only, throughout the academic year. This course took in the use of instruments and touched the elements of mechanical drawing and map reading.

Extracted report of the Professor of Law, Lieut. Colonel George V. Strong.—The work of this department during the past year has consisted, first, in the instruction of cadets in the subject of law, and second, in the handling of courts-martial and other legal matters arising within the jurisdiction. This report is divided into two portions covering the above functions of this office.

Law Department.—The course of instruction began January 2 and as abridged consisted of thirty-six hours per cadet between the dates of January 2 and April 15. The course of law consisted of lectures as indicated hereafter:

Elementary Law.....	3	lectures,	1	written	recitation,
Constitutional Law.....	8	"	3	"	"
Military Law.....	11	"	4	"	"
Moot Court.....	2	"			
General Review.....	4	written recitations.			

The class consisted of 272 cadets of the first class; at the end of the general reviews forty-two cadets were deficient and were turned out for a written examination, but all passed a satisfactory final examination.

The lecture system as the sole means of imparting instruction was an innovation at the Military Academy, but appears to have been eminently successful. Such a system, while saving about 70% of the instructors required under the usual front board system of recitations, requires an immense amount of work in preparing and correcting the written recitations, but furnishes a more uniform set of marks and enables the department to determine the relative order of merit uninfluenced by the personal element of cadet or instructor.

For the written recitations, each cadet was furnished a mimeographed copy of the questions. His paper after correction and marking was returned to him with an "approved solution" of the questions to be bound with the recitation in the hope that the instruction imparted would be of some lasting value.

Extracted report of the Professor of Practical Military Engineering, Military Signaling and Telegraphy, Captain J. S. Smylie, (Acting).—The department is maintained for the outdoor instruction of cadets in the several classes of military engineering; the execution of field fortifications and accessory works, the construction and maintenance of roads, the construction of standard and improved types of floating and fixed bridges; demolitions, the use of rigging and tackle, map reproduction, a short though comprehensive course

in surveying is pursued, including the furnishing of survey data for indirect artillery fire; military signaling is taught to the extent of qualification of the dispatch and receipt of wig-wag and buzzer messages, wiring and demonstrations in all standard methods of electrical and luminous exchanges.

The general character of instruction in military engineering consisted in the explanation of the theory by lecture followed by the practical execution of the works by the cadets.

Extracted report of the Professor of Ordnance and Gunnery, Captain Charles Hines, in charge.—Owing to the early graduation of classes there was no opportunity for the usual theoretical instruction in this department. The next regular course will probably start in the fall of 1921 or during the first class year for all classes taking the new four-year course.

All instruction in ordnance and gunnery during the past year has been given under the Department of Tactics, each arm of the service giving a short course in descriptive ordnance, such as the nomenclature, use and functions of various ordnance weapons and stores.

Extracted report of the Surgeon, Colonel F. P. Reynolds.—The health of cadets has been generally satisfactory. Two outbreaks of communicable disease occurred during the year. The first was an explosive outbreak of sore throat, mild in character, which occurred in October, 1919. The infection was traced to a food handler whose duty it was to prepare ice cream. In all, a total of three hundred sixty-five cases were recognized and treated. While about forty per cent. of the cadets were taken up on sick report with the disease, investigation indicated that many others had symptoms of the disease but did not report sick. The cases were about evenly distributed among all the classes at the Academy. No secondary cases appeared in hospital or in barracks, and but two cases occurred among members of the garrison. These two cases had taken meals at the mess hall on the day the general infection took place.

Extracted copy of report of the Chaplain, U. S. M. A., the Reverend C. E. Wheat.—Sunday services were conducted at the Cadet Chapel and at the Old Chapel throughout the year, except during the summer months when a field service was held each Sunday at Battle Monument.

Two-Minute Services.—During Lent, an early morning service was held in the west academic building directly after breakfast. Although a voluntary service yet the room was well filled each morning, an average attendance of over two hundred cadets being maintained throughout the six weeks.

Memorial Windows in the Cadet Chapel.—There have been three glass windows installed and dedicated this year by the following classes:

1900, 1918, and 1920.

Enlisted Men's Club.—Plans have been drawn and $35,000 appropriated for the building of a suitable structure to house the enlisted men's club. The site selected for the building is in the center of the enlisted quarter at the north end of the Post. During the year, the club was reorganized and a constitution and by-laws drawn up. A council, consisting of the commanding officer and two soldiers from each detachment and the Chaplain, has the general supervision of the club and its activities. Property, such as pool tables, chairs, and tables, cafeteria equipment and other club furniture, was salvaged from Merritt Hall at Camp Merritt. Mrs. Wesley Merritt who presented Merritt Hall with its equipment, was instrumental in turning this valuable property over to the enlisted men's club at West Point.

Extracted report of the Quartermaster and Disbursing Officer, Colonel E. J. Timberlake.—Public Works. Laundry.—The laundry building was completed and occupied when boiler piping, laundry machinery and apparatus were fully installed during last November.

Quarters for Married Officers.—This building, providing accommodations for eight married officers will soon be ready for occupancy, installation of trusses, finishing and other interior fittings being well advanced toward completion. Erection of these quarters has been attended by many difficulties in securing materials as needed for use, and greatly hampered by an insufficiency of common labor and by strikes and demands of mechanics employed thereon.

Bachelor Officers' Quarters.—Construction of this building having quarters for twenty bachelor officers has been undertaken by day labor as funds are insufficient for erection by other means. Excavation and construction of walls at the site is now in progress and materials are being delivered upon the grounds.

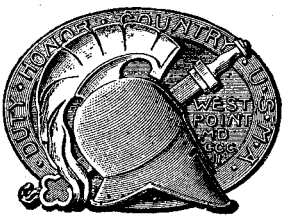
Cadet Barracks and Headquarters. — Construction of walls and reinforced concrete floors has been retarded by the severe winter weather, necessitating entire suspension of masonry work during prolonged period of cold and stormy season. Stone and brick walls of the second and third stories of the building are now being laid and a large amount of materials is on hand for construction of the work.

Cadet Hospital.—Plans and specifications of this building have been completed and advertisement for erection of cadet hospital will soon be issued.

Disbursements.—The following disbursements were made during the past fiscal year:

Quartermaster	$2,283,317.23
Disbursing Officer, U. S. M. A	907,948.81
Special Contingent Fund, U. S. M. A	25,018.70
Total	$3,216,284.74

DOUGLAS MAC ARTHUR,
Brigadier General, U. S. Army,
Superintendent.


DUTY • HONOR • COUNTRY
WEST POINT
1802
1902