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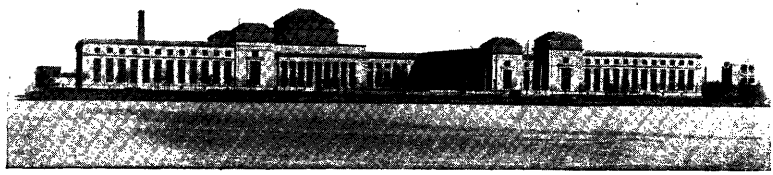

Massachusetts Institute of Technology

President's Report January, 1919

Cambridge, Massachusetts
1919

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

REPORTS

OF THE

PRESIDENT AND TREASURER

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1919

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REPORT OF THE PRESIDENT

To the Members of the Corporation:

It has long been the custom for the President to present at the December meeting of the Corporation a report regarding the affairs of the Institute for the preceding year. A recent change in the by-laws requires this report to be made at the annual meeting in October instead of in December as formerly. This is a more logical and, under normal circumstances, a more convenient arrangement, making the reports of the President and of the heads of the various departments cover a single academic year instead of portions of two different years.

THE WAR

In these days everything of importance is related to the war, and most of the leading events at the Institute associated with war-like ends have already been referred to in verbal communications made by me at meetings of the Corporation held since the last annual report was presented. However, for the sake of a permanent record it may be expedient to refer again to some of these, but not to presume too long upon your patience I shall make these references brief.

The work of the Institute during the last year is conveniently divided into two sections, one dealing with the regular courses and the other with the special schools founded to meet the exigencies of the war. The main changes in the regular courses have been due to the necessity of meeting the war conditions, the chief necessity being that of speed, owing to the urgent demand for technically trained men in the Army and in the Navy and in the industries essential to the prosecution of the war. The speeding up of courses has necessitated some considerable modifications of the ordinary curricula and has called for the continuous operation of the Institute throughout the summer. The Faculty has met these unusual conditions with characteristic self-sacrifice and readiness for service, the members unhesitatingly giving up their vacations and working earnestly and steadfastly to meet the national needs. Some departments have been somewhat short-

handed in the matter of instructors owing to the large number who have been drawn away for active service, but on the whole the Institute has been fortunate in being able to retain almost the normal relation between the number of instructors and the number of students.

Amongst the many innovations due to war conditions that may suggest some permanent changes when peace comes is that of introducing a new freshman class in the middle of the academic year. At the beginning of the second term announcements were made that a limited number, namely one hundred, would be admitted on certificates from high schools, those only being admitted who were highly recommended by the authorities of the schools. The experiment has been eminently successful, nearly all the students thus admitted having maintained high standards considerably above the average of those admitted in the more regular way. How far this is due to abnormal conditions is, of course, a matter for further consideration before any permanent policy along these lines will be adopted by the Faculty.

Amongst the special schools that have been established to meet the national needs, seven of different types are worthy of enumeration:

1. The United States School of Military Aeronautics, maintained at the Institute by the Signal Corps, was opened at the Institute on May 21, 1917. Some reference to this School was made in the last President's Report. It continued as a school for flying cadets until January 5, 1918, and during that period eight hundred fifty-one cadets were enrolled. Towards the end of 1917 the need for engineer officers with a sound knowledge of aircraft construction became steadily more urgent, some being required for the maintenance of airplanes at the flying fields, others to supervise their construction and transportation. The training of engineer officers for this service had been undertaken by the Government at Kelley Field, Texas, but the results had not been satisfactory. In December the Signal Corps expressed the hope that the Institute would undertake this training. This we agreed to do, but owing to the limitations of space and of competent instructors it was arranged that the school for flying cadets should be temporarily removed from the Institute while the engineer officers' school was in operation. The latter school was opened

on January 7, 1918, and continued until July 20, 1918. During that period nine hundred seventy-five officers and privates were enrolled. On July 20, the Government needs having been satisfied, the school was discontinued. The authorities of the War Department characterized the Institute's performance as exceptionally satisfactory to the Government. During the last two months, when the need of the service for engineer officers was diminishing, space and men became available for reopening the school for flying cadets and this work was resumed on May 13, 1918, and continued until September 7, 1918, three hundred twenty-seven cadets having been enrolled in the interval. Owing to the fact that the production of aircraft was proceeding more slowly than had been anticipated, it became apparent that there was an oversupply of cadets for assignment to the flying fields and consequently in September the ground school for flyers at the Institute was temporarily suspended.

2. The United States Naval Aviation Detachment. This School was also referred to in the last President's Report, having opened on July 23, 1917. Since that report, however, it has undergone considerable changes and now consists of four distinct schools — a Ground School, Inspection School, Aerography School and a Receiving Ship School. Through these various schools over four thousand men have already passed and all the schools are still continuing and working to full capacity.

3. The United States Shipping Board Schools for deck officers and marine engineers. These were also referred to in the last Annual Report. The work is still going forward under the same general direction as heretofore. The schools for navigating officers are under the general direction of Professor Alfred E. Burton of the Institute, forty-three separate schools having been established on the Atlantic, Gulf and Pacific coasts and the Great Lakes. From the establishment of these navigation schools until the present over six thousand students have been admitted. The development of the schools for marine engineers was contemporaneous with that of the schools for navigation. The direction of these schools was placed in the hands of Professor Edward F. Miller of the Institute, who has eleven schools under his control. Over five thousand students have been admitted to the engineering schools since their establishment.

4. A special school for naval architects has been conducted by the Department of Naval Architecture and Marine Engineering to meet the needs of the Navy and the Emergency Fleet Corporation. Intensive courses have followed one another continuously since the initiation of the scheme, but at present there is a shortage of students owing to the operation of the draft. Special means are being devised to overcome these difficulties so as to insure the necessary supply.

5. A School for Aeronautical Engineers for the Army and the Navy. Several years ago the Institute established a post-graduate course of Aeronautical Engineering and the men who have taken advantage of this course are now occupying positions of great importance and responsibility in the service of the Government. The supply of competent aeronautical engineers is, however, far below the demand and to meet the need, special intensive courses have been established at the Institute. Thirty students went through the first of these courses and another similar course is just beginning.

6. A School for Radio Engineers has been established in association with the Department of Electrical Engineering to meet the special needs of the Signal Corps.

7. The Institute's Department of Biology and Public Health has established a special school to train men for public health service so as to deal with the special problems presented by war conditions. Plans are being made for the establishment shortly of a special school to meet the urgent needs of the Sanitary Corps.

This bald enumeration of various schools can give no adequate impression of the extent or importance of the activities that are here referred to. A better idea of what they really involve would be obtained from a visit to the various buildings in which these schools are conducted. In this connection it is interesting to note that although it is only two years since the great group of buildings on the present site of the Institute was occupied, these buildings are now crowded to capacity and we have had to erect a very large number of buildings of a temporary character all over the grounds of the Institute to meet the pressing needs of the day.

STUDENT ARMY TRAINING CORPS

The experience of the war has demonstrated that the colleges are the chief source of the supply of competent officers. Owing

to the extraordinary increase in the size of the Army necessitated by present conditions, the problem of obtaining a sufficient supply of officers is one of the most serious and difficult with which the country is confronted and this difficulty is likely to increase when our soldiers become more actively engaged in the conflict and casualties among the officers grow to proportions similar to those that have been experienced by our allies. It is clear that something must be done to begin the training of men who are still too young for service so that those of them who are fit for the task may be quickly turned into officers when the proper time comes. With this object in view the Secretary of War announced in May last that a STUDENT ARMY TRAINING CORPS was to be established and maintained by the War Department in co-operation with the colleges of the country. Further details of the plan were published by the Adjutant General in June. According to the scheme then described, students in our colleges over eighteen years of age were to be given the opportunity of enlistment in a Student Army Training Corps and immediately after enlistment were to be placed on furlough and kept under training at college until the national requirements necessitated their withdrawal for active service. While at college these students were to continue their normal courses with only such modifications as were necessary to give them the preliminaries of a military education. Ten hours a week were to be devoted to military studies, but of these only four were to be set aside for drill and similar military exercises, the remaining six hours being assigned to academic studies that were regarded by the War Department as closely allied to military studies. In July I accepted the invitation of the Secretary of War to become Educational Director of the Student Army Training Corps and since then I have spent practically all my time in Washington absorbed in the duties of that office. Those duties would necessarily have been arduous under any conditions, but they have been rendered unexpectedly exacting by the radical change of conditions that has been brought about recently by the lowering of the draft age and the announcement of the intention of the War Department to transport millions of soldiers to the seat of war within the next nine months. These changes came just when the plans had been perfected for carrying out the original scheme that I have already referred to. The new conditions

present a most formidable problem, indeed one that is impossible of satisfactory solution from the point of view of education, but, on the other hand, one that seems to be forced upon the country by military necessity. No preferences or special privileges can be granted to college students and they must therefore be sent to the front at the same age as men not in the colleges. This means that students who are twenty-one years of age can as a rule remain in the colleges only three months, those who are twenty years, six months; and those who are nineteen years, nine months. It cannot be necessary for me to enlarge on the difficulties from an educational point of view arising from such necessity. It will be evident that the educational value of remaining in college under such conditions must be relatively slight and that the main purposes of initiating the plan of the Student Army Training Corps under the changed conditions are two: first, the military one of mobilizing the forces available for officer material; and second, the educational one of maintaining the organization of the colleges so that the continuity of education may not be completely broken by war conditions.

It will be evident that the general plan that I have outlined is inapplicable to the technical branches of the service as an engineer or medical officer cannot be trained in three or nine months. The general plan has, therefore, been modified in laying down the curricula of the professional schools that are closely related to the technical branches of the service. In all the courses that are maintained at the Institute the curriculum has been changed from four years to two, it being understood, however, that the two years means two years of continuous training, the vacations being practically eliminated. No guarantee will be given that men who enter on these technical courses will be continued within the Institute until their completion, but it is known that the needs of the service will require that a large proportion of students must complete their courses, otherwise there will be a dangerous shortage of technically trained men should the war continue for several years.

I have said that the lowering of the draft age and the decision to prepare millions of men for service within the next nine months have led to radical changes in the earlier plans of the Student Army Training Corps. Under the conditions now prevailing the military authorities have reversed their earlier decision to place the

men in the Student Army Training Corps on furlough. Instead of that they have been placed on active duty with full pay and with provision for subsistence, quarters and tuition. The new plan was announced only a fortnight before the Institute was to have opened and no time could be lost in furnishing barracks to house the student soldiers. In spite of the fact that weather conditions were unusually bad, barracks and a mess hall for the necessary number were ready at the beginning of the academic year. However, these barracks have not yet been occupied, for the epidemic of influenza which is now raging has necessitated a postponement of the opening of the Institute, which is now planned for Monday next. The work of the coming term cannot fail to present many unusual difficulties but I have no doubt that the Faculty will do its best to overcome them, as the desire to set aside all considerations except the furtherance of the great cause on which the Nation has embarked is practically universal in our midst.

RICHARD C. MACLAURIN.

REPORTS OF ADMINISTRATIVE OFFICERS

REPORT OF THE DEAN

During the past year the experiment was tried of admitting students in the middle of the year on certificates from their high schools. The admission requirements were rigid, and it was also necessary that the men should be certified as being in good physical condition. It was the intention to have the men admitted in January, and complete their first-year work by taking intensive courses in the summer corresponding to the second term's work of the first year. It would seem that these men would possibly be subjected to a more severe physical strain than the average student, and therefore more attention than usual was paid to the statements in regard to their general health. Statistics in regard to this class of so-called Junior Freshmen will be given in the Registrar's report, but I wish to state that, from the point of view of the Dean and the First-Year Committee, the experiment of admission on certificate seemed to be a complete success. During the second term the Junior Freshmen stood the strain of the summer work remarkably well. They had Physical Training from eight to nine every morning, and appeared in better general health at the end of the term than any other students at the Institute. The last two hours of Physical Training were given to field sports and swimming contests, in which the large majority of the class participated. Out of this class of Junior Freshmen at the end of the year only one man was required to withdraw on account of low standing.

The new method of dealing with first-year students by a special small committee, meeting frequently during the year, has proved a very successful way of handling students' records.

The dormitories were managed, as heretofore, by student government, and although there were certain difficulties incident to the leaving of many students to go into war service, the general conduct of affairs was satisfactory.

A regularly organized movement was inaugurated by the undergraduates, with the assistance of a Faculty Committee, to

encourage summer work in the Ship Yards. A Student Committee, aided by Professors Peabody and Pearson, placed a large number of men in the various Ship Yards on the Atlantic Coast. Through the generosity of Mr. A. F. Bemis, '93, prizes are to be awarded to the men who write the best essays on their work during the summer. This work of undergraduates in the Ship Yards has undoubtedly been somewhat helpful to the United States Government, but it has been more beneficial to the students themselves, not only by enabling them to earn money during the summer months, but by making them acquainted with the real conditions and attitude of the laborers. The benefit arising from this association with the working men in the Ship Yards cannot be directly estimated, but it will undoubtedly be of value when these students, as engineers, have to face labor problems in the future.

During the first term of last year 313 men took the regular course in Calisthenics. The numbers substituting sports in place of Calisthenics were as follows: track athletics, 81; wrestling, 43; swimming, 12; boxing, 11; excused on account of physical ailments, 7. The second term 332 men took Calisthenics: track athletics, 52; wrestling, 13; swimming, 8; boxing, 7; crew, 17; excused on account of physical ailments, 11. Those who failed to pass and were required to repeat the course numbered 72.

Physical examinations were taken in October, 1917, and April, 1918. From these examinations charts were plotted showing the improvement in strength, and the five Cabot Medals were awarded as follows: L. H. Banks, '21; H. F. Stose, '21; Z. Giddens, Jr., '21; R. W. Smith, '21; and J. Gordon, '21. The following five men were given honorable mention: J. B. Green, '21; G. D. Dateo, '21; V. L. Valdes, '21; C. S. Knight, '21; and H. D. Tucker, '21.

All classes in Physical Training were held under the direction of Mr. Frank M. Kanaly, assisted by Mr. John W. Kilduff, '19. All exercises were taken in the open air.

Of the Junior Freshmen class, 106 men took Physical Training the first term. The numbers electing athletic sports in place of Calisthenics were as follows: track, 16; crew, 8; boxing, 1; wrestling, 1; swimming, 1; those excused because of physical defects, 3. In the second term, 84 men took the course, and as classes were held between 8 and 9 A.M. no substitution of athletics was allowed.

The number who failed to pass and must repeat the course was 2. All exercise was taken in the open air.

There were three deaths during the year: William Eastman of the fourth-year class died November 8, 1917, as the result of an accident in the Aviation Department; and Ralph F. F. Brooks, of the same class, died of pneumonia March 5, 1918. Russell E. Williams of the third-year class was killed in a drowning accident April 17, 1918.

ALFRED E. BURTON,
Dean.

REPORT OF THE LIBRARIAN

During the year 1917-18 the total receipts of the Library have been 4633 pieces. Of these, 1026 were obtained by purchase, 904 by binding, and 2703 by gift, as indicated by the following table:

TABLE I. GROSS ACCESSIONS. 1917-18

By purchase		1026
By binding		904
By gift, volumes	1278	
By gift, pamphlets and maps	1425	2703
Total		4633

After deducting books counted twice, and books worn out or lost, the net increase in the libraries, including special collections, amounts to 3110 volumes, 1190 pamphlets, and 91 maps, so that the end of the fiscal year shows the total contents of the libraries to be 132,921 volumes, 49,551 pamphlets and maps.

During the year the rooms which had been used for departmental libraries for the departments of Civil Engineering and Naval Architecture were required for other uses, and therefore the books and periodicals which had been kept in those rooms were transferred to the Rotunda, and were incorporated into the Central Library.

The number of periodicals received during the year is practically the same as in the previous one, but there has been a slight increase in cost. As during last year, no German periodicals have been received, but steps have been taken which it is hoped will result in the receipt of a certain number of German periodicals for the year 1918.

During the sessions of the school the reading room in the Rotunda has been open on week days from 5 to 10 P.M., except Saturdays, when it has been closed at 4 P.M. The average attendance for 202 days was 16 during the hours from 5 to 7, and 8 during the hours 7 to 10. On twenty-seven Saturday afternoons the average attendance was 23. The circulation of the Central Library amounted to 8437 books borrowed for home use, and 927 periodicals. There were also 152 books sent out on Inter-Library loans.

The General Catalogue contained at the end of this period 146,164 cards, 5536 having been added during the year. During this same period 1080 orders for the purchase of books, and 1003 orders for binding were issued from this Office.

The work on the Vail Library has progressed satisfactorily. Miss Almy, now in charge of that Library, reports that during the year 25 books and 4734 pamphlets were catalogued. This involved the writing of 14,379 cards. The work of binding the unbound volumes continued, 745 such volumes and 62 pamphlets having been bound. Another important part of the work carried on by the cataloguers in charge of the Vail Library was the preparation of bibliographies for the Electrical Engineering Department. These bibliographies contained not only references to books and pamphlets in the Vail Library, but also included references to the Harvard College Library, and other sources. The subjects were "Alternating Currents," "Telephony," "Radiotelegraphy and Radiotelephony," and "Hydroelectric Development."

Several changes have taken place in the personnel of the Library Staff. Mr. E. W. Chapin, who since December, 1913, has had charge of the Vail Library, left the Institute on the 1st of May to enter the military service of the United States. Miss Greenberg has also left to enter government service, and Miss M. S. Smith has resigned to become librarian in the Central Offices of the DuPont Company. Miss Lucile D. Littlefield has recently been appointed Assistant Cataloguer, and comes to us well recommended from the New London Public Library, where she has had several years' experience.

As in former years, we have received a number of valuable gifts, only part of which will be mentioned. Among the largest gifts was one from Mrs. G. K. Warren of Newport, R. I., consisting of a set of Reports of the United States Exploration of the 40th parallel, and 200 photographs. Herbert A. Wilcox, '87, very kindly offered the Institute the choice of a number of periodicals from the Library of the late Thomas Wilcox of New Bedford. From these six titles, including 55 volumes, were selected to complete sets in our Library.

The following gifts should also be recorded:

Donor	Gift
Prof. C. E. A. Winslow	Health Survey of New Haven, Conn.
John Ritchie, Jr.	Ten volumes
Prof. H. W. Tyler	Tanner & Allen, Course in Analytic Geometry
Editors of *The Tech*	*The Tech*
Joseph E. Chander	Colonial House
Walter S. Davis	Ideal Homes in Garden Communities
International Joint Commission, Toronto	Atlas, and one volume
Prof. W. McNeile Dixon, Gilbert Murray	Faith, War, and Policy
Prof. C. Frank Allen	Business Law for Engineers
Prof. D. C. Jackson	Street Railway Fares
Prof. W. S. Franklin	Bill's School and Mine
Prof. Henry Fay	Advanced Course in Qualitative Analysis
James Chittick	Silk Manufacturing and Its Problems
Prof. R. A. Cram	Two volumes
American Swedenborg Printing and Publishing Society	28 Swedenborg Theological Books
Miss C. M. Dorado	España Pintoresca
Prof. E. F. Langley	Science and Learning in France
Prof. Shinji Nishimuro	Study on the Ancient Ships of Japan
Dr. James E. Ives	Experiments in Physics
Prof. Frank Aydelotte	The Oxford Stamp
Profs. W. T. Sedgwick and H. W. Tyler	Short History of Science
Trustees of the Lydia S. Rotch Fund	Thirteen volumes
Prof. A. H. Gill	Oil Analysis and Thwing's "College Administration"
George Henry Lepper	From Nebula to Nebula
Prof. William T. Sedgwick	S. H. Reynolds: The Vertebrate Skeleton
C. R. Greene	Charles Anthony Goessmann
Prof. George L. Hosmer	Navigation
Prof. C. R. Cross	J. Playfair: Outlines of Natural Philosophy, two volumes
Thomas W. Baldwin	Ten volumes
Prof. E. E. Bugbee	Text-book of fire assaying
Henry H. Klein	Two volumes
Surgeon-General U. S. Army	E. B. Vedder: Sanitation for Medical Officers
Prof. Masoru Muiro	Northern Light
The Hon. The Secretary of Industry and Commerce, Mexico	Seven Volumes
J. E. Stone, '73	Register of Charlestown Schools, 1847-1873
E. E. Howard	J. L. Harrington and E. E. Howard: Final Columbia River Interstate Bridge Report
L. G. Straus	Disease in Milk
Prof. H. P. Talbot	B. Valentinus: Triumphal Chariot of Antimony
Mrs. Edward McC. Peters	E. B. Peters: "Edward Dyer Peters." A Monograph

Donor	Gift
C. W. Barron	Three volumes
F. W. Lord, '93	Ethics of Contracting
Prof. L. M. Passano	Plane and Spherical Trigonometry
Prof. F. J. Moore	A History of Chemistry
Miss Elizabeth Crafts	James M. Crafts, Reprints
Mr. J. B. Babcock	Massachusetts Street Railway Investigation Committee Report
Dr. R. P. Bigelow	Biological contributions to the reference handbook of the Medical Sciences
Miss Rebecca Kite	Dr. Henry More: Collection of Philosophical Writings, 1662
R. C. Tolman, '03	Theory of the Relativity of Motion
Earl of Camperdown	Five volumes
C. S. Davison	The Freedom of the Seas
B. F. Goodrich Rubber Company	A Wonder Book of Rubber
Prof. C. F. A. Currier	One hundred fifty-seven volumes

Robert P. Bigelow,

Librarian.

REPORT OF THE REGISTRAR

But few statistics in addition to those presented last December are added to the Registrar's report for the past year.

For the first time in the history of the Institute, required summer courses were held last summer for all of the professional courses. Previously, a few of the departments required summer work in certain subjects, but this year to hasten the graduation of the Class of 1919 an intensive program was planned which required attendance during the past summer. During the past year a new first-year class of one hundred students was admitted at the opening of our second term, the first of February. These students by studying during the summer overtook the class of 1921 and became second-year students by the end of September. The attendance during the summer was 839, of whom some 500 were taking the optional courses.

As the exercises of the Institute are temporarily suspended on account of the epidemic of influenza, a report on the registration of the new school year cannot be made at this time. Last spring the Faculty omitted the June entrance examinations of the Institute and accepted in place of them the records of the College Entrance Examination Board. The number of candidates to submit their entrance examination records was larger than ever and suggested a first-year class of six hundred, an increase over that of last year, which in itself was the largest on record. A canvass of the students who were here last year and of those presenting entrance records was made, but as conditions have changed so frequently during the past summer an accurate estimate of the size of the school for the new school year cannot be made.

On account of the Student Army Training Corps, a new calendar has been adopted. The school year now becomes coincident with the calendar year. It is divided into terms of three months each.

THE CORPS OF INSTRUCTORS

NOVEMBER 1	1901	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17
Professors Emeriti. . .	..	1	1	1	1	1	1	1	1	1	3	3	3	4	4	4	5
Retired . . .	..	..	..	..	..	..	1	1	1	1	3	3	3	4	5	7	7
Non-Resident	..	2	2	3	3	3	3	3	3	3	3	3	3	3	3	2	2
Research (Not counted elsewhere) . .	..	..	..	..	..	..	..	..	..	..	4	3	1	1	0	0	0
Total	..	3	3	4	4	4	5	5	5	5	13	12	10	12	12	13	14
Professors	29	27	27	25	32	36	39	39	43	43	40	47	46	59	63	61	59
Associate Professors . .	9	12	14	17	14	17	17	17	14	18	17	16	23	23	23	30	32
Assistant Professors . .	25	25	25	19	24	21	24	32	31	30	33	35	33	36	31	31	33
Assistant Professors in Chem. Eng. Practice	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	5
Active Faculty	53	64	66	61	69	74	80	88	88	91	90	98	102	118	117	127	129
Instructors	50	54	66	67	72	69	72	62	69	66	64	67	74	70	79	90	70
Assistants	36	46	51	56	53	52	52	50	51	55	50	49	54	52	58	54	38
Faculty Instructors and Assistants	139	164	187	184	184	215	204	200	208	212	204	214	230	240	254	271	237
Research Associates . .	..	..	..	..	6	8	8	6	12	8	5	3	1	3	3	5	4
Research Assistants . .	..	..	..	..	4	3	3	1	1	5	6	7	8	15	11	14	7
Lecturers	40	39	41	33	39	31	32	31	18	21	25	16	19	23	28	31	29
Total Members of Staff.	179	203	228	217	332	257	247	238	239	246	240	240	258	281	296	321	277

YEARLY REGISTRATION SINCE THE FOUNDATION OF THE INSTITUTE

Year	Number of Students	Year	Number of Students	Year	Number of Students
1865–66	72	1883–84	443	1901–02	1,415
1866–67	137	1884–85	579	1902–03	1,608
1867–68	167	1885–86	609	1903–04	1,528
1868–69	172	1886–87	637	1904–05	1,561
1869–70	206	1887–88	720	1905–06	1,466
1870–71	224	1888–89	827	1906–07	1,397
1871–72	261	1889–90	909	1907–08	1,415
1872–73	348	1890–91	937	1908–09	1,462
1873–74	276	1891–92	1,011	1909–10	1,481
1874–75	248	1892–93	1,060	1910–11	1,509
1875–76	255	1893–94	1,157	1911–12	1,566
1876–77	215	1894–95	1,183	1912–13	1,611
1877–78	194	1895–96	1,187	1913–14	1,685
1878–79	188	1896–97	1,198	1914–15	1,816
1879–80	203	1897–98	1,198	1915–16	1,900
1880–81	253	1898–99	1,171	1916–17	1,957
1881–82	302	1899–00	1,178	1917–18	1,698
1882–83	368	1900–01	1,277		

THE STUDENTS, 1917-1918

Registration by Classes	Classified	Unclassified	Total
Candidates for advanced degrees, including 2 Fellows	42	—	42
Fourth year	251	31	282
Third year	204	130	334
Second year	279	181	460
First year	397	127	524
Special	—	—	56
Total	1,173	469	1,698

CLASSIFIED AND UNCLASSIFIED STUDENTS BY COURSES* FOR THE YEAR, 1917-1918

Year	Without Course Classification	Civil Engineering	Mechanical Engineering	Mining Engineering and Metallurgy	Architecture	Chemistry	Electrical Engineering	VIa	Electrical Engineering	Biology and Public Health	Physics	General Science	Chemical Engineering	Sanitary Engineering	Geology	Naval Architecture	Electrochemical Engineering	Engineering Administration	Aeronautical Engineering	Mathematics	Total
Graduates	—	4	2	3	2	11	6	—	3	3	—	—	—	1	—	—	—	6	1		42
4th C†	—	45	57	6	20	9	45	—	3	3	1	31	5	—	3	7	16	—	—		251
4th U	—	4	4	3	2	1	5	—	—	1	—	3	—	1	—	3	5	—	—		31§
Total	—	49	61	9	22	10	50	—	3	4	1	34	5	1	3	10	21	—	—		282§
3d C	—	30	41	5	11	5	25	17	7	1	—	33	7	—	5	3	15	—	—		204§
3d U	2	14	22	6	13	6	15	3	5	1	—	13	1	1	4	5	19	—	—		130
Total	2	44	63	11	24	11	40	20	12	2	—	46	8	1	9	8	34	—	—		334§
2d C	—	43	47	10	7	5	47	—	2	1	—	59	5	—	10	9	34	—	—		279
2d U	9	17	36	4	15	2	19	—	3	—	—	25	2	—	11	9	29	—	—		181
Total	9	60	83	14	22	7	66	—	5	1	—	84	7	—	21	18	63	—	—		460
Specials	5	3	1	3	10	6	4	—	14	—	—	—	1	—	7	1	1	—	—		56
Total C	—	122	147	24	40	30	123	17	15	8	1	123	17	1	18	19	65	6	1		776
Total U	11	35	62	13	30	9	39	3	8	2	—	41	3	2	15	17	53	—	—		342
Total Sp.	5	3	1	3	10	6	4	—	14	—	—	—	1	—	7	1	1	—	—		56
Total	16	160	210	40	80	45	166	20	37	10	1	164	21	3	40	37	119	6	1		1,174§
First Year*																					524
																					1,698

* First-year students do not elect their courses until after this report is presented.
† C means classified; U means unclassified.
§ Deducting names counted in two courses.

TOTALS OF THE SAME CLASSIFICATION* SINCE 1905

Year	Engineering Courses													Science Courses						
	Civil Engineering	Mechanical Engineering	Mining Engineering	Electrical Engineering	Chemical Engineering	Sanitary Engineering	Naval Architecture	Naval Construction	Electrochemical Engineering	Engineering † Administration	Aeronautical Engineering	Total of Engineering Courses	Architecture	Chemistry	Biology	Physics	Geology	Total of Science Courses	General Science	Mathematics
1906–07	210	214	100	193	55	32	43	18	—	—	—	865	102	51	10	18	2	81	0	—
1907–08	210	227	118	202	59	39	37	16	—	—	—	908	84	53	17	21	0	91	2	—
1908–09	197	197	104	209	71	52	41	13	—	—	—	884	91	60	20	19	2	101	4	—
1909–10	207	204	99	203	84	60	41	14	14	—	—	926	109	44	22	4	1	71	4	—
1910–11	220	198	90	210	128	46	26	9	26	—	—	953	113	44	19	7	0	70	2	—
1911–12	217	214	79	203	129	57	19	8	35	—	—	961	112	56	20	4	2	82	3	—
1912–13	212	243	50	201	149	55	29	6	42	—	—	987	127	60	33	5	2	100	4	—
1913–14	209	279	37	196	141	65	31	7	38	—	—	1,003	130	78	36	12	3	129	3	—
1914–15	197	271	34	205	146	61	25	16	46	57	—	1,057	157	66	44	10	3	123	5	—
1915–16	188	279	46	235	157	60	28	23	50	99	—	1,165	163	59	48	14	4	125	4	—
1916–17	172	270	55	233	173	31	38	26	42	139	—	1,179	142	60	61	11	9	144	4	—
1917–18	160	210	40	186	164	21	40	—	37	119	6	983	80	45	37	10	3	95	1	1

* First year students do not elect their courses until after this report is presented.
† Only second and third year students in 1915-16.

STUDENTS AT THE END OF THE SCHOOL YEAR FOR THE PAST SEVEN YEARS

This table includes first year students

	1911	1912	1913	1914	1915	1916	1917	1918
Engineering Courses								
Civil	267	276	264	263	251	234	225	212
Mechanical	264	273	331	365	329	337	340	270
Mining	108	91	61	58	49	56	67	63
Electrical	264	255	244	250	271	282	290	224
Chemical	161	183	181	205	192	200	267	258
Sanitary	70	72	80	90	78	69	40	22
Naval Architecture	41	38	42	52	49	62	74	83
Electrochemical	41	44	57	53	65	63	55	44
Engineering Administration	—	—	—	—	102	146	199	150
Total Engineering	1,216	1,232	1,260	1,336	1,386	1,449	1,557	1,326
Architecture	132	145	148	160	183	173	163	74
Science Courses								
Chemistry	57	71	73	82	82	72	66	52
Biology	20	25	31	41	51	51	63	35
Physics	9	9	9	8	16	15	11	12
Geology	7	4	2	3	6	5	7	3
Total Science Courses	93	109	110	134	155	143	147	102
General Science	4	5	3	5	5	4	5	2
Special and No Course Classification	9	11	18	10	18	17	20	130
Grand Total	1,454	1,502	1,544	1,645	1,747	1,786	1,892	1,634

RESIDENCE OF STUDENTS

NUMBER OF STUDENTS IN EACH YEAR, FROM 1907, COMING FROM EACH STATE OR TERRITORY

States and Territories	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917
North Atlantic:	1,049	1,116	1,126	1,118	1,152	1,212	1,279	1,394	1,434	1,502	1,316
Connecticut	29	31	32	33	45	44	45	55	61	69	49
Maine	23	22	20	24	25	24	25	32	23	32	26
Massachusetts	781	839	852	840	860	890	954	1,032	1,060	1,110	1,005
New Hampshire	27	24	27	27	29	28	34	34	27	30	26
New Jersey	17	14	14	18	33	34	38	48	54	53	47
New York	82	99	99	106	90	108	102	113	121	122	101
Pennsylvania	57	53	46	37	39	43	42	42	46	57	31
Rhode Island	28	28	30	27	25	33	34	31	35	17	19
Vermont	5	6	6	6	6	8	5	7	7	12	12
South Atlantic:	48	51	44	41	49	45	66	66	72	81	43
Delaware	1	—	1	1	1	2	2	3	5	4	7
District of Columbia	10	10	8	5	13	12	21	18	19	27	10
Florida	3	6	5	1	2	3	5	2	5	7	1
Georgia	2	3	4	5	3	3	4	3	5	5	3
Maryland	18	17	12	14	8	8	16	18	13	9	4
North Carolina	—	1	—	—	1	2	4	2	4	5	4
South Carolina	2	—	2	1	3	—	5	6	9	9	4
Virginia	9	11	10	12	15	13	8	11	8	8	6
West Virginia	3	3	2	3	3	2	1	3	4	7	4
South Central:	36	38	37	37	48	46	43	50	54	49	42
Alabama	4	3	5	4	6	3	5	5	5	5	6
Arkansas	2	1	2	2	2	2	1	2	1	1	—
Kentucky	5	4	4	2	8	7	10	10	8	9	6
Louisiana	—	3	2	5	4	4	5	5	7	7	5
Mississippi	3	3	3	6	8	7	5	6	5	2	4
Tennessee	6	8	8	5	3	2	2	5	5	8	3
Texas	16	16	13	13	17	21	15	17	23	17	18
North Central:	142	121	123	140	141	137	115	115	152	146	124
Illinois	31	23	24	33	30	25	15	27	37	31	27
Indiana	12	9	11	10	9	10	9	7	12	5	9
Iowa	16	14	5	4	9	8	11	10	12	6	1
Kansas	5	4	6	9	7	8	3	4	2	3	1
Michigan	8	7	10	9	9	7	12	14	15	16	14
Minnesota	8	8	10	8	7	14	15	6	5	6	4
Missouri	14	6	7	13	12	13	3	5	10	18	15
Nebraska	3	2	4	6	8	8	8	5	5	5	3
North Dakota	4	3	3	3	3	3	2	3	3	1	—
Ohio	26	30	27	33	37	32	25	28	44	43	42
South Dakota	3	3	5	3	2	2	2	1	3	1	1
Wisconsin	12	12	11	9	8	7	10	5	4	11	7
Western:	49	54	59	53	57	65	63	72	59	52	46
Alaska	—	—	—	—	—	1	1	—	—	—	1
Arizona	—	—	—	1	1	1	—	—	—	1	—
California	14	20	25	21	23	22	23	30	25	22	16
Colorado	10	5	6	9	11	14	13	14	11	8	7
Idaho	—	1	—	—	—	—	1	2	1	2	1
Montana	3	2	3	2	2	4	4	3	2	1	3
Nevada	1	1	—	—	—	—	—	—	—	—	—
New Mexico	1	1	1	—	—	1	1	1	1	—	—
Oklahoma	1	1	—	—	—	1	2	—	—	1	—
Oregon	3	4	7	8	11	14	11	10	5	6	6
Utah	3	5	5	3	3	2	2	—	5	5	5
Washington	12	13	11	9	6	6	5	10	7	4	4
Wyoming	1	1	1	—	—	—	—	—	2	2	3

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917
Districts	6	9	11	15	11	6	6	5	4	5	4
Canal Zone	1	1	1	1	—	—	—	—	—	—	—
Hawaii	2	1	2	2	3	2	1	2	1	—	1
Philippine Islands	1	1	1	4	3	1	2	1	1	2	—
Porto Rico	3	6	7	8	5	3	3	2	2	3	3
Total for the United States	1,331	1,389	1,400	1,404	1,458	1,511	1,572	1,702	1,775	1,835	1,575

NUMBER OF STUDENTS IN EACH YEAR, FROM 1907, COMING FROM EACH FOREIGN COUNTRY

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917
Foreign Countries	79	72	79	102	101	100	113	114	125	122	123
Albania	—	—	—	—	—	—	—	—	—	—	1
Argentine Republic	2	2	4	5	2	1	—	—	1	1	1
Armenia	2	2	—	—	—	—	—	—	—	—	—
Australia	—	—	—	—	1	—	—	—	—	—	—
Austria-Hungary	3	—	—	2	1	2	1	2	1	1	1
Belgium	1	—	—	—	—	—	—	—	—	—	—
Brazil	2	3	1	2	3	5	7	4	1	1	4
Bulgaria	—	—	1	—	—	—	—	—	1	—	—
Canada	9	15	20	18	19	13	14	15	14	16	10
Cape Colony	1	1	—	—	1	—	—	1	—	—	—
Central America	—	1	—	—	—	2	—	2	—	—	—
Chile	1	1	1	3	1	—	1	—	—	8	10
China	9	10	11	27	36	37	42	46	49	40	42
Colombia	—	—	—	—	—	—	1	3	4	3	2
Costa Rica	2	3	2	1	1	—	1	—	—	1	1
Cuba	4	2	7	5	3	6	7	3	2	8	6
Cyprus, Island of	—	—	—	—	—	—	—	—	1	—	—
Denmark	1	—	—	1	1	—	2	1	1	1	3
Ecuador	2	2	1	1	1	1	1	—	—	1	1
Egypt	2	2	1	1	2	1	1	1	1	1	1
England	4	3	—	1	1	—	—	1	1	1	—
Finland	—	—	—	1	—	—	—	—	—	—	—
France	—	—	—	2	2	3	4	2	—	—	—
Germany	—	—	1	1	2	3	2	2	3	1	—
Greece	—	—	—	—	1	1	1	1	—	—	2
Guatemala	—	—	—	1	—	—	1	1	1	—	1
Honduras	—	1	3	3	2	—	1	1	2	3	3
India	1	2	1	—	—	2	1	2	2	1	—
Ireland	3	1	—	—	—	—	—	—	—	—	—
Italy	2	1	1	1	—	—	—	—	1	2	—
Jamaica	—	1	1	1	1	—	—	—	—	—	—
Japan	3	4	4	4	3	—	1	1	6	8	11
Korea	—	—	—	—	—	2	—	—	—	—	—
Mexico	12	6	10	9	5	4	7	7	10	9	5
Newfoundland	—	—	—	—	1	1	1	—	—	—	—
New Zealand	—	—	1	1	2	1	—	—	—	—	—
Nicaragua	—	—	—	—	—	—	—	—	2	—	—
Norway	—	—	—	1	—	—	—	—	2	3	6
Paraguay	1	1	1	1	1	1	1	1	—	—	—
Peru	2	2	1	2	1	—	2	3	3	—	2
Poland	1	—	—	—	—	—	—	—	—	—	—
Portugal	—	—	—	1	—	—	1	—	1	—	—
Russia	2	2	2	2	3	4	4	5	2	2	1
Salvador	—	—	—	1	—	—	1	—	3	1	—
Scotland	1	—	—	—	—	—	1	1	—	—	—
Siam	—	—	—	—	—	—	—	—	1	1	—
South African Republic	—	—	—	—	—	1	1	—	1	—	—
Spain	—	—	—	—	—	—	—	—	—	—	2
Sweden	—	—	—	—	—	—	—	—	—	—	2
Switzerland	—	—	1	1	1	—	—	—	—	—	—
Syria	—	—	—	1	2	3	2	2	—	1	—
Transvaal	3	2	1	2	—	—	—	—	—	—	—
Turkey	2	1	2	2	1	5	3	6	8	6	5
Uruguay	1	1	—	—	—	—	—	—	—	—	5
Total in school	1,410	1,461	1,471	1,506	1,559	1,611	1,685	1,816	1,900	1,957	1,698

WOMEN STUDENTS, 1917-1918

Year and Classification			Course						
			Architecture	Chemistry	Biology and P. H.	Geology	Electro-chemistry	No Course Classification	Total
First Year	Classified		—	—	—	—	—	—	1
	Unclassified	1	—	—	—	—	—	—	
Second Year	Classified	2	1	—	—	—	1	—	4
	Unclassified	1	1	—	—	—	—	—	
	Special	1	1	—	—	—	—	—	
Third Year	Classified	2	1	—	1	—	—	—	9
	Unclassified	3	1	1	1	—	—	—	
	Special	4	1	1	—	—	—	2	
Fourth Year	Classified	1	—	—	1	—	—	—	5
	Unclassified	2	—	1	—	1	—	—	
	Special	2	—	—	2	—	—	—	
Total		19	6	3	5	1	1	2	19

TOTAL REGISTRATION AND NUMBER OF NEW STUDENTS, 1917-1918

Year	(1) Total Number of Students	(2) Number of Students in the Catalogue of the previous year who remain in the Institute	(3) Number of New Students entering before issue of Catalogue	(4) Of those in column (3) the following number are classified First-Year Students	(5) Number of New Students not of the regular First-Year Class
1903–1904	1,528	1,042	486	249	237
1904–1905	1,561	986	575	295	280
1905–1906	1,466	984	482	213	269
1906–1907	1,397	862	535	272	263
1907–1908	1,415	888	527	273	254
1908–1909	1,462	868	594	323	271
1909–1910	1,479	890	579	317	262
1910–1911	1,506	944	562	283	279
1911–1912	1,559	932	627	312	315
1912–1913	1,611	984	627	310	317
1913–1914	1,685	1,049	636	295	341
1914–1915	1,816	1,084	727	348	379
1915–1916	1,900	1,146	754	321	433
1916–1917	1,957	1,165	792	369	423
1917–1918	1,698	1,005	693	385	308

GRADUATE STUDENTS, 1917-1918

American Colleges and Universities Represented

	1912–13	1913–14	1914–15	1915–16	1916–17	1917–18
Akron	—	—	—	—	—	3
Alabama	2	2	2	1	2	2
Alabama Polytechnic Inst.	—	1	—	1	2	1
Albany Medical	—	—	—	1	—	—
Alfred	—	—	—	—	—	1
Allegheny	1	1	1	—	—	1
Amherst	3	7	8	6	10	3
Arizona	—	—	—	—	—	1
Armour Institute of Tech.	—	—	—	—	2	1
Baldwin	—	1	—	—	—	—
Baltimore Medical	—	—	1	—	—	—
Bates	3	3	3	—	4	3
Baylor	1	1	2	1	1	—
Bellevue	—	—	1	—	1	—
Bellevue Hospital, Medical	—	—	—	1	—	—
Beloit	2	3	2	1	2	2
Bethany	—	—	—	—	—	1
Boston College	4	2	2	—	3	1
Boston University	3	2	—	1	4	2
Bowdoin	2	4	2	—	4	—
Brooklyn Polytechnic Inst.	—	—	—	—	2	1
Brown	3	4	2	1	2	2
Bryn Mawr	1	—	—	—	—	—
Bucknell	—	1	—	—	—	—
Buffalo	—	—	—	—	—	1
California	—	1	2	3	7	4
Canisius	2	—	—	—	1	—
Carnegie Institute of Technology	—	—	1	—	1	1
Case School of App. Science	1	—	1	—	6	1
Catholic University of Am.	—	—	1	—	5	3
Charleston	—	1	1	2	1	—
Chicago	1	1	1	—	1	1
Cincinnati	—	—	1	1	1	1
City of New York	4	1	2	2	3	7
Clark	1	4	3	2	1	1
Clemson Agricultural	—	1	1	—	—	—
Colby	1	2	1	1	3	2
Colgate	—	1	1	2	2	3
Colorado Agricultural	—	—	—	1	1	—
Colorado College	1	—	1	1	1	—
Colorado School of Mines	1	—	2	—	1	1
Colorado University	—	—	1	—	1	1
Columbia	1	2	3	4	6	3
Cooper Union	—	—	—	—	1	—
Cornell University	1	—	1	2	9	8
Cornell (Iowa)	—	—	—	1	—	1
Cotner	—	—	—	—	1	—
Creighton	—	1	1	1	—	—
Dakota Wesleyan	—	—	—	1	—	—
Dartmouth	9	7	7	4	22	15
Davidson	—	—	—	—	—	1
Davis and Elkins	—	—	—	—	1	1
Delaware	—	—	—	—	—	1
Denison	2	2	2	4	2	2
Denver	—	—	—	—	2	1
Doane	—	—	1	—	—	—
Drake	2	1	—	—	1	—
Drury	—	—	—	—	2	—
Earlham	—	—	1	—	—	—
Fargo	—	—	—	—	1	—
Franklin and Marshall	1	1	—	—	1	—
Furman	—	1	1	1	—	1
Geneva	—	—	—	—	1	—
Georgetown	1	2	1	1	2	1
George Washington	—	—	—	—	—	1
Georgia	—	1	—	1	1	—
Georgia School of Tech.	—	2	1	1	4	2
Gonzaga	1	1	2	2	1	—
Grinnell	—	—	—	2	2	—
Grove City	1	—	—	—	—	—
Hamilton	3	3	3	3	4	2
Hamline	1	1	—	—	—	—
Harvard	8	11	23	44	46	27
Haverford	—	—	—	—	3	—
Highland Park	—	1	—	—	—	—
Hobart	—	1	—	1	1	—
Holy Cross	1	3	1	1	1	3
Hospital College of Medicine	—	—	1	—	—	—
Indiana Medical College	—	—	—	—	—	1
Illinois	2	2	2	3	5	4
Iowa State	—	1	—	1	2	—
Jefferson Medical	—	—	1	—	—	—
John B. Stetson	—	—	—	—	2	—
Johns Hopkins	2	3	1	2	1	—
Juniata	—	—	1	—	—	—
Kalamazoo	—	—	—	—	2	2
Kansas	2	—	—	1	2	4
Kentucky	—	—	1	1	1	1
Kenyon	—	—	1	—	—	—
Lafayette	2	1	2	—	1	—
Lake Forest	—	—	—	1	1	2
Lawrence	—	—	—	—	1	1
Lehigh	—	—	—	—	4	5
Leland Stanford Junior	1	—	1	1	2	1
Lincoln	—	—	—	—	1	—
Lombard	—	—	—	1	1	1
Louisiana State	—	—	—	—	1	1
Louisville	—	—	—	—	1	—
Loyola	—	—	1	1	1	1
McMaster University	—	—	—	—	—	1
Maine	—	1	—	3	7	2
Manhattan	—	—	—	—	—	1
Marietta	—	—	1	1	—	—
Maryville	—	—	—	1	1	1
Massachusetts Agricultural	—	—	1	1	6	3
Mass. Institute of Tech.	17	22	32	3	16	14
Mercer	—	—	—	—	—	1
Miami	—	—	1	2	2	3
Michigan	3	6	3	4	4	2
Michigan Agricultural	1	—	1	1	—	—
Michigan College of Mines	—	—	—	1	1	—
Middlebury	1	3	2	1	2	—
Millsaps	—	—	—	—	—	1
Minnesota	2	1	1	2	3	2
Mississippi	1	—	—	—	—	1
Mississippi Agricultural and Mechanical	—	2	3	3	2	—
Missouri	—	—	—	1	3	2
Monmouth	—	—	—	1	1	—
Montana	1	1	—	—	—	1
Montana School of Mines	—	—	—	—	—	1
Moore's Hill	—	—	—	1	1	1
Mount Holyoke	—	—	2	—	1	—
National Univ. Law School	—	—	—	1	—	—
Nebraska	2	1	—	—	1	1
Newberry	—	—	—	—	1	—
New Hampshire Agricultural and Mechanical	—	—	—	—	1	1
New Mexico	1	1	1	—	—	—
New York University	3	3	1	—	2	1

GRADUATE STUDENTS, 1917-1918 — *Continued*

American Colleges and Universities Represented

	1912–13	1913–14	1914–15	1915–16	1916–17	1917–18
North Carolina	1	2	—	2	6	4
North Dakota Agricultural	2	1	—	—	—	—
Northwestern	—	1	1	—	3	1
Norwich	—	—	—	—	4	1
Notre Dame	—	—	—	—	2	4
Oberlin	3	3	1	2	5	—
Occidental	2	2	—	1	1	2
Ogden	—	1	1	2	1	—
Ohio Northern	—	—	1	—	—	—
Ohio State	1	—	—	2	2	—
Ohio University	—	—	—	2	1	—
Ohio Wesleyan	—	—	1	1	1	1
Oklahoma Agr. and Mech.	—	1	—	—	1	—
Oregon	1	1	1	1	—	1
Oregon Agricultural	1	—	1	1	1	3
Otterbein	1	—	—	—	—	—
Park	1	1	1	—	—	—
Pennsylvania (Gettysburg)	—	—	—	1	2	—
Pennsylvania Military	2	1	1	—	—	—
Pennsylvania State	1	1	1	1	3	—
Pennsylvania University	—	—	3	2	10	5
Pittsburgh	1	—	1	1	—	1
Pomona	—	—	—	—	—	1
Princeton	3	6	6	6	9	4
Purdue	—	3	3	3	3	2
Radcliffe	—	1	—	2	4	4
Randolph-Macon	—	—	1	—	—	—
Reed	—	—	—	1	1	—
Rensselaer Polytechnic Inst.	—	—	—	—	3	1
Rhode Island State	—	—	—	1	1	1
Rice Institute	—	—	—	—	1	1
Rochester	—	—	1	3	7	4
Rose Polytechnic Institute	—	—	—	—	—	4
Rutgers	—	—	—	—	1	—
Rush Medical College	—	—	—	—	—	1
Saint Anne	—	—	—	—	1	—
St. Anselm	—	—	—	—	1	1
Saint Francis Xavier	1	—	—	—	1	1
Saint Francis Xavier (Antigonish, N. S.)	—	—	—	—	—	2
Saint Louis	3	—	—	—	—	—
Saint Mary's	1	1	1	—	—	—
Saint Olaf	1	1	1	—	1	—
Simpson	2	2	2	—	—	—
Smith	1	2	1	2	—	1
South Carolina	—	—	—	—	2	—
South Carolina Military	1	—	2	1	3	3
South Dakota State	1	—	—	—	—	—
Southern California	—	1	1	—	—	—
Southwestern	—	1	1	—	—	—
Spring Hill	4	4	2	3	1	—
Stevens Institute of Tech.	—	—	1	—	—	3
Syracuse	1	1	3	1	2	1
Tarkio	1	—	—	—	—	—
Tennessee	1	1	2	2	1	1
Texas	4	3	4	2	3	4
Texas, Agr. & Mech. Coll. of	1	1	—	4	4	2
Throop	—	—	—	—	2	—
Trinity (Hartford, Conn.)	—	—	3	2	—	1
Trinity (Washington, D. C.)	—	—	—	2	2	1
Trinity (N. C.)	—	—	—	1	—	—
Tufts	—	—	3	1	14	7
Tulane	—	—	—	1	1	1
Union	—	1	1	1	2	3
U. S. Military Academy	1	1	—	—	3	1
U. S. Naval Academy	6	8	10	15	22	1
University of the South	—	—	—	—	1	—
Ursinus	—	1	1	1	1	—
Utah	—	—	—	—	2	3
Utah Agricultural	—	—	—	—	1	—
Valparaiso	—	—	1	—	1	1
Vanderbilt	—	—	—	—	1	1
Vermont	—	1	—	—	2	3
Virginia	2	1	5	4	3	3
Virginia Military	1	—	3	7	5	4
Virginia Polytechnic Inst.	—	1	—	1	—	—
Wabash	1	—	—	—	—	—
Washburn	2	—	1	1	3	—
Washington	1	—	1	—	6	2
Washington (St. Louis)	—	—	—	—	—	1
Washington and Jefferson	2	1	1	—	2	1
Washington and Lee	2	1	1	2	4	3
Washington State	—	—	—	—	1	—
Wellesley	2	—	—	1	—	2
Wesleyan	—	—	1	1	7	5
Western Reserve	—	—	1	—	1	1
West Virginia	—	—	—	1	—	—
Whitman	1	1	1	1	—	1
William Jewell	—	—	1	1	—	1
William and Mary	1	1	2	1	1	—
Williams	11	11	10	12	10	5
Wisconsin	—	2	1	2	4	4
Wittenberg	—	—	—	1	—	—
Wofford	—	—	—	—	1	—
Wooster	1	2	2	3	3	1
Worcester Polytechnic	—	1	—	—	9	11
Wyoming	—	—	—	1	2	4
Yale	7	8	19	25	21	10
Yankton	1	—	—	—	—	—

GRADUATE STUDENTS, 1917–1918 — *Continued*

Foreign Colleges and Universities Represented

	1912–13	1913–14	1914–15	1915–16	1916–17	1917–18
Acadia University	—	—	—	—	2	—
Aix la Chapelle	—	—	—	—	—	1
Anhui Provincial (China)	2	2	—	—	—	—
Belgian Institute (Liege)	—	—	—	—	2	—
Cambridge (England)	—	—	—	—	1	—
Central Technical	—	—	—	1	—	—
Central Turkey	—	1	1	1	3	—
Central University of Quito	—	—	—	—	1	1
Chalmers Institute of Technology (Sweden)	—	—	—	—	—	1
Chile	—	1	—	—	2	4
Chi-li Provincial (China)	1	1	1	1	—	—
Chinese Naval	4	4	4	4	4	2
Christiania	—	—	—	—	—	1
Colegio Mayor de Unestra del Rosario	—	—	—	1	1	1
Dalhousie	—	1	1	—	1	—
Dulwich College	—	—	—	—	—	1
Durham	—	—	—	3	—	—
Ecole Polytechnique (Montreal)	—	—	—	1	—	—
Escuela Industrial (Buenos Ayres)	1	—	—	—	—	—
Euphrates (Turkey)	1	—	—	—	1	2
France	1	1	—	—	—	—
Gymnasium of Salonica	—	—	1	—	—	—
Havana	3	2	—	—	2	2
Hong Kong	—	—	—	—	—	2
Imperial German Naval Coll.	—	—	—	—	1	—
Imperial Polytechnic (Shanghai)	8	8	7	2	—	—
Imperial Technical School (Moscow)	—	—	—	—	—	1
Inst. National of Honduras	—	—	—	—	2	1
Institute National Central (Salvador)	—	—	—	2	1	—
Japanese Naval Engineering (Tokio)	1	1	—	—	1	1
Knarof Imperial University	—	—	—	—	—	1
Kiang Nan Provincial	—	1	1	1	—	—
Kŏng. Techn. Hochschule	—	—	—	1	—	—
Kyoto Imperial	—	—	—	1	2	1
London University	—	—	—	1	1	—
McGill (Montreal)	2	1	—	—	4	1
McGill (Vancouver)	—	—	—	—	1	1
Mackenzie College	—	—	—	—	—	1
Madrid	—	—	—	—	—	1
Manitoba	—	—	2	1	2	—
Meizi College of Technology	—	—	—	—	1	1
Melbourne	1	—	—	—	—	—
Montevideo	—	—	—	—	—	1
Nanking (China)	3	—	—	—	—	—
Nanyang	—	—	—	—	4	6
National (Paraguay)	—	1	1	—	—	—
Naval Academy (Chile)	—	—	—	—	6	6
Naval College (Canton)	—	—	—	3	1	—
Naval College (Cheetoo)	—	—	—	1	—	—
Osaka Technical	—	—	—	—	—	2
Oxford	1	—	—	—	—	—
Paris	—	—	—	—	2	—
Pei-Yang	—	—	—	—	—	2
Pekin	—	—	—	1	1	—
Philippines	—	—	1	—	1	—
Porto Algere School of Engineering	—	—	—	—	—	1
Presidency (Calcutta)	—	1	1	1	—	—
Robert College (Turkey)	—	—	—	—	1	—
Royal Inst. of Technology (Stockholm)	—	—	—	—	—	1
Royal Military (Canada)	1	—	—	—	—	—
Royal Tech. (Copenhagen)	—	1	—	—	—	1
Saint John's University (Shanghai)	2	2	2	3	2	2
Santa Clara (Cuba)	—	—	1	1	2	2
Scientific and Lit. Inst.	1	—	—	—	—	—
Syrian Protestant	4	3	3	4	3	2
Technical Hochschule (zu Darmstadt)	—	—	—	—	2	1
Technical Hochschule (Karlsruhe)	—	—	—	—	1	1
Technical Hochschule (zu Sachen)	—	—	—	—	1	1
Technical School of Athens	—	—	—	—	—	1
Tokio Imperial	—	—	—	4	2	2
Tomsk Institute of Tech.	—	—	1	—	—	—
Tong-Shan Eng. College	—	—	—	—	1	3
Toronto	—	1	2	—	1	1
Tsing Hua	—	—	2	2	11	6
Turin	—	—	—	—	1	1
Union Medical (Pekin)	—	—	—	1	—	—
Universidad National	—	—	—	—	1	—
Waseda University	—	—	—	—	—	1
Wuchang (China)	1	1	1	—	—	—

Graduates who are candidates for Advanced Degrees	42
Graduates who are pursuing undergraduate work	127
Colleges and Universities represented	175

NEW STUDENTS FROM OTHER COLLEGES BY YEARS, 1917–1918

Class Joined at Institute	Years Spent at College				Total
	One	Two	Three	Four, or more	
First year	25	8	—	3	36
Second year	25	20	3	10	58
Third year	—	6	13	19	38
Fourth year	—	—	3	23	26
Graduate year	—	—	2	16	18
Total	50	34	21	71	176

COLLEGE STUDENTS AMONG THE COURSES, 1917–1918

Graduates and Students from Colleges. 23% of the Total Student Body	First Year	Civil Engineering	Mechanical Engineering	Mining Engineering	Architecture	Chemistry	Electrical Engineering	Biology and Public Health	Physics	General Science	Chemical Engineering	Sanitary Engineering	Geology	Naval Architecture	Electrochemical Eng.	Engineering Administration	No Course Classification	Aeronautical Engineering	Mathematics	Total
Graduates	6	29	18	15	12	15	29	14	2	—	4	3	1	8	1	5	—	6	1	169
Non-graduates	31	27	35	5	19	8	19	2	1	—	31	1	1	9	5	27	3	0	0	224
Total	37	56	53	20	31	23	48	16	3	—	3	4	2	17	6	32	3	6	1	393

AGES OF STUDENTS

CLASSIFIED FIRST YEAR STUDENTS, OCTOBER, 1917

Period of Life	1916–1917		1917–1918	
	Half-year Groups	Yearly Groups	Half-year Groups	Yearly Groups
Under 17	8	8	13	13
17 to 17½	28	—	33	—
17½ to 18	44	72	47	80
18 to 18½	85	—	69	—
18½ to 19	46	131	48	117
19 to 19½	57	—	65	—
19½ to 20	24	81	33	98
20 to 20½	35	—	39	—
20½ to 21	15	50	13	52
21 to 22	14	14	16	16
22 to 23	6	6	4	4
	362	362	380	380

Repeating the first year 12
Students of unusual age 5
Average age, omitting those 21 . . . . . 18 years, 11 months

SUMMER SCHOOL

	1917	1918
Number from other colleges and schools attending	68	145
Number not referring to any other school or college	—	6
Number from Massachusetts Institute of Technology	562	356
	630	507
Registrations for failures or deficiencies	146	143
Registrations to anticipate work	973	578
Number who attended Summer School but did not return for Registration	99	185

NUMBER OF STUDENTS REGISTERED IN EACH OF THE COURSES OF THE SUMMER SCHOOL FOR THIS YEAR AND THE YEAR BEFORE

	1917	1918		1917	1918
Algebra B	6	36	Mechanism	4	13
Applied Mechanics	72	26	Metallography	0	1
Bacteriology, Elements of	0	21	Metal Turning	1	0
Bacteriology, General	3	0	Organic Chemistry	29	0
Chemistry, Inorganic and Analytical	150	175	Organic Chemical Laboratory	26	0
Constructive Design	3	0	Perspective	2	0
Cost Accounting	23	0	Physical Laboratory	2	14
Descriptive Geometry	26	47	Physics	20	22
Design (Architectural)	6	1	Physics (Entrance)	0	38
Electrical Engineering, Elements of	39	1	Precision of Measurements	14	14
Electrical Engineering Laboratory	33	1	Public Health Lab. Meth.	0	27
Electrical Engineering, Prin. of	29	0	Public Health Practice	0	1
Electrochemical Laboratory	0	1	Shades and Shadows	2	2
Electrochemistry	0	1	Solid Geometry	11	56
English	6	7	Structural Design	11	0
Epidemology and Ind. Hyg.	0	2	Structures	11	0
Forging	6	4	Surveying	51	49
Foundry	1	0	Testing Materials Laboratory	29	0
French	19	21	Vise and Bench Work	3	0
Geology, Economic	0	1	Vital Statistics	0	1
German	49	21	Woodwork and Pattern Making	4	0
Heat Engineering	31	0			
Hydraulics, Theoretical	44	0	*Surveying Camp*		
Machine Design	73	0			
Machine Tool Work	44	0	Railroad Field Work 120	64	65
Mathematics (1)	18	23	Surveying 103	10	7
Mathematics (2)	23	27	Surveying, Geodetic and Topographic 108	63	65
Mathematics (3)	11	0	Surveying, Hydrographic 160	63	65
Mechanic Arts 297	12	23	Surveying, Plane 107	65	65
Mechanical Drawing	15	23	Surveying, Underground 104	7	7
Mechanical Engineering Drawing	17	10			

GRADUATES BY YEARS AND COURSES

Year	Civil Engineering	Mechanical Engineering	Mining Eng. and Metallurgy	Architecture	Chemistry	Electrical Engineering	Natural History or Biology	Physics	General Course	Chemical Engineering	Sanitary Engineering	Geology	Naval Architecture	Electro-chemistry	Engineering Administration	Total	Total by Decades
1868	6	1	6	—	—	—	—	—	1	—	—	—	—	—	—	14	
1869	2	2	—	—	1	—	—	—	—	—	—	—	—	—	—	5	
1870	4	2	2	—	1	—	—	—	1	—	—	—	—	—	—	10	29
1871	8	2	5	—	2	—	—	—	—	—	—	—	—	—	—	17	
1872	3	1	5	—	3	—	—	—	—	—	—	—	—	—	—	12	
1873	12	2	3	1	7	—	—	—	1	—	—	—	—	—	—	26	
1874	10	4	1	1	—	—	—	—	2	—	—	—	—	—	—	18	
1875	10	7	6	1	1	—	—	1	2	—	—	—	—	—	—	28	
1876	12	8	8	—	5	—	2	3	4	—	—	—	—	—	—	42	
1877	12	6	8	4	2	—	—	—	—	—	—	—	—	—	—	32	
1878	8	2	2	3	3	—	—	—	1	—	—	—	—	—	—	19	
1879	6	8	3	1	3	—	1	1	—	—	—	—	—	—	—	23	
1880	3	—	3	—	1	—	—	—	1	—	—	—	—	—	—	8	225
1881	3	5	6	3	8	—	1	—	2	—	—	—	—	—	—	28	
1882	2	5	5	3	6	—	1	1	1	—	—	—	—	—	—	24	
1883	3	7	5	1	3	—	—	—	—	—	—	—	—	—	—	19	
1884	5	6	13	—	12	—	—	—	—	—	—	—	—	—	—	36	
1885	4	7	8	2	4	2	—	—	1	—	—	—	—	—	—	28	
1886	9	23	7	1	7	10	1	—	1	—	—	—	—	—	—	59	
1887	10	17	8	1	9	8	1	1	3	—	—	—	—	—	—	58	
1888	11	25	4	5	10	17	3	1	1	—	—	—	—	—	—	77	
1889	14	24	5	3	8	17	1	1	2	—	—	—	—	—	—	75	507
1890	25	28	3	5	13	18	3	2	6	—	—	—	—	—	—	103	
1891	18	26	4	6	11	23	3	3	1	7	—	1	—	—	—	103	
1892	22	26	4	13	7	36	6	1	7	4	6	1	—	—	—	133	
1893	25	30	5	2	8	41	2	—	6	8	—	2	—	—	—	129	
1894	21	31	4	14	11	33	1	3	5	12	3	—	—	—	—	138	
1895	25	30	3	15	14	33	—	2	4	11	4	—	5	—	—	144*	
1896	26	34	10	24	17	48	3	3	7	7	4	3	5	—	—	190*	
1897	25	40	7	16	20	33	2	3	7	12	4	1	9	—	—	179	
1898	32	41	7	29	25	33	3	4	6	9	3	—	7	—	—	199	
1899	30	37	9	22	22	32	2	2	1	10	1	—	8	—	—	173*	
1900	32	34	21	21	19	23	3	3	5	11	4	—	9	—	—	185	1,573
1901	37	39	18	21	17	25	1	1	6	14	4	1	16	—	—	200	
1902	24	46	14	18	14	35	5	3	3	9	7	—	14	—	—	192	
1903	26	37	27	15	13	39	1	3	1	10	4	1	12	1†	—	190	
1904	34	45	32	24	15	34	3	5	5	7	2	1	17	8†	—	232	
1905	46	54	26	12	23	31	3	—	3	13	5	1	24	3†	—	244	
1906	47	69	38	22	21	37	2	4	—	10	6	—	19	3†	—	278	
1907	37	52	22	21	10	32	—	—	—	14	3	2	10	5†	—	208	
1908	48	61	19	19	16	38	4	—	—	15	2	—	5	2†	—	229	
1909	51	41	30	18	12	42	5	3	—	13	9	—	5	3	—	232	
1910	57	57	24	18	10	36	3	—	2	18	12	—	11	3	—	251	2,256
1911	46	49	17	10	12	49	1	1	2	19	15	—	6	5	—	231*	
1912	55	47	21	21	7	52	4	2	1	31	14	—	3	3	—	260*	
1913	58	50	20	26	12	43	2	1	—	30	15	—	4	8	—	269	
1914	60	65	17	19	9	51	6	1	4	37	19	—	8	8	—	301*	
1915	49	69	5	30	23	42	3	3	2	33	12	—	7	10	—	286*	
1916	45	84	5	37	11	56	5	3	2	32	18	—	9‡	14	—	318*	
1917	48	62	14	26	12	44	10	1	5	43	17	2	9†	10	37	338*	
1918	40	52	6	20	9	42	3	3	3	28	3	1	1	8	16	234*	
Totals	1,241	1,506	543	568	509	1,130	100	69	117	467	196	17	223	94	53	6,827*	

Names counted twice, students graduating in two different years	24
Bachelors of Science	6,803*
Masters of Science, not including 161 counted above	189
Doctors of Philosophy and of Engineering, not including 16 counted above	23
Total	7,015*

* Deducting names counted twice (students graduating in two courses).
† Prior to 1909 this Course was designated as Option 3 (Electrochemistry) of Course VIII.
‡ Two received the degree in XIIIB in 1916 and three in 1917.

DOCTOR OF PHILOSOPHY

Year	Biology	Chemistry	Geology	Physics	Physical Chemistry	Total
1907	—	—	—	—	3	3
1908	—	1	—	—	2	3
1909	—	—	—	—	—	—
1910	—	—	1	—	1	2
1911	1	—	—	—	—	1
1912	—	3	3	—	—	6
1913	—	1	—	—	—	1
1914	—	2	—	—	—	2
1915	—	2	—	—	—	2
1916	—	1	1	1	—	3
1917	—	3	1	—	—	4
1918	—	3	1	—	—	4
Total	1	16	7	1	6	31

DOCTOR OF ENGINEERING

Total	Aëronautical Engineering	Electrical Engineering	Electrochemical Engineering	Total
1910	—	1	—	1
1911	—	1	—	1
1912	—	—	—	—
1913	—	—	—	—
1914	—	1	—	1
1915	—	1	—	1
1916	1	1	—	2
1917	—	1	1	2
1918	—	—	—	—
Total	1	6	1	8

Master of Science	Civil Engineering	Mechanical Engineering	Mining Engineering	Architecture	Chemistry	Electrical Engineering	Biology and Pub. Health	Physics	General Science	Chemical Engineering	Sanitary Engineering	Geology	Naval Architecture	Naval Contr'n, U. S. N.	Naval Construction, Foreign Students	Aeronautical Engineering	Electrochemical Eng.	No Course	Total
1886	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
1887	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
1888	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1889	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1890	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
1891	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1892	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1893	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
1894	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
1895	—	—	—	1	1	—	—	1	—	—	—	—	—	—	—	—	—	—	3
1896	—	—	—	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	3
1897	—	—	—	2	—	—	—	1	—	1	—	—	—	—	—	—	—	—	4
1898	—	1	—	1	—	—	—	1	—	2	—	—	—	—	—	—	—	—	5
1899	—	—	—	1	1	—	1	—	—	—	—	—	—	—	—	—	—	—	3
1900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1901	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
1902	—	2	—	3	3	—	—	—	—	—	—	—	—	—	—	—	—	—	8
1903	—	1	—	5	—	—	—	—	—	—	1	—	—	—	—	—	—	—	7
1904	—	1	—	4	1	2	—	1	—	—	—	—	—	3	—	—	—	—	12
1905	—	—	—	9	—	—	—	—	—	—	1	—	—	8	—	—	—	—	18
1906	—	—	—	3	1	—	—	—	—	—	—	—	2	3	—	—	—	—	9
1907	—	—	—	6	—	—	—	—	—	1	—	—	—	8	—	—	—	—	15
1908	—	—	—	1	1	3	—	—	—	—	—	—	—	7	—	—	—	—	12
1909	2	1	2	6	1	1	—	1	—	1	—	1	—	3	—	—	—	—	19
1910	2	1	—	6	1	1	1	—	—	—	—	—	—	7	—	—	—	—	19
1911	2	2	—	5	2	4	2	—	—	—	—	—	—	3	—	—	—	—	20
1912	3	—	2	4	3	2	2	—	—	—	2	—	—	4	—	—	—	—	22
1913	1	2	1	4	—	1	1	—	—	7	—	1	—	2	—	—	—	—	20
1914	3	1	—	3	5	2	2	—	—	3	3	1	—	2	—	—	—	—	25
1915	1	4	1	4	2	10	—	—	—	2	—	—	1	2	—	1	1	—	29
1916	5	4	—	7	3	6	1	—	—	1	1	—	—	2	5	5	1	—	41
1917	3	1	1	3	1	5	—	1	—	1	2	—	—	9	—	4	—	—	31
1918	1	2	1	1	1	2	1	—	—	1	—	—	—	—	—	5	—	1	16
Total	24	25	8	84	30	39	11	6	1	20	10	3	3	63	5	15	2	1	350

MASSACHUSETTS CITIES WHICH SENT FIVE OR MORE STUDENTS IN 1917–1918

Boston	234	Haverhill	9
Cambridge	73	Holyoke	9
Brookline	53	Lexington	9
Newton	47	Sharon	9
Lawrence	33	Watertown	9
Somerville	29	Belmont	8
Brockton	28	Winthrop	8
Lynn	27	Dedham	7
Melrose	25	Framingham	7
Lowell	24	New Bedford	7
Malden	22	Springfield	7
Quincy	19	Woburn	7
Newburyport	17	Andover	6
Taunton	17	Milton	6
Arlington	15	Needham	6
Chelsea	13	Danvers	5
Fall River	12	Gloucester	5
Medford	10	Salem	5
Waltham	10	Worcester	5
Everett	9		

WALTER HUMPHREYS,
Registrar and Recorder.

REPORTS OF DEPARTMENTS

DEPARTMENT OF CIVIL AND SANITARY ENGINEERING

Since the last annual report the work of the Department has been carried on continuously and students in both the classes of 1918 and 1919 have completed their work and received their degrees. This was made possible by giving during the spring and summer of 1918 special courses intended to cover the fundamental professional courses usually given in the second term of the third year and in the fourth year. To this end certain general and descriptive courses ordinarily required for the degree were omitted entirely from the curriculum, and others were reduced somewhat in amount.

No changes have occurred since the last report in the permanent staff of the Department. All the assistants of the previous year resigned in June. The following men served as assistants during the year for periods of one term or longer: Claire D. Acker, Raymond B. Collerd, B.S., Paul Connor, S.B., James B. Newman, B.A.E., Alfred S. Niles, Jr., A.B., S.B.

Other necessary assistants were obtained by temporary employment of students or of graduates awaiting definite assignment to military duties.

The seventh session of the Summer Surveying Camp was held during the summer from July 30 to September 20, inclusive. The attendance consisted of seventy-two students. Sixty-four of these students were from Courses I, III, XI and XV, Option 1, in which attendance is required, the remainder coming from miscellaneous courses at the Institute and from other institutions.

The instructing staff included Professors A. G. Robbins, G. E. Russell, G. L. Hosmer, J. W. Howard and J. B. Babcock, 3d, of the regular instructing force, and in addition Professor C. T. Humphrey of Villanova College. The assistants included J. M. Hanley, J. W. Friery, R. Beaver, R. Rimbach and H. P. Etter, all of whom, except Mr. Etter, were graduated in the class of 1918,

Mr. Etter having come to Technology during the summer from the University of California.

Owing to the military situation, it was impossible to obtain a resident physician, but fortunately no illness or serious accidents occurred, and such medical advice and attendance as was necessary was furnished by Dr. Longfellow of Machias who visited the camp several times during the summer.

The expenses of the camp during the season, owing to the high price of supplies and transportation, and the smaller attendance, exceeded that in any previous year, the total cost per student for meals and miscellaneous expenses necessary for the operation of the camp being $1.41 per day, making a total charge for the camp session of $74.73 per man.

The class in Underground Surveying was again held at the Pike Hill Mine at Corinth, Vermont, through the courtesy of J. H. Allen, Esq., '81, of Knox & Allen, consulting mining engineers, and H. G. Hunter, Esq., manager of the mine.

During the year the portion of the Department quarters occupied by the Army, as mentioned in the last report, continued to be used for that purpose, and will probably be used for military purposes during the coming year. In view of the reduction in the number of upper-class students due to early graduation, it is not anticipated that this reduction in the space assigned to the Department will cause serious trouble.

Of the graduates of the Department up to and including the class of 1918, 312 are known to be in active military or naval service, of whom 240 hold commissions. Thirty-two others are attached to either the Army or Navy in a civilian capacity. John G. Kelly, Jr., '14, and Alfred S. Milliken, '14, have died in service.

The thanks of the Department are again due to the Holyoke Water Power Company for permission to use the Holyoke testing flume by the graduate class in Water Power Engineering.

CHARLES M. SPOFFORD.

DEPARTMENT OF MECHANICAL ENGINEERING

During the past year the laboratories and drawing rooms have been in constant use by the regular students; by those attending the Lowell Institute School for Industrial Foremen; by the men enlisted in the various branches of the Army and Navy; and by those enrolled through the United States Shipping Board and trained as Engineer Officers for the Merchant Marine.

About fifty students of the Junior class in Mechanical Engineering were given intensive training during the summer. The enrollment in the Government Schools increased to such an extent during the months of July, August and September that in order to give proper instruction to the men, additional members of the staff had to be called in to assist and, inasmuch as the Department was undermanned, it has necessitated that many of the instructors, besides carrying an extremely heavy load, have also had to teach a variety of subjects. Various members of the staff, in addition to their teaching work, have also been doing special work for different branches of the service, the Strength of Materials Laboratory and the Textile Laboratory especially having been kept in nearly constant operation on Government work. The United States Shipping Board School for Training Engineer Officers has grown to such an extent that the monthly enrollment is at present in the neighborhood of one hundred, and it has been necessary to increase the instructing staff to seven.

Many of the Seniors in the class of 1918, who had anticipated in the summer of 1917 much of their fourth-year work, were called into the service of the Government about the first of January. Quite a number of these men received commissions as either Ensigns or Second Lieutenants. Fifty per cent of the men who took the special course prescribed by the Faculty for the summer of 1917 have been ordered to report for duty in the Army or in the Navy or have been taken by the Ship Yards.

Up to the middle of September, 1918, Course II had four hundred ninety men enrolled in either the Army or the Navy, with fourteen names on the Honor Roll. This is about twenty per cent, of the entire enrollment from the Institute.

A modification of the course in Mechanical Engineering,

on which the Department has been at work for over two years, has been adopted by the Faculty. The new schedule of studies contains fewer subjects, the subject matter having been arranged so that many of the short courses have been combined into one comprehensive course. As an illustration, a course called Industrial Plants includes Foundations, Factory Construction, Heating and Ventilation, Industrial and Financial Management, and Distribution of Power.

The Department, during the past year, has lost from its staff Mr. J. A. Lunn, who was made Second Lieutenant in the Engineer Corps; Mr. H. C. Parker, who was made an Ensign in the Navy; Mr. Paul Hatch, who was made Second Lieutenant in the Coast Artillery; Mr. H. F. Reed, who was inducted into the service; and Mr. H. G. Davies, who resigned. Messrs. S. B. Blaisdell and R. J. Crosby, who were secured in February, were commissioned Ensigns and called to duty in the latter part of April.

The Department has secured Mr. Dean A. Fales, S.B., M. I. T., class of 1914, who at the beginning of the War was transferred from the Department to the Army Aviation School as Instructor in Motors; Mr. Francis V. du Pont, S.B., M. I. T. 1917, who was an instructor in the Army Aviation School; and Mr. H. C. Priest, a graduate of the Electrical Engineering Department in October, 1918.

During the past year extended series of tests have been conducted by Institute students under the direction of Professor Park and by Professor Park himself, on automobile tires, the expense of this investigation having been met by funds contributed for the work by the Goodyear Tire and Rubber Company.

An Amsler Laffon press of one million pounds capacity, ordered in 1915 for the Testing Materials Laboratory, has just been received. This press was manufactured at Schaffhouse and until recently it has been impossible to get the machine out of Switzerland. A Charpy impact testing machine has also been secured for this laboratory.

The Department has had presented to it by Mr. J. G. Prosser a special engine designed for very high economy. This engine is now being installed on the first floor of the Steam Laboratory.

The Department has also received a high pressure hydraulic

pump, presented by the Boston Rubber Shoe Company; a recuperative gas furnace presented by Tate Jones & Co., Inc., of Pittsburgh, for use in the Heat Treatment Laboratory. The Brown Instrument Co. has loaned this laboratory a Brown Pyrometer Indicator.

Other gifts include an exhibition case of safety set screws from the Allen Manufacturing Co.; an electric center grinder from Mr. E. H. Cox, M. I. T. 1904; a lifting truck from the Stue-Bing Truck Co. of Cincinnati, Ohio; a patent tool post for the Hendey engine lathe from the Hendey Machine Co. of Torrington, Connecticut; an exhibition case of small tools from the Pratt & Whitney Mfg. Co. of Hartford, Connecticut; an exhibition case of twist drills and milling cutters from the Union Twist Drill Co., Athol; a metric micrometer from the L. S. Starrett Co., Athol; an exhibition case of safety goggles from the F. A. Hardy Co. of New York; and samples of piping, tubing, wire, nails and ore from the Youngstown Sheet and Tube Co., Youngstown, Ohio.

Through the courtesy of the Boston Electrolytic Oxygen Co. of Everett, Massachusetts, the Department has been kept supplied with oxygen used in connection with the class work in the Machine Tool Laboratory.

EDWARD F. MILLER.

DEPARTMENT OF MINING ENGINEERING AND METALLURGY

The general plan of the Institute, to speed up the studies of the Juniors of the class of 1919 that they might finish their courses in the autumn of 1918 and enter the services of the Government, has been adapted to the requirements of the Department and carried through. It necessitated the omission of certain auxiliary studies, the rearrangement and shortening of some professional work, and the continuation of classes during the summer.

The permanent result of this temporary change has been that Options 1 and 3 receive the same metallurgical instruction, non-ferrous metallurgy is taken up in the second term of the third year, and metallurgy of iron and steel in the first term of the fourth year. In addition, the studies in mining are completed in the first term of the fourth year. The students thus have finished their mining and metallurgical work in classroom and laboratory at the close of the first term of the fourth year, and are well prepared to choose suitable subjects for their theses; in the last term they take up required auxiliary subjects to round out their education.

The course in Wet Assaying has been changed to Non-Ferrous Metallurgical Laboratory II in which students carry out individually ore-dressing or metallurgical experiments, and make the necessary quantitative analytical determinations by standard methods in use at works.

Another change is the omission of assigned work in the Iron and Steel Laboratory. The course in iron and steel, seventy-five hours exercise and forty-five hours preparation, given by Professor A. Sauveur during one term, consisted of three hours lecture and two hours laboratory per week. Owing to the continued absence of Professor Sauveur, who is giving his services to the French government, this work has been taken over by Professor C. R. Hayward. He found that the exercises in the iron and steel laboratory covered a ground similar to that of the Testing Materials Laboratory, Heat Measurements Laboratory, and the course of Metallography taken by the students. The laboratory exercise has been replaced by visits to iron foundries and bessemer and

open-hearth steel-casting plants; it was the intention to include rolling and drawing of iron and steel, but at present such plants are closed to visitors. The change has given very satisfactory results.

Since these alterations in courses are for the period of the war only, the usual schedule will become effective again when times have become normal.

During the year some office and laboratory rooms have been occupied by the United States Naval Aviation Detachments of the Departments of Aerial Navigation, Aeronautics, and Aerography.

In the laboratories a few changes and additions have been made. The equipment of the Mining Laboratory has been increased by the installation of columns and arms for the mounting of rock drills. The Crushing and Sampling Division has been supplied with much-needed sampling shovels. The Ore Dressing Section has installed a Kraut & Kohlberg laboratory flotation machine and two Mason pressure regulation valves to furnish a constant heat for the various apparatus. The Assay Laboratory has been supplied with a Thompson chemical balance. In the Fire-Metallurgical Laboratory, a dust collector has been added to the six-hearth Wedge roasting kiln, and defects discovered in the use of the furnace have been remedied; the Dwight-Lloyd sintering machine has been mounted and connected with the dust-flue and stack, and is ready for important laboratory work; a movable rotary blower with motor attached permits furnishing pressure-air to small furnaces without starting the main blower of the Department. In the Metallographical Laboratory there have been installed a horizontal polishing wheel and two electric muffle furnaces. The Laboratories of Ore-Dressing, Assay and Fire-Metallurgy have been provided with platform scoop scales.

The Research Laboratories of the United States Smelting, Refining and Mining Co., established in the Department, have aided in the solution of current problems in the plants of the Company. In addition considerable original research has been carried out. Some of the investigations completed are: Influence of altitude upon flotation; elimination of tellurium from the anode mud of the Betts process; development of a new process for the production of lead arsenate; production of cadmium pigments; recovery

of bismuth from flue-dust; determination of bismuth in lead slags; determination of rare metals in meteorites.

The Iron and Steel and the Metallographical Laboratories as well as the Laboratory for Fire-Metallurgy have been used by metallurgical firms for carrying on research, as the facilities offered are not found elsewhere.

The Department has received gifts of ores from various sources. Professor R. H. Richards has continued to present to the library his copies of the Mining and Scientific Press.

No professional summer school has been held, nor have men applied for practical work during the summer. The demand for graduates by the United States Government and by mining and metallurgical firms has been so great that the Department was unable to secure a single assistant. The result is that a large amount of work, not directly connected with the regular studies, has had to be postponed. In the Ore-Dressing Laboratory, Professor H. B. Litchman and Mr. W. S. Brown have kindly given their services to help in the operation of machines in the regular exercises.

Six students attended the Summer School of Surveying at East Machias, Maine, under the charge of Professor J. W. Howard. They carried on underground surveys at the Pike Hill mines near East Corinth, Vermont, which were placed at our disposal by Mr. John H. Allen, General Manager; the work was much assisted by the co-operation of Mr. H. G. Hunter, Superintendent.

Five students were graduated in May and five in September. There are registered, in the third year, ten students, and in the second year, approximately twenty. In addition there are four special students carrying on advanced work, one candidate for the degree of Master of Science, and two for the degree of Doctor of Engineering. The thesis of Mr. H. L. Hsueh, who obtained the degree of Master of Science, treated of the recovery of metallic aluminum from aluminum drosses by flotation, a new departure in the solution of this vexed problem.

The Government has called into service eleven men out of the class of 1919, and six out of the class of 1920.

The Department has suffered a great loss in the death of Mr. Timothy W. Sprague, who died December 17, 1917; he had been for a number of years the regular lecturer on the application of electricity to mining.

During the year Professor R. H. Richards has been carrying on research in Virginia on the development of a new process for the concentration of iron ores; Professor Hofman has finished his new treatise on the Metallurgy of Lead, which appeared in September; Professor Locke has given some time to the examination of mining properties in Canada and New England, and to the solution of ore-dressing problems; Professor Bugbee is engaged in the study of an ore-dressing problem for the Utah Apex Co., Bingham, Utah; Professor Hayward has given a course of lectures on metallography and heat treatment to officers and employees of the Watertown Arsenal, and a series of lectures on metals and alloys to the salesmen of the Clinton Wire Cloth Company; he has completed his research upon the recovery of nickel and alumina from Cuban iron ore, the results of which will form an extended paper; he has developed a new process for the reduction of tin ores, and is studying the recovery of zinc from zinc drosses.

H. O. HOFMAN.

DEPARTMENT OF ARCHITECTURE

Architecture as a fine art thrives best in times of peace. Two of its essential characteristics — beauty and harmony — involve something more than the mere requirements of utility. In a way architecture is luxury in building, possible only when the best thought, the most careful research, and the highest inspiration may be devoted to its creation. In times of war all luxury must be forced aside in order that every energy can be directed toward the cause placed first by the nation. But the emergency of war, which for a time may stifle any artistic development, is far less enduring than art itself. The love of beauty is as much a characteristic of man as his inclination to worship some form of deity. As the primitive man, returned from battle, spent a part of his leisure in carving or fashioning into agreeable shape the handle of his knife, so will civilization, when the war is over once more turn its attention to things of beauty, and architecture will again assume its normal place.

Today, even the architect of long experience must search to find a use for himself, and it is small wonder that the young man just entering his professional training should sometimes overlook that he is preparing himself for a life which will last many years after war has ceased, and should sometimes turn from his natural interest to a profession less to his liking but perhaps more immediately of use, forgetting that the training which he acquires today will largely influence his whole career. Architects will be needed after the war, and from among those who begin their training today must come the leaders of the profession of another generation. Even today the architect is not so useless as he at first appears. The long honor roll of graduates of the Department who have entered active service testifies to this. Equipped with the broad fundamental training, the habits of thought, and the sound judgment which the Institute requires of all its graduates, even the men who studied architecture have found important places for themselves in the service of the country. Our lists show that of the 266 former students of the Department who are in service, about 53 per cent are in the Army, 40 per cent in the Navy, 2 per cent in the Marine, and 5 per cent in the Red Cross Service. 136

of the men hold commissions as follows: 21 Captains, 8 Majors, 1 Colonel, 1 Lieutenant-Commander, 3 Lieutenant-Colonels, 50 1st Lieutenants, 33 2d Lieutenants, 19 Ensigns.

The Department began the year with a greatly diminished registration, which continued to decrease as many students of the upper classes were called into service or left to enter industries closely connected with the Government work, so that at the beginning of the second term the Department could claim a roll of but fifty-six students, as compared with a normal enrollment of about three times that number. Most of the men below the senior class who left before graduation expressed a hope of returning to complete the course, and in most cases a real love for the profession they have chosen will lead them back to architecture even though they never find an opportunity to fulfil the requirements for the Institute degree. Our lack of numbers is perhaps more than palliated by the splendid spirit and the pride in sacrifice displayed by the young men who have joined the various branches of the service. In six instances the sacrifice has proved a supreme one, and our list shows six gold stars.

In highest honor are held the names of the six young men who have so nobly given their lives to the cause of democracy and liberty: Kenneth Weeks, class of 1912, a member of the Foreign Legion in France, was killed in service January 17, 1915. Fred E. Schroeder, class of 1918, died at Camp Meade, January 15, 1918. Edward S. Couch, class of 1917, was killed in an airplane accident at Fort Leavenworth, February 6, 1918. Dinsmore Ely, class of 1918, met his death in France from an airplane accident which occurred April 21, 1918, while in service. Alfred T. Wyman, class of 1916, member of the British Royal Flying Corps, was killed May 27, 1918. Frank R. Simmons, class of 1909, in the Intelligence Department of the War Ministry, France, died of pneumonia at Marseilles, August 12, 1918.

Although the Department register has shown a comparatively small attendance, this has resulted in a closer intimacy between the instructors and the students. The attitude of the students and their enthusiasm have been most commendable, and the quality of work accomplished has been quite up to previous standards.

The new curriculum adopted by the Faculty in 1915 became completely established this year. Certain temporary changes in

the third and fourth years had to be introduced, however, to meet the emergency conditions. In the Engineering Option, because of courses anticipated during the summer of 1917, it was found possible to advance a sufficient amount of work from the second to the first term of the senior year, so that with some additional change of hours, the seniors of the Engineering Option could take, with little loss of normal requirements, the intensive training in Naval Architecture offered in the spring term. By substituting, with Faculty approval, certain engineering courses for the architectural requirements, a number of the students of Option 1 also found it possible to take the intensive work in Naval Architecture. In all, ten seniors from this Department registered in the second term for the intensive course in Naval Architecture. Although the students in Architectural Engineering who have entered the intensive course have made themselves immediately of use to the Government, it is to be regretted that more graduates from Option 2 are not available to meet the steady demand for them from structural firms now engaged in Government work.

In accordance with Faculty rules, rather more radical changes were made in the course schedule for the class of 1919. These changes have enabled the members of the class, by taking a summer term, to finish in September the technical subjects required for the degree. Thus all who are called into service at that time will have as complete a technical equipment as possible. A supplementary term made up largely of the studies of a more general nature will permit the class of 1919 to graduate with practically full requirements at the close of the fall term. There are at present twelve candidates for the degree in January, 1919.

An interesting modification of the work in Design given during the first part of the summer to the members of the Senior class of Option 1 was made with the idea of bringing this work more closely into line with the large problems in planning hospitals, cantonments, etc., which are today occupying the attention of the Government. Through the kindness of the trustees of the Weld estate we were able to obtain the use of a tract of land about one mile long and one-half mile wide in West Roxbury and Brookline. The class made a survey of this land and later developed upon it as a site the plans for an institution for wounded soldiers and sailors. The necessary instruction in the use of the transit and

the plane table, and in map making, was undertaken by Mr. Porter, who has unusual qualifications as a teacher of surveying for architectural students. His experience as an astronomer and geographer on a number of Arctic expeditions, and his work for the United States Geological Survey of Alaska, have made him familiar with the simplest methods of obtaining precise data. This, together with his skill in architectural design, equipped him in a remarkable measure to give instruction in the summer courses. The work was under the direct charge of Professor Codman, and occupied the first eight weeks of the term. The interest aroused among the students and the results obtained were most gratifying.

We have lost some members of the Department staff since the opening of the spring term:

Professor Charles Everett, who joined the staff in 1913, and who has been connected with the work in design since that time, resigned in April to accept a commission as 1st Lieutenant in the Signal Corps of the Army.

Professor Stephen Codman, who was appointed Associate Professor in Architecture in 1916, and who has since taken an active part in teaching design, as well as in formulating the course in that subject, resigned this fall to devote his time to other work.

Mr. Russell W. Porter, who has given most efficient instruction in design since 1915, resigned this fall to continue his studies along astronomical lines.

As yet no steps have been taken to replace the vacancies left by these resignations, it being hoped that should the registration next year be as small as seems likely, it will be found possible to carry on the instruction with our present staff.

The Department has added to its collections through certain gifts received during the year as follows: From E. F. Stevens and Charles Butler, Architects, a complete set of plans, details, and schedule of overseas hospitals for the United States Government; from C. E. Morrow several publications on construction; from William Tufts a number of plates on art.

It is of interest to note that the Department staff was invited to act as jury to make the awards in the Fifth Southern Intercollegiate Architectural Competition. This is a competition in architectural design held each year by the Georgia School of Tech-

nology, Rice Institute, the South Carolina Agricultural and Mechanical College, and Tulane University.

The Traveling Fellowship in Architecture was this year awarded to R. M. Blackall. Although the Traveling Fellowship has been awarded each year since the beginning of the war, the benefits of it have been withheld until conditions should become more suitable for their profitable enjoyment. In view of the very unsettled conditions at present and the probable small number of eligible competitors, the Fellowship will not be offered during the coming year.

The American Institute of Architects' medal was awarded to E. A. Grunsfeld, Jr. The gold and silver medals offered by the Société des Architectes diplomés par le Gouvernement Français were won respectively by E. A. Grunsfeld, Jr., and Leon Keach. Mr. Grunsfeld also received the Rotch Prize for the regular student, that for the special student being withheld. The Boston Society of Architects' Prize for the regular student was won by C. M. Ellis; no award was made of the prize offered to the special student. Miss Elizabeth Coit and A. L. Müller received Chandler Prizes, only two out of five prizes being awarded. The Chamberlain Prize was not awarded this year. The "Class of 1904" Prize for the regular student was won by D. C. Sanford, Jr., the prize for the special student not being awarded.

WILLIAM H. LAWRENCE.

DEPARTMENT OF CHEMISTRY AND CHEMICAL ENGINEERING

In spite of the depletion of the instructing staff of the Department, it has again been possible, through the hearty co-operation of the remaining members, to carry on the undergraduate instruction of the past year. Professor Keyes has responded to a call for overseas service, but Professor MacInnes has taken charge of the graduate work (as well as some undergraduate instruction) and, through his aid, a few graduate students have been provided for in physico-chemical lines. Professor Moore has also had post-graduate work in Organic Chemistry under his charge. Nearly all of the graduate work has concerned itself with war problems.

During the past year Professor W. H. Walker has been promoted to a Colonelcy in the Chemical Warfare Service, and is Commanding Officer at the Edgewood Arsenal, which is immediately concerned with the filling and proving of shells for gas warfare. He has supervised the erection and equipment of an extensive plant for the manufacture of war gases, and the filling of shells, hand grenades and incendiary bombs. He is also in charge of various plants throughout the country in which poison gases and materials necessary to their manufacture and transportation are under production, and is the head of the Gas Offense Division of the Chemical Warfare Service, a position of great responsibility, which he is filling with marked success.

Professor J. F. Norris has accepted a commission as Lieutenant-Colonel in the Chemical Warfare Service, and has been assigned to overseas duty. He is the American representative in the council charged with the supervision of war-gas production in Great Britain, and is also attached to the American Embassy in an advisory relation. His headquarters are at present in London.

Professor F. G. Keyes has accepted a Captain's commission and is now on overseas duty in the Chemical Warfare Service, at the front. Professor S. P. Mulliken is now on leave of absence and is commissioned as Major in the Chemical Warfare Service, having charge of the Confidential Information Section at Washington. Professor H. H. Hanson is now Major Hanson. He was at first assigned to overseas duty, but is now actively and effec-

tively promoting the important work at Edgewood Arsenal. Professor L. T. Sutherland is serving as Captain in the Chemical Warfare Service and Mr. R. E. Wilson, who was first given a Captain's commission, is now a Major in the same service, connected with the Defense Section of the Research Division. Dr. F. H. Smyth is now a Captain in the Offense Section of the Research Division. Messrs. Wylde, Wallace and Little, formerly Instructors in the School of Chemical Engineering Practice, are now in Chemical Warfare Service, the first two as Lieutenants, the last as Captain; Mr. Leach and Dr. Burdick are Lieutenants in the Ordnance Department.

Professor A. A. Noyes has been absent from the Institute most of the year, although he has kept in touch with the graduate work. He has continued his connection with the National Research Council for a part of the time as Acting Chairman, and is chairman of the Nitrate Committee which has an important advisory relation to the Ordnance Department which is erecting the Government plants for the fixation of atmospheric nitrogen. He also spent a short time at Throop College of Technology.

Professor W. K. Lewis has declined flattering offers of commissions, in order that he might continue his instructional work at the Institute. He is in charge of the Defense Section of the Research Division of the Chemical Warfare Service, and has been most successful in the development of this important work. He has returned to the Institute for two days each week and it is largely owing to his devotion to the work that the instruction in the industrial chemical laboratory and that in chemical engineering has been maintained.

Professor M. S. Sherrill has asked for leave of absence and is now Chemical Investigator in the Ordnance Department under civilian appointment. Professor E. B. Spear has an appointment as Consulting Chemist in the Chemical Warfare Service. The same is true of Professor Talbot, who also retains membership on the Advisory Board of the Research Division of the Chemical Warfare Service, this having been taken over into the War Department from the Bureau of Mines. He also served as a member of the committee, appointed by the National Research Council, to report to the Educational Director of the Students Army Training

Corps as to the scope of instruction in chemical subjects to be given members of that Corps.

In addition to these commissioned officers and civilian appointees, nearly all the members of the instructing staff have been, or are, engaged with war problems in some capacity. A visit to the laboratories of the American University Experiment Station at Washington, or to the Edgewood Arsenal, or to the plants manufacturing war gases at Cleveland, becomes for a member of the Chemical Department Staff a sort of miniature reception, so great is the number of our graduates at each of these stations — a gratifying evidence of the national service performed through them.

The number of graduates and former students of chemistry and chemical engineering now known to be in military or naval service is 226, of whom 149 hold officers' commissions. Five have already given their lives to the country. The record is necessarily incomplete.

Assistant Professors R. S. Williams, W. T. Hall and E. B. Spear have been promoted to Associate Professorships in deserved recognition of efficient service. Mr. W. G. Whitman has been promoted to Instructor in Industrial Chemistry. Mr. E. P. Stevenson has resigned his instructorship to accept a civilian appointment in national service.

Of the assistants of last year, Messrs. Brown, Maguire, Zeitfuchs, Nute and Richards have resigned. The new appointees are J. L. Parsons, S.B.; Clarence L. Nutting, S.B.; Walter T. Hall, George O. Ekwall, S.B.; and Bernard O'Daly, S.B.

Miss Ruth M. Thomas continues as Research Associate in Organic Chemistry, through the generosity of Professor Moore. Miss Amy Walker has resigned as Research Assistant in Chemistry of Foods, appointed under a grant from the Ellen H. Richards Research Fund, and her place will be taken by Miss Hester S. Lewis, A.B. (Wellesley), who will continue the work under Professor Woodman's direction.

The Institute has recently been the recipient of a Fellowship established by du Pont de Nemours & Company for graduate work in Chemistry or Chemical Engineering, which provides an award of $750. This Fellowship has been awarded for 1918-1919 to Mr. Leighton B. Smith, S.B., of the class of 1919, who has just completed his course. The investigation, which will be under the

general direction of Dr. Noyes, will have a direct bearing upon some war problem.

The admission of an entering class in February made necessary the repetition of the first-year instruction of the first term during the second half of the year, and the continuance of the first-year work during the summer. During the twelve-week summer term an effort has been made to prepare these students to take up the work of the second year in October, with the class of 1921. The determination to hasten the completion of the work of the class of 1919 has also necessitated the maintenance of Senior classes during the summer term. These classes, with the usual summer courses, involved the services of nearly all of the instructing staff for six weeks, and of a considerable number for the entire time. These services were cheerfully rendered in spite of the rather severe tax upon nervous energy involved.

As was noted in the Report of last year the number of students electing Chemistry or Chemical Engineering seems to be rapidly increasing. There is evidence that, if the war continues, the demand on the part of the Government and essential industries may well exceed 3000 chemists and chemical engineers in the next two years. At the moment at which this report is written, the plans for the instruction of the Students Army Training Corps are in process of development, through which this unprecedented demand must be supplied. It is greatly to be hoped and cannot be too strongly urged, that such of this Corps as show aptitude for chemical pursuits may be allowed to continue their work for a sufficient time to enable them to acquire a reasonably secure foundation for efficient and productive service, such as our graduates are now rendering to such a gratifying extent.

H. P. TALBOT.

DEPARTMENT OF ELECTRICAL ENGINEERING

In the last report of this Department, considerable space was devoted to the Co-operative Course in Electrical Engineering (Course VI-A), then recently established, and maintained in conjunction with the Lynn works of the General Electric Company.

The salient features of the plan were, two years of preparatory work at the Institute, followed by two years of work divided between the Institute and the General Electric Company, in alternate terms, and a final year, in which employment at the works might preponderate. At the end of the course, the successful student was to receive the degree of Master of Science. The course was primarily designed for those students who were particularly interested in or particularly fitted for work in manufacturing, and it was the hope of those specially interested in its establishment, that it would produce a corps of trained manufacturing engineers and executives whose services would be available at the close of the war.

The war situation has made it necessary to suspend operations in this co-operative course. It is, however, the desire of all concerned that the plan be given a thorough trial as soon as conditions permit.

At the request of the Signal Corps, U. S. A., a special intensive course on Radio Communication was given by the Department, in order to prepare men for service in that Corps. Work was begun February 4, 1918, with Professor A. E. Kennelly in charge. Half of the work of this course was given at Technology, by Professor Kennelly, assisted in the laboratory work by Mr. A. F. Murray, and in code practice by Mr. Norman Patton; the other half of the work was given at Harvard University by Professor E. L. Chaffee, assisted by Mr. R. F. Field. The total time required for the students in this course was thirty hours a week. Seventeen students enrolled in the course, which lasted fifteen weeks, being completed May 20. Thirteen of these men are now enlisted in the Signal Corps, and two of them are now teaching Signal Corps radio courses.

During the summer term the Radio Communication Course was repeated, with Professor E. L. Chaffee in charge. Professor

Chaffee and Mr. Field gave the lecture and laboratory work at Harvard as before; the work at Technology was given by Mr. W. T. Haines. Ten students were enrolled for this term, which was completed August 23. Mr. Haines has since reported for duty in the Signal Corps.

Owing to the military situation and to the urgent demand for technically trained men in the service of the Government, the regular work of our Research Division has had to be greatly curtailed for lack of available assistance. Up to the end of May we were able to carry on research work in sound wave analysis and on skin effect in conductors, with the aid of three research assistants, Messrs. F. D. Everett, R. N. Hunter and C. W. Whitall. Early in June, however, these gentlemen were called either into military service or into Government work, so that the Research Division had to be closed during the summer. We hope, however, to carry on a limited amount of research during the coming year.

Professor Kennelly was awarded the Howard N. Potts gold medal by the Franklin Institute during the year, for his research work in connection with the electrical hot-wire anemometer.

Work on the cataloguing and maintenance of the Vail Library has been continued during the year. The present status of the library is as follows:

	Catalogued	*Bound*	*Lettered*	*Book-Plates Pasted*
Books	10192	5360	5014	10811
Pamphlets	9069	1283	....	.....
Periodicals	827	827	827	827

It will be seen that the Vail Library includes over 20,000 catalogue entries. Mr. E. W. Chapin, who had charge of this work, left in May to enter military service.

The five-year appropriation of the American Telephone and Telegraph Company of 1913, for electrical engineering research and for the Vail electrical engineering library, having expired, a new five-year annual appropriation was granted by the Company for continuing these activities at the Institute.

Throughout the past year the Department of Electrical Engineering has been aided by Professor W. S. Franklin of the Department of Physics, who has devoted a portion of his time to instruction in the fundamental principles of electrical engineering. Professor Franklin has brought to his work of instruction an

enthusiastic interest in young men and methods of presentation distinct from those of less original teachers, and it is the hope of the Department that he may continue to assist us in this important phase of our work.

Just prior to the opening of the fall term, Professor W. E. Wickenden announced that he desired, as soon as possible, to be relieved of his duties as Associate Professor of Electrical Engineering, in order to devote his entire time to work with the Western Electric Company, in connection with problems of engineering personnel. During the past year Professor Wickenden has devoted a portion of his time to this work. He has found the problems confronting him of increasing complexity, and has become so deeply immersed in this work that a definite choice became necessary as to his future field of activity.

Professor Wickenden came to the Institute in 1909, having previously been instructor in Electrical Engineering at the University of Wisconsin. In the Electrical Engineering Department he has been especially charged with giving instruction to students beginning the study of electrical engineering, at the same time offering certain optional professional studies to men of the fourth year. Since the establishment of Course VI-A he has had charge of the administrative details connected with that course.

Professor Wickenden's well-known powers of exposition and his interest in the underlying principles of education have exerted a marked influence on his teaching, and it is with great regret that we announce his withdrawal from the teaching force of the Department.

During the past year the Dynamo Laboratory has been very satisfactorily administered by Mr. C. W. Ricker, Instructor in Electrical Engineering. Mr. E. A. Ekdahl, Assistant in Electrical Engineering, resigned to enter military service and was succeeded by Mr. C. H. G. Gray. Assistants P. H. Burkhart, C. O. Gibbon and Guy Gray have left the Department, the last to engage in work at the Bureau of Standards. He was succeeded by Mr. A. L. Russell. Messrs. C. E. Tucker, Joseph Kaufman and T. E. Shea have been recommended for appointment as assistants in Electrical Engineering. Mr. W. H. Costelloe was appointed Assistant in Electrical Engineering, but he was unable to serve as he joined the Signal Corps of the United States Army. Instruc-

tor W. T. Haines left to join the Signal Corps of the United States Army.

Professor Hudson has been appointed director of an Electric Welding Research to be conducted at the Institute for the Emergency Fleet Corporation. Professor Lyon will also devote a part of his time to this research.

Instructor C. L. Dawes has conducted a course on Elementary Electricity in the school of the Naval Aviation Department, and in the spring delivered lectures to the Flight Officers on electricity as pertaining to radio communication.

Early in May Professor Jackson, Major in the Engineering Reserve, was called into active service and sailed for France to assume the duties of Chief Engineer to the American Expeditionary Force Technical Board, co-ordinating fuel-using power for the American Forces. This board is working in close co-operation with the French, and has under way many important projects in different parts of the French Republic. Professor Jackson's headquarters are in Paris, but his duties take him to all parts of France, for questions of power supply are proving as important to the military service as those of men, materials and food.

On the departure of Professor Jackson the duties of Head of the Department were assumed by Professor Kennelly. In May Professor Kennelly was requested by the War Department to investigate overseas certain problems concerned with the communication of military intelligence. This necessitated a visit to France and England. During his absence, June 6 to October 1, inclusive, the Department was administered by Professor Laws.

Since the declaration of hostilities on April 6, 1917, the Department has furnished from its staff, either to the military service or to associated Government work, for the duration of the war, no less than twenty-five men; namely, two professors, one assistant professor, five instructors, eleven research assistants and six laboratory assistants.

A. E. KENNELLY,
F. A. LAWS.

DEPARTMENT OF BIOLOGY AND PUBLIC HEALTH

The present report covers the years 1917 and 1918, *i.e.*, the period just before and during the participation of America in the great war. The class of 1917, ten in number, was the largest ever graduated from the Department, and of its members nine are now in war service (eight holding the rank of lieutenant, either in the Sanitary Corps or in the United States Public Health Service), while the tenth is engaged in an essential food-manufacturing industry. The class of 1918, on the other hand, was depleted by enlistment on the outbreak of the war so that three only were graduated in June, and of the class of 1919 seven on October 1.

In June, 1917, Professor Gunn was appointed an Associate Director of the "American Commission for the Prevention of Tuberculosis in France," established by the International Health Board of the Rockefeller Foundation, and since that time he has personally directed a highly successful country-wide campaign of health education among the civilian population of France.

Mr. C. E. Turner, Instructor, was given leave of absence in June, 1918, for service as sanitary engineer to the United States Shipping Board, and has since had charge of sanitary conditions of the yards of that Board in the First District, with headquarters at the custom house in Boston.

Mr. M. P. Horowitz, Instructor, on the outbreak of the war took over a heavy burden of teaching, besides spending a large part of the summer of 1917 as a research worker in the Sewage Experiment Station at Brooklyn, N. Y., and all of that of 1918 in making a State-wide health survey, for the Oklahoma Association for the Prevention of Tuberculosis, of the sanitary conditions of various cities of Oklahoma.

Dr. F. H. Slack, Instructor in Public Health Laboratory Methods, besides his regular teaching took charge of an important summer course in War Bacteriology in the Harvard-Technology School of Public Health, as is recorded below.

Professor Bigelow has likewise given extra instruction, besides having been repeatedly called upon for aid in war problems involving microscopical technique. Apparatus in his care, provided for

histological work, proved adaptable to the solution of the problems presented and valuable aid was thus rendered by him.

Professor Prescott has now completed and prepared for publication what is perhaps the largest single investigation of soils ever undertaken by private enterprise — in this case the United Fruit Company. He was commissioned as a Major in the Sanitary Corps of the Medical Department of the Army in the autumn of 1917 and assigned to duty in the Food and Nutrition Division. He was permitted, nevertheless, to direct the work of his classes for the remainder of the year while supervising, especially investigations of food-dehydration carried on by his assistants in the bacteriological laboratories of the Institute.

Mr. E. H. Heath, Jr., S.B., appointed an Assistant in 1907, left us in November for service in the pathological laboratory of the Base Hospital at Camp Devens. In June, 1918, Mr. C. C. Stockman, 2d, S.B., was appointed his successor, and in September Mr. J. M. Strang, S.B., was also appointed an Assistant in Biology. Mr. Stockman conducted with marked ability and success important summer courses in General Bacteriology and in Vital Statistics.

The new laboratories have furnished excellent facilities for our work and an immense relief from the crowded and out-grown quarters on Trinity Place. For the first time in the history of the Department both staff and students have had ample space for laboratory, investigation and teaching purposes, and quiet and comfortable rooms for study — for all of which we are deeply grateful.

Both teaching and research have suffered from the war, but the new burdens which war has brought have been cheerfully borne and many new problems attacked and solved.

W. T. Sedgwick.

SANITARY RESEARCH LABORATORIES AND SEWAGE EXPERIMENT STATION

The extended researches begun in 1916 upon the digestion of the unpurified effluent of a sewage filter plant by a small and unpolluted stream — a problem of great interest and importance — were continued in 1917 in connection with the sewage-disposal plant of the city of Brockton by Professor R. S. Weston and Mr. C. E. Turner. These researches have yielded much valuable information and have attracted attention which would have been much more widespread but for war conditions. A full report with illustrations was published as a separate brochure in June, 1917, being the tenth volume of the published contributions from the Station.

The ice cream industry has of late years grown by leaps and bounds until it has now reached vast proportions, and since ice cream is eaten uncooked it falls into the category of foods especially liable to become contaminated and therefore dangerous to the public health. In the best factories the components are duly safeguarded by pasteurization, but the magnitude of the industry and its possible dangers to health are such as to make careful bacteriological investigations and sanitary control indispensable. These were being carried out in 1917 by Mr. (now Lieutenant) H. W. Hamilton, our Research Assistant, and the results obtained before he went into war service have been published in the *Journal of the American Public Health Association.*

Tests have also been made, at the request of Army officers, on a new antiseptic much used in war surgery in order to determine its availability for the purification of polluted drinking water in emergencies under field conditions in war.

The devoted and generous friend and anonymous donor, by whose munificence the Sanitary Laboratories and Sewage Experiment Station were initiated and maintained, died during the winter of 1917-18, and it will doubtless surprise many to learn that this donor was a woman — a woman of keen intellect, intensely devoted to public health problems, hating with a perfect hatred dirt and all forms of uncleanness, and desiring above all things to make the world a cleaner and a sweeter place for mankind to live in. We

shall long cherish the memory of her alert, original, incisive and powerful personality; of her determination to uphold whatsoever things are lovely and of good report; and her eagerness to put down all evil, to do away with filth, and to cleanse and purify the dirty places of this too often unclean world.

W. T. SEDGWICK,
Director.

SCHOOL OF PUBLIC HEALTH

The development of this School, maintained in voluntary co-operation with Harvard University, has proceeded very much as heretofore, excepting as affected by war conditions.

In June, 1917, the Certificate in Public Health (C. P. H.) was awarded to twelve candidates, of whom nine were Doctors of Medicine and the remainder holders of other academic degrees. In 1918, on the other hand, only three such certificates were awarded.

In the autumn of 1917 it became apparent that women would soon be greatly needed as technicians in the laboratories attached to Army hospitals whether in cantonments or elsewhere. Accordingly the Chairman visited most of the women's colleges of Massachusetts and appealed to the students, especially to the seniors, in those institutions to so arrange their work that at the end of their course in June they might quickly be prepared for positions in Army hospital laboratories. A course, which afterward came to be known as "War Bacteriology," was arranged and given by Dr. F. H. Slack, formerly Director of the Laboratory of the Boston Board of Health, and at present Instructor in Public Health Laboratory Methods in the Institute and in the Harvard-Technology School of Public Health. This class was begun in early July with an attendance of thirty-nine and a considerable number of the young women who completed it and qualified in War Bacteriology have since actually entered upon professional work as Laboratory Technicians in Army hospitals.

With the hearty approval of the Laboratory Division of the Office of the Surgeon-General of the United States Army, this course is now being repeated with an attendance of twenty-two, of whom it is expected that a considerable number will be ready for war service as Laboratory Technicians before the end of the calendar year.

The establishment by Harvard University of a special School of Industrial Hygiene, and the provisional association of this school with the Harvard-Technology School of Public Health, holds out promise of interesting and valuable opportunities for Institute students in the future.

W. T. SEDGWICK, *Chairman.*

DEPARTMENT OF PHYSICS

Professors Goodwin, Derr, Norton, Thompson and Wilkes carried on work in the Department during the summer in connection with the required summer work for the Junior-Senior Class. Professor Wilson gave his courses in theoretical aeronautics during the summer in the special Army and Navy Officers' Course in Aeronautical Engineering. Professor Franklin worked at the Bureau of Standards in the department that has to do with aeronautical instruments. Last winter Professor Wilson gave a course of eight Lowell Lectures on the Principles of Aeronautics.

Professor Norton has been much engaged in war work for the Army and Navy.

Last spring three members of the Department, Professors Wilson, Norton and Thompson, were called upon by the Secretary of the Interior to render him a report upon a much-advertised and supposedly important invention or discovery.

Dr. W. S. Franklin has been advanced to the rank of Professor. Mr. Wilkes, after a number of years of faithful service during which he had acquired a considerable reputation for ability along industrial lines, has been promoted Assistant Professor of Industrial Physics. We are fortunate in securing from Dartmouth Mr. H. H. Palmer as instructor in physics. Mr. J. C. MacKinnon, who has previously served as assistant, has returned to the Department as instructor after a year in the Registrar's office. With the staff thus increased and with a reasonable number of assistants the outlook for carrying on the work of the Department is much better than it was a year ago.

E. B. WILSON.

DEPARTMENT OF GEOLOGY AND GEOLOGICAL ENGINEERING

During the time of ten months covered by this report the Department of Geology in its teaching capacity has suffered from the same disarrangement incidental to the war which has affected all other institutions of learning. The number of students has been small and the activities of the teaching staff have been more or less circumscribed by the work in connection with military training.

The name of the Department has been changed to Department of Geology and Geological Engineering in order to give expression to the practical tendencies of geological science and the prominent position which economic geology in its various applications occupies in the Institute of Technology.

Instructing Staff. In January Mr. John G. Barry left for military duty, and his place was taken temporarily for three months by Mr. William F. Jones, who also gave a course of thirty hours on the subject of oil and coal deposits.

Course Scheme. A new scheme of study for students in the Geological Department was proposed and accepted by the Faculty during the past year. To some degree this scheme is elastic and allows for emphasis on various subjects of geology. The general idea of thorough undergraduate training in all branches of the science and avoidance of premature specialization has been maintained.

In accordance with the plans of the Faculty a summer course in Economic Geology was given to senior students who were graduated in September of this year.

Students. Only few students ordinarily take the purely Geological Course referred to above. One student received the degree of B.S. in June, 1918. In January, 1918, the degree of Doctor of Philosophy was conferred upon W. L. Whitehead upon the presentation of a thesis on "The Veins of Chanarcillo, Chile." At the present time there are two candidates for Doctor's degrees: J. G. Barry, who is now absent on military duty, and W. M. Davy, who had previously studied at the Universities of Princeton and Columbia. Advanced instruction has been given to three special

students. Owing to the suspension of the laboratory of Economic Geology at Harvard, no co-operation with that University has been carried on during the year.

Collections and Instruments. Many accessions have been received by purchase and donation to the mineralogical and geological collections. A collection of gems has been purchased, and an exceptionally fine suite of specimens from the tin mines of Bolivia has been presented by Mr. Howland Bancroft. Two new petrographic microscopes have been purchased from Bausch & Lomb to replace two nearly worn-out instruments.

The Research Laboratory has been equipped with an electric furnace and transformer set for high-temperature work. Pyrometers and auxiliary apparatus have also been purchased so far as war conditions have permitted. Certain necessary instruments, however, either could not be purchased, or have not been, owing to excessively high prices prevailing. Several pieces of ordinary laboratory equipment, such as constant temperature ovens and water baths, have also been put in.

Professional Work. In July, 1918, Professor Lindgren was absent on professional work and engaged in the study of ore deposits at Bingham, Utah. Professor Lahee has been on leave of absence from April first to October first, engaged in study of petroleum deposits in Texas.

Library. The usual accessions of current publications were received by the Departmental Library. During the year three hundred and fifty books were taken out from the Library and twenty new books on geological subjects were purchased.

WALDEMAR LINDGREN.

DEPARTMENT OF DRAWING AND DESCRIPTIVE GEOMETRY

There has been one change in the staff of the Department in the past year: Mr. W. C. F. Gartner has resigned as half-time Assistant, and in his place Mr. C. K. Rathbone has been appointed.

At the Department conferences plans were formulated for certain changes in the instruction which were to have been put into effect the coming year. As a result of the alterations in courses due to the war conditions, some of these changes will have to be deferred.

Extra lockers and filing cases have been provided for use in the freehand work. Some improvement has been noted in the lighting of room 2-390, due to a change in the number and position of the lamps. In the rooms assigned to classes in Mechanical Drawing and Descriptive Geometry suitable frames have been constructed for the display of students' drawings, and measures have been taken to lessen the amount of sound conducted from one room to another.

ALFRED E. BURTON.

DEPARTMENT OF ENGLISH

At the close of the year 1917-1918 two of the members of the Department, Mr. Percy Marks and Mr. W. A. Crosby, left to enter the military service. Their places are taken during the coming year by Professor F. P. Emery and Mr. M. R. Copithorne. Professor Emery, head of the English Department at Dartmouth, has been granted a year's leave of absence, and the Institute is fortunate in having his services as a member of its Faculty and its Department of English.

In the second term of the year 1917-1918, owing to Professor Currier's absence on account of ill health, the work of instruction in History was assigned to the English Department. The Freshman class in this term is required to study American History. The plan which the Department carried out in the last weeks of the term involved a study of the international relations of the United States, based on Coolidge's "The United States as a World Power." A series of lectures given by men not associated with the Institute staff included such subjects as: The United States and the Far East; The United States and Russia; The United States and South America; The United States and England; Germany's Attempts at Acquiring Influence in South America. The written work was based upon the topics studied in the textbook and discussed in class. As a whole, in spite of the hurried conditions under which the work was undertaken, the experiment showed what satisfactory results may be obtained from a combination of instruction in History and English, and is full of encouragement for further work along these lines.

HENRY G. PEARSON.

DEPARTMENT OF ECONOMICS AND STATISTICS

The academic work has proceeded according to the regular program. Outside lectures in Business Management and in Securities and Investments have been given as noted below.*

Professor Doten, in November, 1917, obtained a leave of absence to accept a position as Chief of the Information Branch of the Industrial Service Department of the Emergency Fleet Corporation of the United States Shipping Board. In February he

*A full list of those who lectured to the class in Business Management, with the topics on which they spoke, during the past academic year, is as follows: E. B. Saunders, "Organization of the Simonds Manufacturing Company"; W. H. Blood, "Organization of Stone & Webster"; S. P. Wilder, "Organization of the Merrimac Chemical Company"; G. L. LeClear, "The Design and Lay-out of Industrial Plants," "Salada Tea Company Process Diagram," "Salada Tea Company Lot Plan"; J. J. Gillespie, "Engineering Services"; L. C. Lowenstein, "Power Plants and Power Plant Equipment"; J. A. Gibson, "Purchasing as a Profession"; J. M. Davis, "Purchasing"; F. A. Ryer, "Purchasing for a Transportation Company"; W. O. Hildreth, "Selective Conveyors"; S. L. Haines, "Internal Transportation"; T. E. Jewett, "Traffic Problems"; R. A. Wentworth, "Inspection"; F. H. Leggett, "Stock and Stores Systems"; P. A. McKittrick, "Mnemonic Classifications"; H. P. Kendall, "Unsystematized, Systematized and Scientific Management"; W. L. Shaw, "The Planning Department"; R. A. Wentworth, "The Control of Production"; C. N. Bigelow, "Time Study"; E. H. Ballou, "Scientific Management in Practice"; Lillian M. Gilbreth, "Motion Study"; C. H. Scovell, "Industrial Engineering"; Mrs. Jane C. Williams, "Scientific Management in the Office"; H. C. Metcalf, "Relation of Labor to Scientific Management," "Welfare Work"; F. G. Coburn, "Industrial Engineer"; Gilbert Francke, "Employment as a Profession"; Dr. K. M. H. Blackford, "Character Analysis"; Elmer H. Fish, "Physical Examinations at the Norton Company"; Dr. William Healy, "Psychological Tests"; J. M. Larkin, "Employment Methods at the Fore River Shipbuilding Company"; Earl Morgan, "Industrial Accident Prevention"; Dr. Robert Quimby, "Service Department"; Mrs. D. R. Dewey, "Massachusetts State Board of Labor and Industries"; Ordway Tead, "Personnel Surveys"; C. H. Blackall, "Industrial Housing"; H. N. Haven, "Scientific Management in Selling"; W. W. Duncan, "Sales Organization"; Professor Harold Whitehead, "Principles of Salesmanship"; G. C. Frolick, "Selling by Mail"; Professor C. E. Bellatty, "Advertising"; John K. Allen, "Advertising Campaigns."

The list of lecturers and topics for the class in Investments and Securities during the past academic year is as follows: William J. Garrison, Jr., "The Work of a Bond House"; Henry J. Horn, "Railroad Accounts"; S. B. Pearmain, "A Day's Experience on the Stock Exchange"; F. B. Tupper, "The Relation of the Engineer to the Bond House"; Frank A. Merrill, "Municipal Bonds"; Arthur S. Dewing, "Public Utility Investments," "Organization and Promotion of a Power Company"; Pliny Jewell, "The Liberty Loan"; Montgomery Rollins, "Convertible Bonds"; A. P. Brown, "Commercial Paper"; George B. Baker, "Water Power Bonds"; Everett P. Turner, "Investments of a Trustee"; J. B. Hardon, "Mining Securities"; George B. Farrington, "General Investment Problems."

was made Assistant Head of the Industrial Service Department, still retaining his work in the Statistical Branch. In June of this year he was made Executive Head of the Industrial Service Section. This section has a personnel of about one hundred and thirty employees. During the first part of the year Professor Doten was stationed at Washington, but more recently the office has been transferred to Philadelphia.

Professor Schell has been spending three or four days each week at the Hog Island Shipyard of the American International Shipbuilding Corporation, where he has been engaged in industrial engineering work. He has also given lectures on plant organization and business management in the war emergency course in Employment Management conducted under the auspices of Harvard University, Boston University, and the Massachusetts Institute of Technology.

Professor Shugrue has been called upon for special work in industrial plants, having served as an employment manager of E. B. Badger & Sons of Boston for about three months. He also lectured at Brown University throughout the year and for a portion of the time at Boston University. Professor Shugrue aided in the report of the Massachusetts Street Railway Investigation Commission, which was made in February, 1918.

Professor Dewey has given lectures on statistics before the Employment Management Courses referred to above.

Professor Armstrong gave lectures on transportation at Boston University during part of the year.

DAVIS R. DEWEY.

DEPARTMENT OF MODERN LANGUAGES

Courses in French, German and Spanish have been offered by the Department of Modern Languages during the past year to classes of average size as heretofore. The interest and accomplishment of the students have kept pace with previous records. Changes have necessarily been introduced in the apportionment of the several languages, but on the whole the number and size of classes have not materially changed. The admission of a class of Freshmen in February extended the work of the Department throughout the summer, three classes in French and three in German being given.

Messrs. Lieder and Cawley again served as Readers, and Professor Vogel as Chief Examiner and Chief Reader in German, and Professor Langley served as Reader in French for the College Entrance Examination Board in New York last June.

Professors Vogel and Langley conducted extra special classes in German and French respectively for those men who were preparing to take Officers' Examinations.

At the beginning of the second term in February, Mr. A. L. McCobb resigned his position as instructor to enlist in the United States Navy. We were fortunate in getting Mr. F. M. Currier to accept the instructorship with us. He finished the term and then resigned to enter the United States service. Mr. Cawley resigned his position to teach elsewhere, and Mr. Lieder's and Mr. Plath's terms have expired. Two new instructors were appointed, Mr. L. J. Cook and Mr. R. M. Baker, who have now both resigned, Mr. Cook going to Camp Devens and Mr. Baker to teach elsewhere. Thus our Department of Modern Languages now consists of only Professors Vogel, Langley and Kurrelmeyer.

FRANK VOGEL,
Professor of German.

DEPARTMENT OF MATHEMATICS

There have been no changes in the personnel of the Department during the past year. Several members of the Department have devoted such time as could be spared from Institute duties to various forms of war work.

The condensation of our program under the new S. A. T. C. curriculum will involve careful study on the part of the Department, and a profitable weighing of relative values.

Professors Woods, Bailey and George have co-operated in the reading of examinations of the College Entrance Examination Board in order to estimate more accurately the expediency of accepting these examinations as a complete substitute for our own.

The statistics for the principal mathematical classes during the past year are as follows:

In the first term:

	Students	*Sections*
Trigonometry, M10	496	24
Analytic Geometry, M11	540	24
Calculus, M21	413	21
Differential Equations, M31	65	4

In the second term:

Trigonometry, M10, for Junior Freshmen	104	5
Analytic Geometry, M11, for Junior Freshmen	114	5
Analytic Geometry and Calculus, M12	538	25
Calculus, M22	353	21

Graduate and Elective Courses given during the year include the following: Mathematical Laboratory (M54), conducted by Professor Lipka; Elements of the Theory of Functions of a Complex Variable (M56), conducted by Professor Moore; and The Electron Theory of Matter (M64), conducted by Professor Phillips.

H. W. TYLER.

SOCIETY OF ARTS

The juvenile lectures which were first given in 1917 have been continued during the past year. Four lectures were given, on the fourth Tuesday of February, March, April and May. Notices were sent to the superintendents of schools and the principals of the high and preparatory schools situated within twenty-five miles of Boston, inviting them to apply for tickets to these lectures for the pupils of their schools. The demand for these tickets was large and for all lectures the requests made by the numerous schools could not be completely filled.

At the first meeting Mr. William Lyman Underwood, of the Department of Biology of the Institute, gave a lecture on "The Mosquito and House-fly, with Suggestions for their Suppression." It was illustrated by lantern slides taken from life by the lecturer. Following the lecture the school children were given an opportunity of examining various exhibits specially arranged for them in the Biological Laboratories.

The second lecture was given by Professor Henry P. Talbot, Head of the Department of Chemistry at the Institute, upon "Chemistry and Some of its Applications." Following a brief statement as to the meaning of the term science, many experiments were shown illustrating this lecture. Representatives of the high and preparatory schools present were invited to inspect the Chemistry Department, where members of the staff were present to show the visitors about this Department.

The third lecture was given by Professor Charles L. Norton, Professor of Industrial Physics at the Massachusetts Institute of Technology, upon "High and Low Temperatures." The experiments in this lecture with liquid air provoked the greatest attention and interest from the audience.

The last lecture of the season was given by Professor Arthur E. Kennelly on "Signalling without Wires." Experiments were shown to illustrate wave motion. Hertzian electromagnetic waves were generated and caused to ring a bell across the lecture table through the use of a coherer. Signals by wireless were shown.

The audience was fascinated by the last experiment, which indicated the nature of amplifiers, or vacuum tube receivers. It was performed with the aid of a microphone and the ticking of a watch was audible throughout the hall.

Letters of appreciation have since been received from various schools.

WALTER HUMPHREYS,
Secretary.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

TREASURER'S REPORT

FOR THE YEAR ENDED JUNE 29, 1918

Treasurer's Report

To the Corporation of
the Massachusetts Institute of Technology:

I have the honor to submit herewith statements showing the financial condition of the Massachusetts Institute of Technology as of June 30, 1918, as well as the financial transactions during the fiscal year ended on that date.

The following gifts and legacies have been received during the year:

Capital Gifts:		
Anonymous Donor, for Chemistry and Physics Departments	$400,000.00	
M. I. T. Alumni for New Buildings and Equipment	56,747.85	
Estate E. K. Turner, for E. K. Turner Fund	17,010.00	
Edmund Hayes, for General Endowment Fund	10,000.00	
Class of 1885, for Flag Pole	4,810.87	
Class of 1892, for Flag Pole	4,810.87	
Charles W. Eaton, for Summer Camp	2,504.36	
T. Coleman duPont, for Aerodynamical Laboratory	5,000.00	
P. S. duPont, for Aerodynamical Laboratory	5,000.00	
Lammot duPont, for Aerodynamical Laboratory	2,500.00	
Anonymous, for New Equipment	1,800.00	
Estate F. W. Emery, for New Equipment	4,626.00	
Estate S. C. Cobb, for S. C. Cobb Fund	4,000.00	
Prosser Company, for Mechanical Engineering Department	200.00	
		$519,009.95
Gifts for Research (Schedule B-1), Minor Fund Earnings:		
American Telephone and Telegraph Company, for Library Fund	$4,303.20	
American Telephone and Telegraph Company, for Research	5,914.16	
J. F. Lord, for Applied Chemistry	450.00	
		10,667.36
Miscellaneous Gifts:		
Mrs. Edward Cunningham, for Tech Bureau	$5,000.00	
Mrs. Edward Cunningham, for Summer Camp	15,054.97	
Prof. F. J. Moore, for Salaries	900.00	
S. P. Williams, for Tech Bureau	100.00	
Estate Frances E. Weston, for Scholarship	400.00	
H. E. Fales, for General Purposes	100.00	
C. H. Blackall, for General Purposes	25.00	
W. W. Duncan, for General Purposes	25.00	
J. G. Gillespie, for General Purposes	25.00	
J. M. Larkin, for General Purposes	25.00	
Winfield L. Shaw, for General Purposes	25.00	
Roger W. Babson, for General Purposes	20.00	
George B. Baker, for General Purposes	20.00	

W. L. Garrison, Jr., for General Purposes	$20.00	
Pliny Jewell, for General Purposes	20.00	
Frank A. Merrill, for General Purposes	20.00	
Montgomery Rollins, for General Purposes	20.00	
G. E. Farrington, for Economics Department	20.00	
S. B. Pearmain, for Economics Department	20.00	
Everett P. Turner, for Economics Department	20.00	
		$21,859.97
		$551,537.28

Also acknowledgment is made of the gift of Mrs. Edward Cunningham of land and buildings in Westwood which were subsequently sold and the proceeds applied to current war purposes by the Institute.

Of the above total $551,537.28, the sum of $27,027.33 was given for current expenses or research, and has been carried into the income for the year.

Respectfully submitted,

FRANCIS R. HART,
Treasurer.

November 1, 1918.

SCHEDULE A

FINANCIAL RESULT OF THE YEAR ENDED JUNE 29, 1918, COMPARED WITH THE PREVIOUS YEAR.

	1917-1918	*1916-1917*
Current Income, Schedule **B-1**	$1,484,181.98	$1,074,659.69
Current Outgo, Schedule **C-1**	1,382,350.60	1,052,985.76
Excess of Income	$101,831.38	$21,673.93
Income transferred to Funds — net	72,012.28	14,816.71
Net current income	$29,819.10	$6,859.22
LOSSES AND GAINS DURING YEAR		
Gifts for general purposes, Schedule **A**	$10,345.00	$390.00
Gains and credits, Schedule **S**	21,320.78	18,845.04
	$61,484.88	$26,092.26
Losses and charges, Schedule **S**	191,715.77	144,587.66
Decrease of Current Surplus	$130,230.89	$118,495.40

SCHEDULE B-1

INCOME

	Regular Courses	*Research and Funds*	*Total*
INCOME FROM STUDENTS:			
Tuition fees	$382,156.58		
Entrance examination fees forfeited	1,440.00		
Locker fees	1,612.00		
Supplies, chemicals, laboratory materials, etc.	23,253.91		
Sale of lecture notes, etc.	1,209.54		
Registration fees	70.00		
Dormitory rentals (Schedule C-7)	28,232.29		
	$437,974.32		$437,974.32
INCOME FROM INVESTMENTS:			
Endowments for general purposes, Schedule P	$263,882.03	$569.04	
Endowments for scholarship purposes, applied	25,642.50		
Endowments for other designated purposes	22,280.25	132,239.33	
	$311,804.78	$132,808.37	
Other income not applied to funds	6,042.71		
	$317,847.49		
Less:			
Accrued interest on purchases, etc.	6,042.71		
Net, Schedule Q	$311,804.78	$132,808.37	444,613.15
GRANTS BY NATION AND STATE:			
Annual Grant from Commonwealth of Massachusetts	$100,000.00		
Federal Aid Income from land grant,			
Act 1862	5,306.68		
Act 1890	16,666.67		
	$121,973.35		121,973.35
GIFTS FOR			
Salaries	900.00		900.00

	Regular courses	*Research and funds*	*Total*
MINOR FUND EARNINGS:			
Total as shown in Schedule R .		$18,237.52	$18,237.52
INCOME FROM OTHER SOURCES:			
Harvard University	$63,629.55		
Interest	10,821.15		
Huntington Hall	3,500.00		
U. S. S. M. & R. Co.	3,250.00		
Walker Building	8,000.00		
Dining Service, Walker Memorial (Schedule C-8) . . .	338,203.28		
Bursar's Fund reimbursements		154.50	
Games, Walker Memorial . .	1,246.04		
Summer Camp, 1917 (including Gifts)	31,679.12		
	$460,329.14	$154.50	460,483.64
Total income, Schedule A . .	$1,332,981.59	$151,200.39	$1,484,181.98
GIFTS FOR			
General Purposes, Schedule A	$10,345.00		

SCHEDULE C-1

OUTGO

		Regular courses	*Research and funds*	*Total*
SALARIES OF TEACHERS:				
Professors		$154,019.80	$1,000.06	
Associate Professors		60,636.68	75.00	
Assistant Professors		68,494.19	3,000.00	
Instructors		79,254.29	3,187.50	
Lecturers		5,565.00	....	
Assistants		29,191.07	7,882.55	
		$397,161.03	$15,145.11	$412,306.14
WAGES ACCESSORY TO TEACHING:				
Stenographers and Assistants		10,331.28	1,124.83	11,456.11
DEPARTMENT SUPPLIES AND REPAIRS: (Schedule C-2):				
Supplies	$59,273.50			
Wages	15,018.94	74,292.44		74,292.44
ADMINISTRATION AND GENERAL EXPENSE:				
Salaries of officers		31,966.62		
Salaries of assistants, stenographers, etc.		31,930.68		
Lecture notes		340.88		
Advertising and printing (Schedule C-3)		13,938.34		
Insurance		4,917.12		
General Expense (Schedule C-4)		42,877.45		
		$125,971.09		125,971.09
OPERATION AND MAINTENANCE OF PLANT:				
Power Plant Operation (Schedule C-5)		111,266.67		
Building service		104,068.82	$2,405.12	
Gas		3,370.58		
Repairs (Schedule C-6) viz.:				
Wages	$6,677.78			
Stock and expense	6,038.58	12,716.36		
		$231,422.43	$2,405.12	233,827.55
EXPENSES OF MINOR FUNDS (excluding salaries):				
Total as shown in Schedule R			10,539.61	10,539.61
AWARDS:				
Edward Austin Fund awards			2,575.00	
Teachers' Fund awards			6,708.30	
Bursar's Fund awards			526.00	
Fellowship awards			1,075.00	
Dormitory awards (Whitney Fund)			652.50	

	Regu'ar courses	*Research and funds*	*Total*
AWARDS—*Continued.*			
Student Tax awards (Whitney Fund)		$1,540.00	
Architectural Prizes		400.00	
		$13,476.80	$13,476.80
PREMIUMS CHARGED OFF:			
General Investments	$6,405.00		
Rogers Memorial Investments	167.00		
Draper Fund Investments	24.00		
Whitney Fund Investments		130.00	
Cilley Fund Investments		10.00	
Pratt Fund Investments		20.00	
EXPENSES:			
Pratt Naval Architectural Fund		34,647.05	
Chemical Engineering Practice Fund		1,143.17	
Alumni New Site Fund		344.72	
Edna Dow Cheney Fund		144.74	
Technology Matrons' Teas Fund		29.00	
Ellen H. Richards Fund		23.91	
Cilley Fund		4.05	
Emma Rogers Fund	305.61		
Dormitories (Schedule **C-7**)	23,496.57		
Summer Camp, 1917	37,916.95		
Dining Service (Schedule **C-8**)	333,447.17		
Harvard University and Tuitions	12,646.22		
APPROPRIATIONS:			
Physico-Chemical Research Fund	4,150.00		
President's Fund	500.00		
Historical Exhibit	186.98		
INTEREST PAID	44,000.18		
SOCIETY OF ARTS. Expenses	738.54		
	$463,984.22	$36,496.64	500,480.86
Total Outgo, Schedule **A**	$1,303,162.49	$79,188.11	$1,382,350.60

SCHEDULE C-2

DETAIL OF DEPARTMENTS

	Expense		*Repairs*			
	Supplies	*Salaries and wages*	*Stock*	*Wages*	*Total*	*Overdraft*
Architecture	$1,776.95		$66.23	$156.82	$2,000.00	$95.93
Biology	2,087.35	$118.84	61.26	82.55	2,350.00	67.07
Chemistry	4,515.92	....	590.04	1,072.44	6,178.40	....
Chemical Supply Room	17,627.03	7,946.84	114.08	197.84	25,885.79	....
Civil and Sanitary Engineering	1,883.22	....	65.08	8.18	1,956.48	....
Drawing	175.57	....	46.66	102.77	325.00	50.25
*Economics	2,427.68	382.32	....	....	2,810.00	20.79
Electrical Engineering	4,310.76	15.34	383.04	290.86	5,000.00	20.28
Electrical Engineering VIA	....	750.00	....	....	750.00	....
English	200.00	....	....	....	200.00	21.98
General Library	2,325.00	....	41.64	99.18	2,465.82	....
Geology	1,220.05	28.28	14.11	98.03	1,360.47	....
Geology — Special	531.19	....	....	....	531.19	....
History	250.00	....	....	....	250.00	2.72
Mathematics	263.13	323.47	....	....	586.60	....
Mechanical Engineering	6,747.51	682.34	542.50	891.42	8,863.77	....
Military Science	1,303.37	374.00	16.56	28.78	1,722.71	....
Mining	2,020.43	6.96	304.01	197.09	2,528.49	....
Modern Language	61.55	375.00	....	....	436.55	....
†Naval Architecture	865.12	961.90	45.56	197.69	2,070.27	260.65
Physical Training Gymnasium	279.68	....	34.48	32.13	346.29	....
Physical Training Athletic Field	807.79	1,856.96	112.95	193.00	2,970.70	....
Physics	3,957.81	....	244.99	470.44	4,673.24	....
Physics — Special	952.76	....	.44	7.39	960.59	....
	$56,589.87	$13,822.25	$2,683.63	$4,126.61	$77,222.36	$539.67
Expense items brought down			56,589.87	13,822.25		
Total stocks and supplies			$59,273.50			
Total salaries and wages				$17,948.86		
Grand total					$77,222.36	
Less Salaries of Teachers (included elsewhere)				2,929.92	2,929.92	
Total, Schedule C-1				$15,018.94	$74,292.44	
Department overdrafts (Schedule D — Current Assets)						$539.67

*Including Engineering Administration.
†Including Aeronautics and Intensive Course in Naval Architectur'

SCHEDULE C-3

DETAIL OF EXPENSE OF PRINTING AND ADVERTISING

For Administration Offices	$5,063.60
Advertising in Technology Publications	820.70
Department of Publicity	1,644.51
"Program," "Catalog" and "President's Report"	4,396.19
Examinations	552.17
Theses, etc.	316.50
Student Records, Directory of Students, etc.	957.92
Miscellaneous	186.75
Total, Schedule C-1	$13,938.34

SCHEDULE C-4

DETAIL OF ITEMS OF GENERAL EXPENSE (Net)

Administration Expense	$4,131.66
Buildings' and Janitors' Supplies	2,811.30
Express, Freight, Telegrams, etc.	581.82
Fees, Dues, Commissions, etc.	15,120.58
Furniture and Office Equipment	1,037.57
General Office Supplies	1,467.95
Graduation Expenses, etc.	1,046.30
Grounds	1,171.72
Ice, Spring Water	710.98
Electric Lamps and Fixtures	2,879.89
Neostyle Service	1,430.29
Postage	1,238.16
Traveling Expenses	1,356.29
Telephone Service	6,075.57
Trucking	1,691.19
Miscellaneous	126.18
Total, Schedule C-1	$42,877.45

SCHEDULE C-5

DETAIL OF POWER PLANT OPERATION

Coal	$98,815.02
Water	3,162.60
Power Plant and Boiler Room Supplies	5,949.27
Repairs and Trucking	1,497.39
Salaries	17,197.60
	$126,621.88
Less Sales of Electricity	15,355.21
Total, Schedule C-1	$111,266.67

SCHEDULE C-6

DETAIL OF PLANT REPAIRS

	Labor	*Stock*
Rogers Building, Boston	$734.98	$276.82
President's House	314.88	185.40
General Educational Building, Group No. 1	603.46	339.40
General Educational Building Group No. 2	505.62	258.01
General Educational Building Group No. 3	772.05	199.68
General Educational Building Group No. 4	586.96	97.75
General Educational Building Group No. 8	325.78	68.97
General Educational Building Group No. 10	723.35	132.60
Gas Engine Laboratory	19.79	
General Furniture Repairs	357.53	104.38
Clocks	37.18	....
Trucks	87.78	6.37
Garage	4.43	5.62
Shop Maintenance	729.04	104.59
Grounds, etc.	432.25	170.27
	$6,235.08	$1,949.86
Undistributed, Labor and Stock	442.70	4,088.72
	$6,677.78	$6,038.58
Total labor, brought down		6,677.78
Total, Schedule **C-1**		$12,716.36

SCHEDULE C-7

DORMITORY ACCOUNT

Income:		
Cash	$29,494.76	
Accounts Receivable	367.50	
	$29,862.26	
Less Rental Refunds	1,629.97	
Total Schedule **B-1**		$28,232.29
Expense:		
Salaries	$6,058.57	
Laundry	1,501.46	
Heat	4,000.00	
Light and Power	1,550.00	
Water	639.10	
Repairs	1,046.20	
Supplies	1,638.59	
Insurance	150.00	
Trucking, etc.	67.25	
Printing	95.40	
Interest on Mortgage Loan (Whitney Fund)	6,750.00	
Total Expense (Schedule **C-1**)		23,496.57
Net Income for year		$4,735.72

SCHEDULE C-8

DINING SERVICE ACCOUNT

Income:		
Cash	$77,896.98	
Coupon Books	268,244.68	
Accounts Receivable — (Schedule **D**)	7,730.00	
	$353,871.66	
Less coupons outstanding	15,668.38	
Net Income (Schedule **B-1**)		$338,203.28
Expenditures:		
Food	$220,447.93	
Cigars and Candy	19,754.03	
Salaries	72,930.90	
Light, Heat, Power, etc.	8,371.00	
Laundry	3,960.08	
Printing and Advertising	1,895.65	
Flowers, Music	654.75	
Ice, Refrigeration, etc.	4,196.74	
Repairs, Telephone, Trucking	5,605.22	
Administration Expense	1,604.97	
Dining-room Equipment	12,993.67	
Kitchen Equipment	8,665.39	
Refund on Coupons	20,019.90	
Interest and Depreciation	7,500.00	
		$388,600.23
Less		
Food and Cigar Inventory (Schedule **D**)	$46,922.27	
Dining-room and Kitchen Equipment (Added to permanent equipment)	8,230.79	55,153.06
Net Expense (Schedule **C-1**)		$333,447.17
Net gain for year		$4,756.11

SCHEDULE D

TREASURER'S BALANCE SHEET

1

INVESTMENT ASSETS

Securities and Real Estate, Schedule H	$9,484,915.13
Cash: In banks for Investment, Schedule E	22,410.66
Cash: Expended in advance (carried down per contra) (Account United States Government Schools)	124,096.32
Total	$9,631,422.11

2

CURRENT ASSETS

Cash available for general purposes, Schedule E			$44,219.90
Accounts Receivable			32,224.47
Student Fees Receivable			1,108.57
Student Deposits Receivable			1,166.23
Unexpired Insurance			13,661.15
Advances — account 1918–19	Department Appropriations Schedule C-2	$539.67	
	Summer Camp	562.06	1,101.73
Purchases — account 1918–1919 — Dining-room			46,922.27
Accounts receivable — Dining-room (Account S. M. A.)			7,730.00
Net expenditures account United States Government Schools			179,634.61
Total			$327,768.93

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EDUCATIONAL PLANT ASSETS

Lands, Buildings and Equipment. Book Values

Total book value at beginning of year (net)	$9,958,667.98
Additions during year	449,743.60
Total Book Value at end of year, Schedule J	$10,408,411.58

M. I. T. ALUMNI FUND. ASSETS

Appropriated for Equipment of New Buildings, Walker Memorial and Dormitories	$540,000.00
Appropriated for 1916 Reunion	19,672.06
Balance, Cash in bank (Schedule E)	9,129.48
Total	$568,801.54

SCHEDULE D

JUNE 29, 1918

1

ENDOWMENT AND OTHER FUNDS

Funds, Schedule Q recapitulation	$9,616,402.42
Minor Funds, Schedule R	15,019.69
Total Funds	$9,631,422.11

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CURRENT LIABILITIES

Borrowed from Investment Assets	$124,096.32
Accounts Payable	52,092.02
Tuition in advance, 1918–19	35,186.00
Summer Camp, 1918, Fees and Deposits	510.00
Summer Camp, Outside Students' Fees	50.00
Entrance Examination Fees	2,845.00
Students' Deposits in advance	4,796.00
Dormitories, Income in advance	2,373.50
Students' deposits outstanding	4,344.71
*Student Tax — 1918–19	536.17
Dining-Room — Advance sale of coupons — salaries — 1918–1919	18,005.69
Alumni New Site Fund	729.07
Gifts, anticipated	4,233.00
Total	$249,797.48
Surplus available for current expense, Schedule S	77,971.45
Total	$327,768.93

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EDUCATIONAL PLANT AND CAPITAL ACCOUNTS

Endowment for Educational Plant, Schedule K-1	$9,558,411.58
Notes Payable	700,000.00
Mortgage Loan, Dormitories	150,000.00
Total	$10,408,411.58

* $350 Student Tax Funds, invested in Liberty Loan, not included in this amount.

M. I. T. ALUMNI FUND

Balance at beginning of year	$511,667.72
Subscriptions and net income for year	57,133.82
Total	$568,801.54

SCHEDULE E

CASH RECEIPTS AND DISBURSEMENTS

FOR THE YEAR

Total Cash Disbursements (less transfers)	$2,656,979.16
Total Cash Receipts (less transfers)	2,568,945.63
Excess of Disbursements	$88,033.53
Cash balance at beginning of year	163,793.57
Cash balance at end of year	$75,760.04

CASH BALANCE

Cash on deposit at banks:		
For Alumni Fund		$9,129.48
For Investment		22,410.66
For General Purposes	$39,989.97	
Cash at office:		44,219.90
For General Purposes	4,229.93	
Cash balance as above		$75,760.04

SCHEDULE H

SECURITIES: BONDS, STOCKS,

Bonds	*Description of securities*	*Due*	*Balance at beginning of year*
$1,000.00	Adirondack Elec. Power Corp. 5%	1962	$920.00
26,000.00	Am. Dock and Improvement Co. 5%	1921	26,255.00
115,000.00	Am. Tel. & Tel. Co. 4%	1929	114,025.00
5,000.00	Am. Thread Co. 4%	1919	4,931.25
75,000.00	Atch., Topeka & Santa Fe R.R. Co. 4%	1995	72,000.00
75,000.00	Atch., Topeka & Santa Fe R.R. Co. 4½%	1962	73,143.75
1,000.00	Baltimore, City of, 4%	1961	950.00
94,000.00	Baltimore & Ohio R.R. Co. 3½%	1925	86,490.00
1,000.00	Belt R.R. and Stock Yds. Co. 4%	1939	900.00
1,000.00	Beverly, City of, 4%	1919	....
30,000.00	Blackstone Valley Gas & Elec. Co. 4½%	1919	30,000.00
50,000.00	Blackstone Valley Gas & Elec. Co. 5%	1939	50,228.00
10,000.00	Boston & Northern St. Ry. Co. 4%	1954	9,250.00
100,000.00	Brooklyn Rapid Transit Co. 5%	1918	100,000.00
1,000.00	Buffalo, Rochester & Pitts. Ry. Co. 4½%	1921	1,000.00
1,000.00	Business R. E. Trust, Boston, Trustees 4%	1921	950.00
1,000.00	Central Ill. Public Service Co. 5%	1952	880.00
50,000.00	Central Pacific Ry. Co. 4%	1954	40,918.75
1,000.00	Chelsea, City of 4%	1958	....
93,000.00	Chesapeake & Ohio Ry. Co. 5%	1939	100,275.00
25,000.00	Chesapeake & Potomac Tel. Co. 5%	1943	24,500.00
1,000.00	Chicago, Burlington & Quincy R.R. 4%	1927	1,000.00
1,000.00	Chicago, Burlington & Quincy R.R. 3½%	1949	837.50
48,000.00	Chicago, Burlington & Quincy R.R. 4%	1958	47,307.00
9,000.00	Chicago, Ill., City of, 4%	1924	9,070.00
16,000.00	Chicago, Ill., City of, 4%	1930	16,225.00
50,000.00	Chicago City Railway 5%	1927	49,750.00
50,000.00	Chi. Junc. Rys. and Union Stock Yds. 4%	1940	49,250.00
35,000.00	Chi. Junc. Rys. and Union Stock Yds. 5%	1940	34,743.75
1,000.00	Chi. Mil. & Puget Sound Ry. Co. 4%	1949	895.00
25,000.00	Chi. Mil. & St. Paul Ry. Co. 4%	1934	23,406.25
55,000.00	Chi. Mil. & St. Paul Ry. Co. 5%	2014	56,098.00
2,000.00	Chicago & Northwestern Ry. Co. 4%	1926	1,900.00
100,000.00	Chicago & Northwestern Ry. Co. 4%	1987	96,500.00
65,000.00	Chicago Union Station 4½%	1963	65,477.00
1,500.00	Cincinnati, City of, 4½%	1935	1,630.00
50,000.00	Cincinnati, City of, 4¼%	1936	52,960.00
6,500.00	Cincinnati, City of, 4½%	1945	7,254.00
1,000.00	Cincinnati, City of, 4½%	1933	1,029.00
100,000.00	Cleveland Elec. Ill. Co. 5%	1939	102,014.00
25,000.00	Cleveland & Pittsburgh R.R. Co. 4½%	1942	25,714.00
100,000.00	Columbus, Ohio, City of, 4½%	1944	108,894.00
2,000.00	Commonwealth of Massachusetts 3%	1941	....
2,000.00	Commonwealth of Massachusetts 3½%	1930	2,000.00
1,000.00	Concord & Montreal R. R. Co. 4%	1920	940.00
68,000.00	Cons. Gas, Elec. Light & Power 4½%	1935	63,630.00
50,000.00	Consumers Power Co. 5%	1936	50,000.00
51,000.00	Cumberland Tel. & Tel. Co. 5%	1937	50,305.75
17,000.00	Delaware & Hudson Co. 4%	1943	17,250.00
100,000.00	Delaware & Hudson Co. 5%	1935	106,297.00

SCHEDULE H

REAL ESTATE AND MORTGAGES

Purchases and charges during year	*Sales and credits during year*	*Balance at end of year*	*Accrued interest, etc.*	*Income received*
....	....	$920.00	....	$50.00
....	$85.00	26,170.00	....	1,300.00
....	....	114,025.00	....	4,600.00
....	....	4,931.25	....	200.00
....	....	72,000.00	....	3,000.00
....	....	73,143.75	....	3,375.00
....	....	950.00	....	40.00
....	....	86,490.00	....	3,290.00
....	....	900.00	....	40.00
$1,000.00	....	1,000.00	....	40.00
....	....	30,000.00	....	1,350.00
....	11.00	50,217.00	....	2,500.00
....	....	9,250.00	....	400.00
....	....	100,000.00	....	5,000.00
....	....	1,000.00	....	45.00
....	....	950.00	....	40.00
....	....	880.00	....	50.00
....	....	40,918.75	....	2,000.00
1,000.00	....	1,000.00	....	20.00
....	347.00	99,928.00	....	4,650.00
....	....	24,500.00	....	1,250.00
....	....	1,000.00	....	40.00
....	....	837.50	....	35.00
....	....	47,307.00	....	1,920.00
....	12.00	9,058.00	....	360.00
....	18.00	16,207.00	....	640.00
....	....	49,750.00	....	2,500.00
....	....	49,250.00	....	2,000.00
....	....	34,743.75	....	1,750.00
....	....	895.00	....	40.00
....	....	23,406.25	....	1,000.00
....	11.00	56,087.00	....	2,750.00
....	....	1,900.00	....	80.00
....	....	96,500.00	....	4,000.00
....	10.00	65,467.00	....	2,925.00
....	7.00	1,623.00	....	67.50
....	165.00	52,795.00	....	2,125.00
....	28.00	7,226.00	....	292.50
....	2.00	1,027.00	....	45.00
....	96.00	101,918.00	....	5,000.00
....	30.00	25,684.00	....	1,125.00
....	342.00	108,552.00	....	4,500.00
2,000.00	....	2,000.00	....	30.00
....	....	2,000.00	....	70.00
....	....	940.00	....	40.00
....	....	63,630.00	....	3,060.00
....	....	50,000.00	....	2,500.00
....	....	50,305.75	....	2,550.00
....	10.00	17,240.00	....	680.00
....	370.00	105,927.00	....	5,000.00

Schedule H. (*Continued.*)

Bonds, shares	*Description of securities*	*Due*	*Balance at beginning of year*
$25,000.00	Detroit Edison Co. 5%	1933	$25,445.00
50,000.00	Detroit Edison Co. 5%	1940	50,120.00
1,000.00	Dom'n Power & Transmission Co. 5%	1932	910.00
100,000.00	Edison Electric Ill. Co. 5%	1922	101,776.00
17,000.00	Electrical Securities Corp. 5%	1940	16,830.00
1,000.00	Electrical Securities Corp. 5%	1942	990.00
25,000.00	Electrical Securities Corp. 5%	1943	25,000.00
....	Erie R.R. Co. 5%	1917	1,000.00
1,000.00	Fall River, City of, 4%	1921	....
1,000.00	Franklin, Town of, 4%	1921	....
92,000.00	General Electric Co. 5%	1952	95,125.00
47,000.00	Georgia Ry. & Electric Co. 5%	1932	47,994.00
30,000.00	Grand Rapids, City of, 3½%	1928	29,100.00
50,000.00	Great Britain and Ireland 5%	1918	49,625.00
750.00	Greenfield, Town of, 4%	1919	....
750.00	Greenfield, Town of, 4%	1920	....
68,000.00	Illinois Central R.R. Co. 4%	1951	62,817.50
100,000.00	Illinois Central R.R. Co. 4%	1952	90,500.00
2,000.00	Illinois Central R.R. Co. 3½%	1952	1,570.00
1,000.00	Illinois Central R.R. Co. 4%	1955	875.00
25,000.00	Indianapolis Union Ry. Co. 5%	1965	24,906.25
50,000.00	Interboro Rapid Trans. Co. 5%	1966	49,562.50
1,000.00	Iowa Central Railway 5%	1938	1,000.00
50,000.00	Kansas City, Mo., 4½%	1935	54,038.00
7,000.00	Kan. City, Clinton & Spfd. Ry. Co. 5%	1925	6,289.21
50,000.00	Kan. City, Ft. Scott & Mem. R.R. 6%	1928	53,629.00
8,500.00	Kan. City, Mem. & Birming. R.R. 4%	1934	8,287.50
37,000.00	Kan. City, Mem. & Birming. R.R. 5%	1934	34,225.00
50,000.00	Kan. City Terminal 4%	1960	44,187.50
18,000.00	Kentucky Central Ry. Co. 4%	1987	17,910.00
1,000.00	Lackawanna Steel Co. 5%	1923	927.50
3,000.00	Lake Shore & Mich. So. Ry. Co. 4%	1928	3,000.00
85,000.00	Lake Shore & Mich. So. Ry. Co. 4%	1931	84,087.50
100,000.00	Long Island R.R. Co. 4%	1949	96,137.50
50,000.00	Los Angeles, City of, 4½%	1942	53,069.00
25,000.00	Los Angeles, City of, 4½%	1943	26,170.00
5,000.00	Los Angeles, City of, 4½%	1931	5,252.00
75,000.00	Maine Central Ry. Co. 4½%	1935	75,088.00
....	Manchester Trac. Light & Power Co. 5%	1918	24,750.00
1,000.00	Maryland, Dela. & Va. Ry. Co. 5%	1955	800.00
100,000.00	Massachusetts Gas. Cos. 4½%	1931	96,812.50
66,000.00	Milwaukee Gas Light Co. 4%	1927	61,932.50
100,000.00	Milwaukee County 4½%	1927	105,093.00
50,000.00	Minneapolis, City of, 4%	1927	48,175.00
10,000.00	Minneapolis, City of, 4½%	1930	10,391.00
20,000.00	Minneapolis, City of, 4½%	1931	20,827.00
20,000.00	Minneapolis, City of, 4½%	1932	20,870.00
50,000.00	Minneapolis Gen. Elec. Co. 5%	1934	50,475.00
100,000.00	Minn., St. Paul & Sault St. Marie 4%	1938	93,425.00
50,000.00	Montreal, City of, Canada 5%	1936	50,000.00

Schedule H. (*Continued*)

Purchases and charges during year	*Sales and credits during year*	*Balance at end of year*	*Accrued interest, etc.*	*Income received*
....	$15.00	$25,430.00	....	$1,250.00
....	5.00	50,115.00	....	2,500.00
....	....	910.00	....	50.00
....	444.00	101,332.00	....	5,000.00
....	....	16,830.00	....	850.00
....	....	990.00	....	50.00
....	....	25,000.00	....	1,250.00
....	1,000.00	....	....	25.00
$1,000.00	....	1,000.00	....	40.00
1,000.00	....	1,000.00	....	20.00
....	92.00	95,033.00	....	4,600.00
....	71.00	47,923.00	....	2,350.00
....	....	29,100.00	....	1,050.00
....	....	49,625.00	....	2,500.00
750.00	....	750.00	....	15.00
750.00	....	750.00	....	15.00
....	....	62,817.50	....	2,720.00
....	....	90,500.00	....	4,000.00
....	....	1,570.00	....	70.00
....	....	875.00	....	40.00
....	....	24,906.25	....	1,250.00
....	....	49,562.50	....	2,500.00
....	....	1,000.00	....	50.00
....	237.00	53,801.00	....	2,250.00
....	....	6,289.21	....	350.00
....	362.00	53,267.00	....	3,000.00
....	....	8,287.50	....	340.00
....	....	34,225.00	....	1,850.00
....	....	44,187.50	....	2,000.00
....	....	17,910.00	....	720.00
....	....	927.50	....	50.00
....	....	3,000.00	....	120.00
....	....	84,087.50	....	3,400.00
....	....	96,137.50	....	4,000.00
....	128.00	52,941.00	....	2,250.00
....	48.00	26,122.00	....	1,125.00
....	20.00	5,232.00	....	225.00
....	5.00	75,083.00	....	3,375.00
250.00	25,000.00	....	....	1,250.00
....	....	800.00	....	50.00
....	....	96,812.50	....	4,500.00
....	....	61,932.50	....	2,640.00
....	462.00	104,631.00	....	4,500.00
....	....	48,175.00	....	2,000.00
....	32.00	10,359.00	....	450.00
....	63.00	20,764.00	....	900.00
....	62.00	20,808.00	....	900.00
....	30.00	50,445.00	....	2,500.00
....	....	93,425.00	....	4,000.00
....	....	50,000.00	....	2,500.00

Schedule H. (*Continued.*)

Bonds, shares	*Description of securities*	*Due*	*Balance at beginning of year*
$1,000.00	Montreal Tramways Co. 5%	1941	$890.00
1,000.00	National Dock Trust 4½%	1940	925.00
50,000.00	New England Tel. & Tel. Co. 4%	1930	50,259.00
50,000.00	New England Tel. & Tel. Co. 5%	1932	50,929.00
52,000.00	N. Y. C. & H. R.R. Co. 4%	1998	46,046.65
4,000.00	N. Y. C. & H.R. R.R. Co. 3½%	1998	2,905.00
1,000.00	N. Y. C. Lines Equipment 4½%	1919	985.00
36,000.00	N. Y. C. Lines Equipment 5%	1919	34,740.00
2,600.00	N. Y. Central R.R. 6%	1935	2,684.00
40,000.00	New York City 4¼%	1964	78,303.00
100,000.00	N. Y. Connecting R.R. Co. 4½%	1953	98,625.00
31,000.00	N. Y., N. H. & H. R.R. Co. 6%	1948	34,569.00
55,000.00	N. Y. Telephone Co. 4½%	1939	53,130.86
33,000.00	Norfolk, Va., City of, 4%	1954	33,000.00
1,000.00	Northern Me. Seaport R.R. Co. 5%	1935	850.00
159,000.00	Northern Pacific Gt. No. R.R. Co. 4%	1921	155,437.50
75,000.00	Northern Pacific Ry. Co. 4%	1997	67,875.00
50,000.00	Norton Company 5%	1922	50,000.00
1,000.00	Ogdensburg & Lake Champlain Ry. 4%	1948	680.00
25,000.00	Old Colony St. Ry. Co. 4%	1954	22,750.00
50,000.00	Omaha, Neb., City of, 4½%	1934	53,781.00
50,000.00	Omaha, Neb., City of, 4½%	1941	54,553.00
50,000.00	Province of Ontario 5%	1926	50,000.00
84,000.00	Oregon R.R. & Navigation Co. 4%	1946	82,668.25
50,000.00	Oregon Short Line R.R. Co. 4%	1929	48,500.00
14,500.00	Oregon Short Line R.R. Co. 5%	1946	15,331.00
41,000.00	Ottawa, P. Q., City of, 4½%	1930	39,003.30
75,000.00	Pacific Tel. & Tel. Co. 5%	1937	73,915.10
18,000.00	Pennsylvania R.R. Co. 4½%	1960	18,630.00
100,000.00	Pennsylvania R.R. Co. 4½%	1965	101,098.00
117,900.00	Pere Marquette R.R. Co. 5%	1956	104,719.59
50,000.00	Philadelphia, City of, 4%	1947	51,692.00
25,000.00	Portland General Electric Co. 5%	1935	25,463.00
1,000.00	Portland, Ore., City of, 4%	1936	950.00
50,000.00	Portland, Ore., City of, 4½%	1945	50,932.00
50,000.00	Quebec, City of, 5%	1920	49,375.00
1,000.00	Quincy Market Realty Co. 5%	1964	....
25,000.00	Rensselaer & Saratoga R.R. Co. 7%	1921	27,414.00
51,000.00	Rio Grande Western Ry. Co. 4%	1939	49,935.00
1,000.00	Saginaw, Mich., City of, 3½%	1922	946.25
15,000.00	Saginaw, Mich., City of, 4%	1924	15,000.00
40,000.00	Salt Lake City, Utah, 4½%	1934	41,941.00
15,000.00	San Francisco, City of, 5%	1937	16,310.00
10,000.00	San Francisco, City of, 5%	1939	10,926.00
100,000.00	Savannah, Ga., City of, 4½%	1934/40	106,327.00
19,000.00	Seattle Electric Co. 5%	1929	18,430.00
6,000.00	Seattle Electric Co. 5%	1930	6,222.00
1,000.00	Somerset Ry. Co. 4%	1955	850.00
100,000.00	Southern Bell Tel. & Tel. 5%	1941	101,377.00
45,000.00	Southern Calif. Edison Co. 5%	1939	44,550.00

Schedule H. (*Continued.*)

Purchases and charges during year	*Sales and credits during year*	*Balance at end of year*	*Accrued interest, etc.*	*Income received*
....	....	$890.00	....	$50.00
....	....	925.00	....	45.00
....	$21.00	50,238.00	....	2,000.00
....	66.00	50,863.00	....	2,500.00
....	....	46,046.65	....	2,080.00
....	....	2,905.00	....	140.00
....	....	985.00	....	45.00
....	....	34,740.00	....	1,800.00
....	5.00	2,679.00	....	156.00
....	36,612.00	41,691.00	....	2,443.75
....	....	98,625.00	....	4,500.00
....	119.00	34,450.00	....	1,860.00
....	....	53,130.86	....	2,475.00
....	....	33,000.00	....	1,320.00
....	....	850.00	....	50.00
....	....	155,437.50	....	6,360.00
....	....	67,875.00	....	3,000.00
....	....	50,000.00	....	2,500.00
....	....	680.00	....	40.00
....	....	22,750.00	....	1,000.00
....	236.00	53,545.00	....	2,250.00
....	198.00	54,355.00	....	2,250.00
....	....	50,000.00	....	2,500.00
....	....	82,668.25	....	3,360.00
....	....	48,500.00	....	2,000.00
....	30.00	15,301.00	....	725.00
....	....	39,003.30	....	1,845.00
....	....	73,915.10	....	3,750.00
....	15.00	18,615.00	....	810.00
....	23.00	101,075.00	....	4,500.00
....	....	104,719.59	....	5,895.00
....	58.00	51,634.00	....	2,000.00
....	27.00	25,436.00	....	1,250.00
....	....	950.00	....	40.00
....	34.00	50,898.00	....	2,250.00
....	....	49,375.00	....	2,500.00
$1,000.00	....	1,000.00	....	25.00
....	805.00	26,609.00	....	1,750.00
....	....	49,935.00	....	2,040.00
....	....	946.25	....	35.00
....	....	15,000.00	....	600.00
....	121.00	41,820.00	....	1,800.00
....	69.00	16,241.00	....	750.00
....	44.00	10,882.00	....	500.00
....	353.00	105,974.00	....	4,500.00
....	....	18,430.00	....	950.00
....	19.00	6,203.00	....	300.00
....	....	850.00	....	40.00
....	60.00	101,317.00	....	5,000.00
....	....	44,550.00	....	2,250.00

Schedule H. (*Continued.*)

Bonds	*Description of securities*	*Due*	*Balance at beginning of year*
$25,000.00	Southern Ry. Co. 4%	1951	$24,875.00
25,000.00	St. Paul, City of, 4½%	1935	25,392.00
50,000.00	St. Paul, City of, 4¼%	1936	52,309.00
1,000.00	Springfield, Mass., City of, 3½%	1926	....
1,000.00	Toledo, City of, 4½%	1931	1,026.00
1,100.00	Toledo Terminal R.R. Co. 4½%	1957	825.00
5,000.00	Terminal R.R. Assn. of St. Louis 4%	1953	5,000.00
100,000.00	Terminal R.R. Assn. of St. Louis 4½%	1939	100,358.00
25,000.00	Terre Haute Traction & Light Co. 5%	1944	25,000.00
50,000.00	Toronto, City of, 5%	1932	50,000.00
100,000.00	Union Pacific R.R. Co. 4%	1947	101,100.00
....	United Fruit Co. 5%	1918	69,900.00
8,000.00	United Fruit Co. 4½%	1923	7,642.50
2,800.00	United Fruit Co. 4½%	1925	40,625.00
200.00	United States of America 3½%	1947	60,000.00
43,000.00	United States of America 4¼%	1942	....
420,000.00	United States of America 4¼%	1928	....
1,000.00	U. S. Envelope Co. 5%	1924	1,000.00
100,000.00	U. S. Steel Corp'n 5%	1963	108,714.00
1,000.00	Washington Co. R.R. Co. 3½%	1954	750.00
100,000.00	Western Tel. & Tel. Co. 5%	1932	101,644.00
25,000.00	Western Electric Co. 5%	1922	24,875.00
2,000.00	Western Union Telegraph Co. 4½%	1950	1,860.00
....	Westinghouse Elec. & Mfg. Co. 5%	1917	1,000.00
40,000.00	Winnipeg, Man., City of, 5%	1926	39,350.00
50,000.00	Winston-Salem Southbound Ry. 4%	1960	43,875.00
1,000.00	Winthrop, Town of, 4%	1929	....
10 shares	American Mfg. Co. Com.		1,176.00
5 "	American Mfg. Co. Pfd.		470.00
50 "	American Tel. & Tel. Co.		6,113.12
80 "	Amoskeag Mfg. Co. Pfd.		7,890.00
46 "	Amoskeag Mfg. Co. Com.		3,266.00
141 "	Batopilas Mining Co.		141.00
2 "	Bates Mfg. Co.		536.00
6 "	Boston & Lowell R.R. Corp'n		780.00
295 "	Boston & Albany R.R. Co.		60,911.50
18 "	Boston & Maine R.R. Com.		618.00
19 "	Boston & Maine R.R. Pfd.		855.00
10 "	Boston Ground Rent Trust		897.50
68 "	Boston Real Estate Trust		71,661.64
12 "	Boston Wharf Co.		1,323.00
31 "	Boston Woven Hose & Rubber Co. Com.		5,812.50
20 "	Boston Woven Hose & Rubber Co. Pfd.		2,340.00
12 "	Boylston Market Ass'n.		16,800.00
75 "	British Westinghouse Elec. & Mfg. Co. Pfd.		600.00
12 "	Calumet & Hecla Mining Co.		5,911.74
4 "	Cambridge Gas Light Co.		1,020.50
91 "	Central Wharf & Wet Dock Corp'n		18,900.00
93 "	Chi., Milwaukee & St. Paul Ry. Co. Pfd.		7,367.00
33 "	Chi., Milwaukee & St. Paul Ry. Co. Com.		3,168.00

Schedule H. (*Continued.*)

Purchases and charges during year	*Sales and credits during year*	*Balance at end of year*	*Accrued interest, etc.*	*Income received*
....	....	$24,875.00	....	$1,000.00
....	$23.00	25,369.00	....	1,125.00
....	128.00	52,181.00	....	2,125.00
$1,000.00	....	1,000.00	....	17.50
....	2.00	1,024.00	....	45.00
....	....	825.00	....	49.50
....	....	5,000.00	....	200.00
....	17.00	100,341.00	....	4,500.00
....	....	25,000.00	....	1,250.00
....	....	50,000.00	....	2,500.00
....	38.00	101,062.00	....	4,000.00
100.00	70,000.00	....	....	3,500.00
....	....	7,642.50	....	360.00
....	13,720.00	26,905.00	....	2,000.25
....	59,800.00	200.00	....	774.19
43,000.00	....	43,000.00	$172.95	860.00
420,000.00	....	420,000.00	....	....
....	....	1,000.00	....	50.00
....	3,420.00	105,294.00	....	5,150.00
....	....	750.00	....	35.00
....	117.00	101,527.00	....	5,000.00
....	....	24,875.00	....	1,250.00
....	....	1,860.00	....	90.00
....	1,000.00	....	....	25.00
....	....	39,350.00	....	2,000.00
....	....	43,875.00	....	2,000.00
1,000.00	....	1,000.00	....	20.00
....	....	1,176.00	....	140.00
....	....	470.00	....	25.00
....	....	6,113.12	....	400.00
....	....	7,890.00	....	360.00
....	....	3,266.00	....	138.00
....	....	141.00	....	....
....	....	536.00	....	24.00
....	....	780.00	....	48.00
....	....	60,911.50	....	2,581.25
....	....	618.00	....	....
....	....	855.00	....	....
....	....	897.50	....	50.00
....	....	71,661.64	....	3,060.00
....	....	1,323.00	....	30.00
....	....	5,812.50	....	372.00
....	....	2,340.00	....	120.00
....	....	16,800.00	....	840.00
....	....	600.00	....	....
....	....	5,911.74	....	720.00
....	....	1,020.50	....	40.00
....	....	18,900.00	....	728.00
....	....	7,367.00	....	325.50
....	....	3,168.00	....	66.00

Schedule H. (*Continued.*)

Shares	*Description of securities*	*Balance at beginning of year*
29 shares	Chicago & Northwestern Ry. Co. Com.	$3,733.75
6 "	Concord & Montreal R.R.	558.00
40 "	Congress St. Associates	3,880.00
2 "	Co-operative Publishing Co.	2.00
7 "	Copley Sq. Trust Pfd.	686.00
4 "	Cordis Mills	560.00
5 "	Delaware & Hudson Co.	750.00
2 "	Dwight Mfg. Co.	1,600.00
27 "	Essex Co.	3,780.00
152 "	Fitchburg R.R. Co. Pfd.	11,699.00
31 "	Great Falls Mfg. Co.	3,472.00
56 "	Hamilton Woolen Co.	5,390.00
40 "	Hood Rubber Co.	....
18 "	Illinois Central R.R. Co.	1,890.00
50 "	Lancaster Mills	5,519.00
3 "	Lawrence Gas Co.	495.00
1 "	Lowell & Andover R.R.	98.00
101 "	Maine Central R.R. Co.	9,740.00
5 "	Merchants Warehouse Co. Pfd.	475.00
50 "	Nashua Mfg. Co.	32,500.00
3 "	National Grand Bank of Marblehead	324.00
7 "	Newburyport Gas & Elec. Co.	1,155.00
36 "	New Eng. Tel. & Tel. Co.	4,738.77
65 "	N. Y. C. and H. R. R.R. Co.	5,760.63
50 "	N. Y., N. H. & H. R.R. Co.	3,725.00
54 "	Old Colony R.R.	7,290.00
10 "	Pemberton Co.	850.00
8 "	Pemberton Bldg. Trust	360.00
77 "	Pepperell Mfg. Co.	6,845.50
8 "	Pennsylvania R.R. Co.	440.00
11 "	Pere Marquette Ry. Co. Pfd.	440.00
63 "	Plymouth Cordage Co.	11,970.00
50 "	Pray Building Trust	2,500.00
197 "	Pullman Co.	31,520.00
11 "	Rivett Lathe and Grinder Co. Pfd.	....
3 "	Rivett Lathe and Grinder Co. Pfd.	....
50 "	Samson Cordage Co.	5,000.00
6 "	State Street Exchange	390.00
25 "	South Terminal Trust	2,000.00
2 "	Tri-Mountain Trust Co.	180.00
20 "	Union Pacific R.R. Co. Com.	2,635.00
3 "	Union Pacific R.R. Co. Pfd.	243.00
300 "	United Fruit Co.	38,362.50
70 "	Vermont & Massachusetts R.R. Co.	8,680.00
11 "	Washington Water Power Co. of Spokane	924.00
6 "	Western Real Est. Trust	....
188 "	Westinghouse Elec. & Mfg. Co. Com.	9,106.54
100 "	Westinghouse Elec. & Mfg. Co. Pfd.	6,393.10
10 "	York Mfg. Co.	1,000.00

Schedule H. (*Continued.*)

Purchases and charges during year	*Sales and credits during year*	*Balance at end of year*	*Accrued interest, etc.*	*Income received*
....	....	$3,733.75	....	$203.00
....	....	558.00	....	42.00
....	....	3,880.00	....	145.00
....	....	2.00	....	....
....	....	686.00	....	35.00
....	....	560.00	....	32.00
....	....	750.00	....	45.00
....	....	1,600.00	....	120.00
....	....	3,780.00	....	297.00
....	....	11,699.00	....	760.00
....	....	3,472.00	....	372.00
....	....	5,390.00	....	448.00
$4,720.00	....	4,720.00	....	140.00
....	....	1,890.00	....	135.00
....	....	5,519.00	....	500.00
....	....	495.00	....	24.00
....	....	98.00	....	9.00
....	....	9,740.00	....	606.00
....	....	475.00	....	25.00
....	....	32,500.00	....	4,000.00
....	....	324.00	....	21.00
....	....	1,155.00	....	56.00
....	$55.80	4,682.97	....	252.00
....	....	5,760.63	....	325.00
....	....	3,725.00	....	....
....	....	7,290.00	....	378.00
....	....	850.00	....	60.00
....	....	360.00	....	20.00
....	....	6,845.50	....	924.00
....	....	440.00	....	24.00
....	....	440.00	....	....
....	....	11,970.00	....	819.00
....	....	2,500.00	....	50.00
....	....	31,520.00	....	1,576.00
935.00	....	935.00	....	66.00
105.00	....	105.00	....	....
....	....	5,000.00	....	300.00
....	....	390.00	....	21.00
....	....	2,000.00	....	87.50
....	....	180.00	....	9.00
....	....	2,635.00	....	200.00
....	....	243.00	....	12.00
....	....	38,362.50	....	2,400.00
....	....	8,680.00	....	420.00
....	....	924.00	....	44.00
750.00	....	750.00	....	42.00
....	....	9,106.54	....	658.00
....	....	6,393.90	....	350.00
....	....	1,000.00	....	100.00

Schedule H. (*Continued.*)

		Due	Balance at beginning of year
MORTGAGE NOTES:			
	E. V. & C. T. Bigelow 5%		$4,500.00
	W. H. Partridge 5%		7,000.00
	Sam'l Carr et al. Trustees 5% (face 125,000)		75,000.00
	Park Square Real Estate Trust Co. 4%		250,000.00
REAL ESTATE:			
	Avon Street Land and Buildings, Equity		60,732.55
	Newbury Street Land and Buildings, Equity		....
	Franklin Street Land and Buildings, Equity		....
	Pearl Street Land and Buildings Equity		44,764.32
	Portland, So. Portland & Mt. Desert, Maine, ¼ interest		4,625.00
	Westwood, Land and Buildings		....
			$7,439,374.92
INVESTMENTS, W. B. ROGERS MEMORIAL FUND:			
$25,000.00	Atchison, Top. & St. Fe Ry. Co. 4%	1995	$24,470.00
6,000.00	Baltimore & Ohio R.R. Co. 3½%	1925	5,310.00
7,000.00	Chesapeake & Ohio Ry. Co. 5%	1939	7,668.00
1,000.00	Chi., Burl. & Quincy R.R. 4%	1958	1,000.00
40,000.00	Chi. Junc. Rys. & U. Stock Yds. Co. 5%	1940	39,400.00
4,000.00	Cin., Ind., St. Louis & Chi. Ry. 6%	1920	4,000.00
35,000.00	Fort St. Union Depot Co. 4½%	1941	34,825.00
31,000.00	N. Y. C. & H. R. R.R. 4%	1934	30,225.00
1,000.00	Central Lines Equipment 5%	1919	965.00
37,500.00	Pere Marquette Ry. Co. 4%	1956	37,500.00
24,000.00	Rome, Watertown & Ogdensburg R.R. 5%	1922	24,532.00
4,000.00	United Electric Securities Co. 5%	1940	4,032.00
			$213,927.00
INVESTMENTS, EBEN S. DRAPER FUND:			
$20,000.00	Mil. & St. Paul Ry. Co. 5%	2014	$20,388.00
16,000.00	Georgia Ry. & Elec. Co. 5%	1932	16,260.00
24,000.00	Indianapolis Union Ry. Co. 5%	1965	23,880.00
20,000.00	New York Tel. Co. 4½%	1939	19,395.00
20,000.00	Wilmington City Elec. Co. 5%	1951	19,600.00
			$99,523.00
INVESTMENTS, THOMAS WENDELL BAILEY FUND:			
	5 shares Swift & Co.		$457.50
	Miscellaneous Oklahoma Properties		352.00
			$809.50
INVESTMENTS, JOY SCHOLARSHIP FUND:			
	Massachusetts Hospital Life Insurance Co.		$5,000.00
INVESTMENTS, SUSAN H. SWETT SCHOLARSHIP FUND:			
	Massachusetts Hospital Life Insurance Co.		$10,000.00
INVESTMENTS, RICHARD LEE RUSSEL FELLOWSHIP FUND:			
$2,000.00	Fisk Wharf and Warehouse Trust		$1,980.00
INVESTMENTS, JONATHAN WHITNEY FUND:			
$25,000.00	American Thread Co. 4%	1919	$24,656.25
25,000.00	Atchison, Topeka & St. Fe Ry. Co. 4½%	1962	24,381.25
35,000.00	Chicago Union Station 4½%	1963	35,256.00
25,000.00	Detroit Edison Co. 5%	1933	25,445.00
25,000.00	Georgia Ry. & Electric Co. 5%	1932	25,583.00

Schedule H. (*Continued.*)

Purchases and charges during year	*Sales and credits during year*	*Balance at end of year*	*Accrued interest etc.*	*Income received*
....	....	$4,500.00	....	$225.00
....	....	7,000.00	....	350.00
....	....	75,000.00	....	4,500.00
....	....	250,000.00	....	10,000.00
....	....	60,732.55	....	3,954.44
$56,763.29	....	56,763.29	$2,065.37	4,219.40
95,334.05	$48,262.02	47,072.03	2,737.90	1,358.23
....	44,764.32	....	1,066.49	1,691.85
749.00	5,374.00	....	....	....
10,000.00	10,000.00	....	....	139.19
$643,206.34	$325,256.14	$7,757,325.12	$6,042.71	$350,219.55
....	....	$24,470.00	....	$1,000.00
....	....	5,310.00	....	210.00
....	$31.00	7,637.00	....	350.00
....	....	1,000.00	....	40.00
....	....	39,400.00	....	2,000.00
....	....	4,000.00	....	240.00
....	....	34,825.00	....	1,575.00
....	....	30,225.00	....	1,240.00
....	....	965.00	....	50.00
....	....	37,500.00	....	1,500.00
....	134.00	24,398.00	....	1,200.00
....	2.00	4,030.00	....	200.00
....	$167.00	$213,760.00	....	$9,605.00
....	$4.00	$20,384.00	....	$1,000.00
....	20.00	16,240.00	....	800.00
....	....	23,880.00	....	1,200.00
....	....	19,395.00	....	900.00
....	....	19,600.00	....	1,000.00
....	$24.00	$99,499.00	....	$4,900.00
....	$4.75	$452.75	....	$178.92
....	....	352.00	....	....
....	$4.75	$804.75	....	$178.92
....	....	$5,000.00	....	$212.50
....	....	10,000.00	....	425.00
....	....	1,980.00	....	80.00
....	....	24,656.25	....	1,000.00
....	....	24,381.25	....	1,125.00
....	$5.00	35,251.00	....	1,575.00
....	29.00	25,416.00	....	1,250.00
....	41.00	25,542.00	....	1,250.00

Schedule H. (*Continued.*)

		Due	Balance at beginning of year
JONATHAN WHITNEY FUND—*Continued*:			
$25,000.00	Maine Central Ry. Co. 4½%	1935	$25,029.00
25,000.00	New York City 4¼%	1964	26,192.00
25,000.00	New York Telephone Co. 4½%	1939	24,150.39
25,000.00	St. Paul, City of, 4½%	1935	25,391.00
21,000.00	United Electric Securities Co. 5%	1940	21,090.00
	Mortgage Note, M. I. T. Dormitory		150,000.00
			$407,173.89
INVESTMENTS, FRANK HARVEY CILLEY FUND:			
$8,000.00	Electrical Securities Corp. 5%	1940	$7,960.00
10,000.00	New York City 4¼%	1964	....
5,000.00	St. Louis, Iron Mt. & So. R.R. 4%	1933	4,812.50
40 shares	Boston & Albany R.R. Co.		8,000.00
10 "	Boston & Providence R.R. Corp.		2,500.00
30 "	Edison Elec. Illum. Co.		7,959.00
50 "	Fitchburg R.R. Co. Pfd.		5,000.00
75 "	Massachusetts Gas Cos. Pfd.		6,825.00
50 "	N. Y., N. H. & H. R.R.		4,700.00
25 "	Springfield Ry. Cos. Pfd.		2,125.00
50 "	West End Street Ry. Co. Com.		3,600.00
	South American Properties		1.00
	Isabelle Aznive, Mortgage Note		1,600.00
	Jacob Levenson, Mortgage Note		2,400.00
	Bank Interest		....
	Total		$57,482.50
INVESTMENTS, PRATT FUND:			
50 shares	American Linen Co.		$4,000.00
50 "	American Sugar Refining Co. Pfd.		5,900.00
100 "	Beacon Trust Co.		25,000.00
21 "	Border City Mfg. Co.		2,312.77
223 "	Boston Elevated Ry. Co.		16,236.00
45 "	Boston & Albany R.R.		8,010.00
155 "	Cambridge Gas Light Co.		34,875.00
100 "	Copper Range Co.		6,700.00
25 "	Federal Trust Co.		3,450.00
40 "	Fitchburg R.R. Pfd.		3,000.00
25 "	King Phillip Mills		3,500.00
115 "	Lake Copper Co.		1,610.00
78 "	Lincoln Mfg. Co.		7,800.00
50 "	Massachusetts Gas Companies		4,100.00
600 "	Mexican Cons. Mining Co.		600.00
34 "	Old Colony R.R. Co.		4,760.00
86 "	Salem Gas Light Co.		17,200.00
26 "	Tecumseh Mills		3,562.00
200 "	Utah Cons. Mining Co.		2,800.00
25 "	Wamponoag Mills		2,000.00
15 "	West End St. Ry. Co.		1,125.00
100 "	Winona Copper Co.		611.99

Schedule H. (*Continued.*)

Purchases and charges during year	*Sales and credits during year*	*Balance at end of year*	*Accrued interest, etc.*	*Income received*
....	$2.00	$25,027.00	....	$1,125.00
....	26.00	26,166.00	....	1,062.50
....	....	24,150.39	....	1,125.00
....	23.00	25,368.00	....	1,125.00
....	4.00	21,086.00	....	1,050.00
....	....	150,000.00	....	6,750.00
....	$130.00	$407,043.89	....	$18,437.50
....	....	$7,960.00	....	$400.00
$10,450.00	$10.00	10,440.00	....	212.50
....	....	4,812.50	....	200.00
....	....	8,000.00	....	350.00
....	....	2,500.00	....	100.00
....	....	7,959.00	....	360.00
....	....	5,000.00	....	250.00
....	....	6,825.00	....	200.00
....	....	4,700.00	....	....
....	....	2,125.00	....	100.00
....	....	3,600.00	....	175.00
....	....	1.00	....	....
....	....	1,600.00	....	96.00
....	....	2,400.00	....	120.00
....	....	....	....	139.44
$10,450.00	$10.00	$67,922.50	....	$2,702.94
....	....	$4,000.00	....	$500.00
....	....	5,900.00	....	350.00
....	....	25,000.00	....	1,400.00
....	....	2,312.77	....	220.50
$875.00	....	17,111.00	....	357.00
....	....	8,010.00	....	393.75
....	....	34,875.00	....	1,550.00
....	....	6,700.00	....	800.00
....	....	3,450.00	....	175.00
....	....	3,000.00	....	200.00
....	....	3,500.00	....	275.00
....	....	1,610.00	....	....
....	....	7,800.00	....	858.00
....	....	4,100.00	....	300.00
....	....	600.00	....	....
....	....	4,760.00	....	238.00
....	....	17,200.00	....	688.00
....	....	3,562.00	....	286.00
....	....	2,800.00	....	400.00
....	....	2,000.00	....	150.00
....	....	1,125.00	....	....
....	....	611.99	....	....

Schedule H. (*Continued.*)

		Due	*Balance at beginning of year*
PRATT FUND — *Continued*			
$15,000.00	Boston, City of, 4%	1924	$15,000.00
20,000.00	Boston, City of, 4%	1935	20,000.00
15,000.00	Commonwealth of Massachusetts 4%	1919	15,000.00
15,000.00	Commonwealth of Massachusetts 4%	1920	15,000.00
5,000.00	Everett, City of, 4%	1921/25	5,000.00
20,000.00	New York City 4½%	1964	....
10,000.00	Salem, City of, 4%	1921/24	10,000.00
11,000.00	Salem, City of, 4%	1921/24	11,000.00
1,000.00	Winchester, Town of, 4%	1919	1,000.00
3,000.00	Winchester, Town of, 4%	1919/23	3,000.00
2,000.00	Winchester, Town of, 4%	1918/23	3,000.00
	Bank Interest		....
	Deposits in Savings Banks		2,114.27
	Edward W. Fuller, Mortgage Note 4½%		43,000.00
	Eugene F. Sullivan, Mortgage Note 4½%		50,000.00
	Adolph Morse, Mortgage Note 5%		5,000.00
	Catharine R. Walsh, Mortgage Note 5%		15,000.00
	Real Estate, Huntington Ave., Boston		34,100.00
	Real Estate, Huntington Ave., Boston		27,000.00
	Real Estate, Huntington Ave., Boston		26,900.00
	Real Estate, Isabella St., Boston		23,800.00
	Real Estate, Pearl St., Boston		33,800.00
	Real Estate, Leverett St., Boston		8,200.00
	Real Estate, Wareham St., Boston		16,200.00
	Real Estate, Mass. Ave. and Prospect St., Cambridge		176,000.00
	Real Estate, Prospect St. and Austin St., Cambridge		74,100.00
	Real Estate, Massachusetts Ave., Cambridge		17,500.00
	Real Estate, Massachusetts Ave., Cambridge		90,900.00
	Real Estate, Franklin St., Boston		....
			$900,767.03
	Grand Total, Schedule D		$9,136,037.84

Schedule H. (*Continued.*)

Purchases and charges during year	*Sales and credits during year*	*Balance at end of year*	*Accrued interest etc.*	*Income received*
....	....	$15,000.00	....	$600.00
....	....	20,000.00	....	800.00
....	....	15,000.00	....	600.00
....	....	15,000.00	....	600.00
....	....	5,000.00	....	200.00
$20,900.00	$20.00	20,880.00	....	425.00
....	....	10,000.00	....	400.00
....	....	11,000.00	....	440.00
....	....	1,000.00	....	40.00
....	....	3,000.00	....	120.00
....	1,000.00	2,000.00	....	120.00
....	....	....	....	284.52
57.84	....	2,172.11	....	43.42
....	....	43,000.00	....	1,935.00
....	....	50,000.00	....	2,068.06
....	....	5,000.00	....	250.00
....	....	15,000.00	....	750.00
....	....	34,100.00	....	1,704.65
....	....	27,000.00	....	1,847.70
....	....	26,900.00	....	1,751.67
....	23,800.00	....	....	1,234.72
....	33,800.00	....	....	3,666.52
....	8,200.00	....	....	800.04
....	16,200.00	....	....	1,816.16
....	....	176,000.00	....	16,136.86
....	....	74,100.00	....	6,295.71
....	....	17,500.00	....	2,650.00
....	....	90,900.00	....	5,000.00
82,000.00	....	82,000.00	....	2,173.17
$103,832.84	$83,020.00	$921,579.87	....	$63,894.45
$757,489.18	$408,611.89	$9,484,915.13	$6,042.71	$450,655.86

SCHEDULE J

EDUCATIONAL PLANT

Land, Buildings and Equipment

Land, Boylston, Clarendon and Newbury Streets, Boston	$1,500,000.00
Rogers Building, Boylston Street, Boston	200,000.00
Walker Building, Boylston Street, Boston	150,000.00
Land and Improvements, New Technology, Cambridge	1,068,494.82
Main Educational Building Group, Cambridge	4,060,299.74
Mechanic Arts Building, Cambridge	82,381.55
Power Plant (inc. Machinery and Equipment), Cambridge	256,512.23
Educational Equipment, Cambridge	1,574,415.60
Steam and Electrical Distribution System, Cambridge	155,164.59
Gas Engine Laboratory, Cambridge	26,301.88
Service Garage, Cambridge	5,981.54
Athletic Field, Cambridge	17,959.21
Summer Camp, East Machias, Maine	36,081.81
Walker Memorial Building, Cambridge	563,085.19
Walker Memorial Building, Equipment	132,353.80
Dormitories, Cambridge	331,140.49
Dormitories, Equipment	20,435.57
Miscellaneous	227,803.56
Total, June 29, 1918 (Schedule D)	$10,408,411.58

SCHEDULE K-1

PRINCIPAL GIFTS AND APPROPRIATIONS FOR EDUCATIONAL PLANT

Anonymous Donation for New Buildings	$3,500,000.00
Anonymous Donation for Dormitories	100,000.00
T. C. duPont, Donation for Land	500,000.00
T. C. duPont, Donation for Dormitories	100,000.00
T. C. and P. S. duPont, Chas. Hayden, for Mining Building	215,000.00
Alumni Fund, Equipment, Dormitories and Walker Memorial	540,000.00
Walker Memorial Fund, for Walker Memorial	164,409.53
Improvement Fund, for Walker Memorial	24,491.04
Appropriation from Emma Rogers' Fund for Dormitories	150,000.00
Estate of F. W. Emery, for New Equipment	125,186.80
Land in Boston, Grant of Commonwealth	1,500,000.00
Sale of Land and Buildings in Boston	656,919.45
Equipment from Buildings in Boston (estimated)	500,000.00
Other Funds, Donations, etc.	1,482,404.76
Total, June 29, 1918 (Schedule D)	$9,558,411.58

SCHEDULE P

ENDOWMENT FUNDS FOR GENERAL PURPOSES

Increases and Decreases of Funds for General Purposes

Invested funds Restricted	*Funds June 30, 1917*	*Investment income*	*Other increases or decreases of funds*	*Expenditure*	*Funds June 29, 1918*
Anonymous Endowment Fund.	$2,500,000.00	$118,550.00	....	$118,550.00	$2,500,000.00
General Endowment Fund . .	1,517,549.00	72,315.50	$10,000.00	72,315.50	1,527,549.00
George Robert Armstrong . .	5,000.00	237.10	....	237.10	5,000.00
Charles Choate	33,932.63	1,612.28	....	1,612.28	33,932.63
Eben S. Draper	100,000.00	4,900.00	....	4,900.00	100,000.00
Martha Ann Edwards	30,000.00	1,422.60	....	1,422.60	30,000.00
William Endicott	25,000.00	1,185.50	....	1,185.50	25,000.00
Jonathan French	25,212.48	1,185.50	....	1,185.50	25,212.48
James Fund	163,654.21	7,776.88	....	7,776.88	163,654.21
Katharine B. Lowell	5,000.00	237.10	....	237.10	5,000.00
Richard Perkins	50,000.00	2,371.00	....	2,371.00	50,000.00
John W. and Belinda L. Randall	83,452.36	3,935.86	....	3,935.86	83,452.36
William B. Rogers	250,225.00	9,605.00	....	9,605.00	250,225.00
Saltonstall Fund	47,766.20	2,276.16	....	1,707.12	*48,335.24
Samuel E. Sawyer	4,764.40	222.87	....	222.87	4,764.40
William J. Walker	23,663.59	1,138.08	....	1,138.08	23,663.59
Albion K. P. Welch	5,000.00	237.10	....	237.10	5,000.00
Unrestricted					
Sidney Bartlett	10,000.00	474.20	....	474.20	10,000.00
Stanton Blake	5,000.00	237.10	....	237.10	5,000.00
Helen Collamore	12,483.97	569.04	....	569.04	12,483.97
George B. Dorr	49,573.47	2,371.00	....	2,371.00	49,573.47
Caroline L. W. French . . .	100,843.34	4,789.42	....	4,789.42	100,843.34
Arthur T. Lyman	5,000.00	237.10	....	237.10	5,000.00
James McGregor	2,500.00	118.55	....	118.55	2,500.00
Nathaniel C. Nash	10,000.00	474.20	....	474.20	10,000.00
Frances M. Perkins	16,525.00	806.14	....	806.14	16,525.00
Emma Rogers	378,077.06	17,924.76	....	17,924.76	378,077.06
Robert E. Rogers	7,680.77	365.13	....	365.13	7,680.77
Seth K. Sweetser	25,061.62	1,185.50	....	1,185.50	25,061.62
Nathaniel Thayer	25,000.00	1,185.50	....	1,185.50	25,000.00
Lucius Tuttle	50,000.00	2,371.00	....	2,371.00	50,000.00
Charles G. Weld	15,000.00	711.30	....	711.30	15,000.00
Alexander S. Wheeler	30,000.00	1,422.60	....	1,422.60	30,000.00
	$5,612,965.10	$264,451.07	$10,000.00	$263,882.03	$5,623,534.14

*One-fourth income added to fund.

SCHEDULE Q

ENDOWMENT FUNDS FOR DESIGNED PURPOSES

Increases and Decreases of Funds for Designated Purposes

Invested funds	*Funds June 30, 1917*	*Investment income*	*Other increases or decreases of funds*	*Expenditures*	*Funds June 29, 1918*
FUNDS FOR SALARIES:					
Samuel C. Cobb For General Salaries . .	$30,000.00	$1,564.86	$4,000.00	$1,564.86	$34,000.00
Sarah H. Forbes For General Salaries . .	500.00	23.71	....	23.71	500.00
George A. Gardner For General Salaries . .	20,000.00	948.40	....	948.40	20,000.00
James Hayward Professorship of Engineering	18,800.00	891.50	....	891.50	18,800.00
William P. Mason Professorship of Geology.	18,800.00	891.50	....	891.50	18,800.00
Henry B. Rogers For General Salaries . .	25,000.00	1,185.50	....	1,185.50	25,000.00
Nathaniel Thayer . . . . Professorship of Physics.	25,000.00	1,185.50	....	1,185.50	25,000.00
Totals	$138,100.00	$6,690.97	$4,000.00	$6,690.97	$142,100.00
FUNDS FOR LIBRARY, READING ROOMS AND GYMNASIUM					
Cilley Fund	$67,995.39	$2,702.94	....	$14.05	$70,684.28
Charles Lewis Flint Library	5,000.00	237.10	....	237.10	5,000.00
William Hall Kerr Library.	2,107.25	94.84	....	80.00	2,122.09
Arthur Rotch Architectural Library	5,000.00	237.10	....	237.10	5,000.00
John Hume Tod Fund . .	2,852.49	118.55	....	143.30	2,827.74
Technology Matrons' Tea Fund	2,029.00	94.84	....	29.00	2,094.84
Edna Dow Cheney for Margaret Cheney Reading Room	14,785.89	663.88	....	856.47	14,593.30
Totals	$99,770.02	$4,149.25	....	$1,597.02	$102,322.25
FUNDS FOR DEPARTMENTS:					
Anonymous — For Chemistry and Physics	....	$3,082.30	$400,000.00	$3,082.30	$400,000.00
Frank W. Boles Memorial .	$16,043.23	711.30	....	325.63	16,428.90
Samuel Cabot (Industrial Chemistry)	59,615.19	2,371.00	....	....	61,986.19
Wm. E. Chamberlain Fund	3,000.00	142.26	....	142.26	3,000.00
Chemical Engineering Fund	285,683.03	13,277.60	672.86	6,830.73	292,802.76
Susan E. Dorr Fund . . .	95,955.67	4,552.32	....	4,552.32	95,955.67
George H. May Chem.Dept.	5,000.00	237.10	....	237.10	5,000.00
Pratt Naval Arch. Fund .	912,735.12	63,894.45	91.27	34,667.05	942,053.79
Arthur Rotch Architectural Fund	25,000.00	1,185.50	....	1,185.50	25,000.00
Edmund K. Turner Fund	188,282.19	9,484.00	17,010.00	7,613.00	*207,163.19
Totals	$1,591,314.43	$98,937.83	$417,774.13	$58,635.89	$2,049,390.50

*One-fourth net income added to fund.

Schedule Q. (*Continued.*)

Invested funds	*Other Funds June 30, 1917*	*Investment income*	*Other increases or decreases of funds*	*Expenditures*	*Funds June 29, 1918*
FUNDS FOR RESEARCH:					
Ellen H. Richards Research Fund	$15,803.02	$711.30	....	$623.91	$15,890.41
Charlotte B. Richardson (Industrial Chemistry)	37,378.78	1,422.60	....	1,422.60	37,378.78
Whitney Fund	40,099.68	1,896.80	....	1,117.86	40,878.62
Totals	$93,281.48	$4,030.70	....	$3,164.37	$94,147.81
FUNDS FOR FELLOWSHIPS:					
Collamore Fund	$10,522.50	$474.20	....	....	$10,996.70
Dalton Graduate Chemical	5,539.74	237.10	....	....	5,776.84
Moore Fund	5,481.02	237.10	....	....	5,718.12
Willard B. Perkins	8,135.07	284.52	....	....	8,419.59
Clifford Richardson	171.91	....	....	....	171.91
Richard L. Russel	2,346.57	80.00	....	....	2,426.57
Henry Saltonstall	10,815.73	474.20	....	$450.00	10,839.93
James Savage	14,358.34	474.20	....	450.00	14,382.54
Susan H. Swett	10,670.45	425.00	....	175.00	10,920.45
Totals	$68,041.33	$2,686.32	....	$1,075.00	$69,652.65
FUNDS FOR SCHOLARSHIPS:					
Anonymous	$300.00	....	....	$300.00	....
Elisha Atkins	5,350.37	$237.10	....	220.00	$5,367.47
Billings Student Fund	52,453.70	2,371.00	....	2,200.00	52,624.70
Jonathan Bourne	10,502.21	474.20	....	450.00	10,526.41
Lucius Clapp	5,262.20	237.10	....	220.00	5,279.30
Lucretia Crocker	52,536.81	2,465.84	....	....	55,002.65
Isaac W. Danforth	5,416.63	237.10	....	220.00	5,433.73
Ann White Dickinson	42,568.04	1,991.64	....	1,800.00	42,759.68
Farnsworth Fund	5,400.37	237.10	....	220.00	5,417.47
Charles Lewis Flint	5,467.88	237.10	....	220.00	5,484.98
Sarah S. Forbes	3,565.56	142.26	....	130.00	3,577.82
George Hollingsworth	5,247.65	237.10	....	200.00	5,284.75
T. Sterry Hunt	3,244.22	142.26	....	130.00	3,256.48
William F. Huntington	5,425.47	237.10	....	220.00	5,442.57
Joy Scholarships	10,000.00	449.60	....	449.60	10,000.00
Income Joy Scholarships	3,990.74	....	$449.60	420.00	4,020.34
William Litchfield	5,441.37	237.10	....	220.00	5,458.47
Elisha T. Loring	5,451.16	237.10	....	220.00	5,468.26
George H. May	4,854.57	237.10	....	220.00	4,871.67
James H. Mirrlees	3,015.60	142.26	....	110.00	3,047.86
Nichols Fund	5,400.37	237.10	....	220.00	5,417.47
Charles C. Nichols	5,441.66	237.10	....	220.00	5,458.76
John Felt Osgood	5,391.37	237.10	....	220.00	5,408.47
Richard Perkins	56,288.97	2,608.10	....	2,300.00	56,597.07
Edward D. Peters	....	....	250.00	....	250.00
Thomas Sherwin	5,450.37	237.10	....	220.00	5,467.47
Susan Upham	1,061.75	47.42	....	40.00	1,069.17
Ann White Vose	65,531.25	3,082.30	....	2,700.00	65,913.55
Louis Weissbein	4,180.88	189.68	....	180.00	4,190.56
Frances Erving Weston	950.00	....	200.00	40.00	1,110.00
Samuel Martin Weston	200.00	....	200.00	200.00	200.00
Totals	$385,391.17	$17,425.96	$1,099.60	$14,509.60	$389,407.13

Schedule Q. (*Continued.*)

Invested funds	*Funds June 30, 1917*	*Investment income*	*Other increases or decreases of funds*	*Expenditures*	*Funds June 29, 1918*
FUNDS FOR PRIZES:					
Arthur Rotch Prize Fund in Architecture	$5,370.37	$237.10	....	$200.00	$5,407.47
Arthur Rotch "Special" Prize Fund in Architecture	5,970.37	237.10	....	200.00	6,007.47
Totals	$11,340.74	$474.20	....	$400.00	$11,414.94
FUNDS FOR RELIEF:					
Architectural Society	$1,280.80	$47.42	....	....	$1,328.22
Edward Austin	396,413.75	18,256.70	....	$12,107.50	402,562.95
Thomas Wendall Bailey	2,375.89	178.92	....	....	2,554.81
Levi Boles	10,695.50	474.20	....	....	11,169.70
Bursar's Fund	6,864.42	310.71	$154.50	526.00	6,803.63
Teachers' Fund	122,692.29	4,742.00	....	6,708.30	120,725.99
Jonathan Whitney	501,591.04	18,437.50	....	4,372.50	515,656.04
Morrill Wyman	70,312.26	3,319.40	....	....	73,631.66
Totals	$1,112,225.95	$45,766.85	$154.50	$23,714.30	$1,134,433.00
Funds for General Purposes	$5,612,965.10	$264,451.07	$10,000.00	$263,882.03	$5,623,534.14
Funds for Salaries	138,100.00	6,690.97	4,000.00	6,690.97	142,100.00
Funds for Libraries, Reading Rooms and Gymnasiums	99,770.02	4,149.25	....	1,597.02	102,322.25
Funds for Departments	1,591,314.43	98,937.83	417,774.13	58,635.89	2,049,390.50
Funds for Research	93,281.48	4,030.70	....	3,164.37	94,147.81
Funds for Fellowships	68,041.33	2,686.32	....	1,075.00	69,652.65
Funds for Scholarships	385,391.17	17,425.96	1,099.60	14,509.60	389,407.13
Funds for Prizes	11,340.74	474.20	....	400.00	11,414.94
Funds for Relief	1,112,225.95	45,766.85	154.50	23,714.30	1,134,433.00
Grand Total	$9,112,430.22	$444,613.15	$433,028.23	$373,669.18	$9,616,402.42

SCHEDULE R

INCREASES AND DECREASES OF MINOR FUNDS

MINOR FUNDS:	*Funds June 30, 1917*	*Income*	*Other Increases*	*Expenditures Salaries*	*Expenditures Other*	*Funds June 29, 1918*
American Tel. & Tel. Research Fund	*$126.33	$5,951.61	.....	$4,183.51	$48.04	$1,593.73
American Tel. & Tel. Library Fund	383.78	4,303.20	.....	2,592.42	1,714.81	379.75
Biology Department—Special Equipment Fund	101.67	.....	.....	.....	101.67	.....
Commercial Research Fund	7.52	.....	.....	.....	.....	7.52
Course XV Fund	98.80	.....	.....	.....	.....	98.80
Dormitory Fund	2,746.18	54.92	.....	.....	.....	2,801.10
Electric Railway Traffic Research Fund	2,336.69	.....	.....	.....	591.60	1,745.09
Historical Exhibit	367.02	.....	†$186.98	.....	554.00	.....
Jacques Fund	772.35	15.44	.....	.....	.....	787.79
Letter Box Fund	132.62	2.64	.....	.....	.....	135.26
Macy Research Fund	5.92	2.75	.....	.....	6.30	2.37
Naval Architectural Fund	55.87	.....	.....	.....	55.87	.....
Ozone Fund	14.18	.....	.....	.....	.....	14.18
Physico-Chemical Research Fund	*222.64	.....	†4,150.00	2,273.22	1,782.54	*128.40
President's Fund	513.74	.....	†500.00	.....	.....	1,013.74
Research Laboratory of Applied Chemistry	2,827.96	501.00	§1,200.00	599.90	76.81	3,852.25
Research Laboratory of Organic Chemistry	1,677.77	33.54	.....	.....	.....	1,711.31
Roentgen Ray Experiment Fund	633.88	12.66	.....	.....	.....	646.54
Sanitary Research Fund	2,159.97	6.00	.....	2,025.93	550.06	*410.02
Technology Bureau, Paris	*2,300.00	7,353.76	.....	.....	5,053.76	.....
Traveling Scholarship in Architecture	750.00	.....	.....	.....	.....	750.00
Vehicle Research Fund	22.83	.....	.....	.....	4.15	18.68
	$12,959.78	$18,237.52	$6,036.98	$11,674.98	$10,539.61	$15,019.69

*Overdraft.
†Appropriations from Current Income.
§Appropriation from Richardson Fund.

SCHEDULE S

CURRENT SURPLUS

Balance, July 1, 1917	$208,202.34
Net decrease, Schedule A	130,230.89
Balance, June 29, 1918, Schedule D	$77,971.45

Details of Losses and Gains, etc.

LOSSES AND CHARGES:	
Appropriation for Endowment Educational Plant	$190,546.64
Accounts Receivable — charged off	321.50
Students' Fees Receivable — charged off	300.00
Students' Deposits Receivable — charged off	463.93
Losses on sales of Bonds	83.70
Total, Schedule A	$191,715.77
GAINS AND CREDITS:	
Gains on sales of Bonds	$350.00
Collections a/c 1916–1917	510.82
Students' Deposits a/c 1916–1917	662.45
Summer Camp Fees a/c 1915–1916	150.00
Sales of Material used in New Construction	19,647.51
Total, Schedule A	$21,320.78

84 State Street, Boston, September 27, 1918.

To the Auditing Committee of the
Massachusetts Institute of Technology,
Cambridge, Mass.

Gentlemen:

We hereby certify that we have examined the books and have audited the accounts of the Treasurer and Bursar of the Massachusetts Institute of Technology for the year ended June 30, 1918.

We have established the assets and liabilities of the Institute as set forth on the balance-sheet of the printed report of the Treasurer, including a comparison of the detail list of securities with the certified list furnished by the Old Colony Trust Company, but we have not made a physical inventory of the securities themselves.

The various schedules, A to S inclusive, except the supporting details of Schedule C, have been verified by us as being accurately drawn from the books and truly showing the intent of each schedule.

We have verified the details of the bookkeeping during the year, have examined the vouchers for disbursements and have satisfied ourselves that all receipts of money have been acknowledged on the books and deposited in the bank and that the cash balances shown by the books on June 30, 1918, were actually available and that these balances are correct.

Very respectfully,

HARVEY S. CHASE & Co.,
Certified Public Accountants.