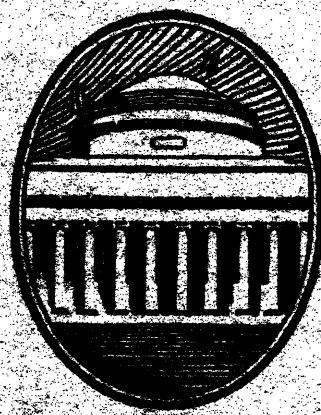
THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PRESIDENT'S REPORT

VOLUME 60 NUMBER 3



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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

REPORTS OF THE PRESIDENT AND TREASURER

FOR THE YEAR ENDING JUNE 30, 1924

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TABLE OF CONTENTS

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REPORT OF THE PRESIDENT

To THE MEMBERS OF THE CORPORATION:

In accordance with the by-laws of the Corporation, I have the honor to submit to you a report upon the work of the Institute during the preceding year, appending, as usual, reports from other administrative officers with reference to the work of their special departments.

THE CORPORATION. The term for which Messrs. Henry A. Morss, J. Franklin McElwain and Merton L. Emerson were elected expired in June. In place of these retiring Term Members, the Corporation elected Messrs. George L. Gilmore, Morris Knowles and Redfield Proctor, upon nomination by the Alumni Association.

Since the last annual meeting, the Corporation has suffered the loss by death of Mr. William L. Putnam, on July 26, 1924. Mr. Putnam was elected a Life Member of the Corporation on March 10, 1897, and from that time until his death he was a member of the Auditing Committee, and of the Visiting Committee of the Department of Mathematics.

The Corporation has been strengthened during the year by the election to Life Membership of Messrs. William H. Bovey, William R. Kales, Joseph W. Powell and Henry A. Morss.

A former Term Member of the Corporation, Mr. Eben S. Stevens, died on June 5, 1924. He was one of the first of the Term Members of the Corporation, having been appointed in 1906 to serve for three years. He was elected a Term Member again in 1912 and served until 1917. He also served as Term Member from 1918 until 1923.

Dr. Ernest Fox Nichols, former President of the Institute, died on April 29, 1924.

THE FACULTY. During the year the Faculty has suffered loss through the death of Professor Heinrich O. Hofman

and of Professor Joseph Lipka. Other losses have been occasioned by the resignations of Professors T. H. Dillon and Albert E. Ferran, and of Assistant Professors F. S. Dellenbaugh, Jr., E. H. Schell, Major P. H. Ottosen, Captain R. T. Pendleton and Captain William B. Wright; and of Nathan Van Patten as Assistant Librarian.

Additions to the Faculty have been made as follows: Jacques Carlu has been appointed Professor of Architectural Design; Arthur W. Hanson has been appointed Assistant Professor of Accounting; Captain Thomas Phillips, Lieutenant M. R. Woodward, Lieutenant G. M. O'Connell, Major S. S. Winslow and Major Lewis E. Goodier have been appointed Assistant Professors of Military Science and Tactics; and William N. Seaver has been appointed Assistant Librarian.

Associate Professors E. P. Warner, W. Felton Brown, M. S. Sherrill and R. S. Williams have been advanced to the grade of Professors.

Assistant Professors J. W. M. Bunker, C. P. Burgess, G. B. Wilkes and M. J. Shugrue have been advanced to the grade of Associate Professors.

The following have been promoted to the grade of Assistant Professors: W. R. Barss, Evers Burtner, H. U. Faulkner, J. L. Gillson, W. Prescott, C. E. Tucker, N. Wiener and H. E. Lobdell.

THE STUDENTS. The reports of the Dean and the Registrar contain, as usual, interesting statements concerning the students — their number, origin, and distribution in the various courses. I am informed that the registration today is 2,904 as compared with a total of 2,919 at this time last year.

LECTURES. In addition to the continuation of the Aldred Lectures mentioned in the last report, technical and scientific men have been secured from abroad and in this country to supplement the work of the Institute's staff. These lectures have in many cases represented the more recent fields of research and development. They have been well attended and in general are fitted into the regular curriculum of the Institute in such a way that credit is secured for them.

EXCHANGE PROFESSORS WITH FRANCE. As was mentioned in my last year's report, the exchange of professors is a question of considerable international importance. Such exchange suitably effected between the institutions of higher learning in different countries is capable of producing educational results of the highest value both directly and indirectly; directly, in bringing special fields of knowledge and eminent teachers to the knowledge of students in other countries, and indirectly, in fostering the exchange of students between this and other countries, together with the friendly international relations thereby promoted.

STUDENT GOVERNMENT. The year has been normal with respect to student activities. The Institute Committee, as the central governing body, has, through its officers and sub-committees, and under the leadership of its Chairman, exercised general supervision of the student organizations bearing the Institute name. The only notable change in the governmental system during the year has been a reorganization of the Dormitory Committee, as a result of which that Committee is made more directly responsible to the Institute Committee, an arrangement which it is hoped will lead to greater stability and efficiency.

COÖPERATION WITH ALUMNI. Among the graduates of the Institute are many men who are prominent in the various branches of engineering and science who are showing great interest in its work. They are serving as members of Advisory Committees, as lecturers, and in a consulting capacity to the various departments. This coöperation is exceedingly important from the point of view of maintaining contact with the various fields of activity for which those now attending the Institute are being fitted.

COURSES OF INSTRUCTION. The heads of departments and other members of the Instructing Staff have coöperated in the revision of existing courses or the establishment of new ones wherever necessary in order to keep the work of the Institute in touch with new development and the best practice in the fields covered. Furthermore, these departments through the research work of the Instructing Staff and graduate students are contributing to the fundamental

knowledge upon which technical instruction and practice must be based.

VISITING COMMITTEES. In each department the Visiting Committee of the Corporation, the Instructing Staff, and technical experts selected from the various professions, are coöperating in a way which is of the greatest benefit to the Institute in the development of its courses of instruction and investigational work.

DIVISION OF INDUSTRIAL COÖPERATION AND RESEARCH. The Division continues to serve as the point of contact between the industries and the members of the Staff, and to assist in bringing about prompt and efficient use of the Institute facilities for the solving of problems essential in scientific and industrial development. Furthermore, in solving these problems the training of men in research methods is quite as important, if not more so, than direct production of useful information.

The practice of the larger industrial companies of sending their representatives to the various educational institutions in search of suitable young men to enter their employ has been constantly increasing, and in such cases, as frequently arise, where numbers of men of different types of training, graduates of different courses, are sought, the Division assists in the selection of the men and in affording the representatives of the industrial companies opportunities to meet various groups of students. In every case the Division has worked in close coöperation with other departments.

SOCIETY OF ARTS. During the past school year four "Popular Science Lectures" were given under the auspices of the Society of Arts for the benefit of the pupils of the secondary schools and of the general public. These lectures as in past years were delivered on Friday and Saturday afternoons for the young people and on the following Sunday afternoons for the public. Interest shown in the lectures continues unabated. The large lecture hall was filled at nearly every lecture and in one case the demand for tickets was such that the hall could have been filled a fourth time. The subjects of the lectures were selected with special reference to the more recent developments in science and their

applications, and the lectures were all illustrated by experiments and were eminently successful in arousing a lively interest.

THE LOWELL INSTITUTE SCHOOL, which is carried on under the auspices of the Institute of Technology, is continuing to fulfill an important need on the part of industry. During the past year (its twenty-first) the school had the largest registration in its history, five hundred fifty-three students. The school is graduating more than one hundred students each year and not a small number of these men become candidates for the degrees of the Institute. In addition to its regular courses, the school maintained advanced courses in Telephone Transmission, Advanced Structural Design and Reinforced Concrete Design.

The men attending these evening classes value highly this opportunity of gaining training in applied science and are deeply grateful not only to the Trustees of the Lowell Institute but to the Massachusetts Institute of Technology.

The more urgent needs of the Institute as to equipment and buildings are as follows:

SUMMER MINING CAMP. The construction program originally planned for the Summer Mining Camp at Dover, New Jersey, was continued, and important additions were made in 1924. These include the administration building and a cubicle providing sleeping quarters for the employees. Plans have been made for 1925 requiring the additional expenditure of about $14,000, and this construction will provide cubicles for dormitories to accommodate twenty-five students and five instructors. The Institute is indebted to Mr. Harry J. Carlson for services as architect.

The prime function of the camp is to provide instruction in surveying, including surface and mine surveying which occupies eight weeks, commencing in the latter part of July and extending to the middle of September. There were sixteen students registered in this course in 1924. Opportunity to provide instruction in mine surveying is made possible by the generous act of the Replogle Steel Company in permitting free access to its mine and plant.

Two shorter courses were given in 1924, one entitled Mining Practice, which included visits to nearby mines. For courtesies and privileges extended in connection with this work the Institute is indebted to The New Jersey Zinc Company and The Thomas Iron Company. The former entertained our party at their zinc mine at Franklin; and the latter at the Richard iron mine at Wharton. Field Geology is the third course given at the camp, and this included an excursion to Scranton, Pennsylvania, where the anthracite coal deposits were studied.

EXPERIMENTAL TANK. In the last annual report attention was called to the urgent need of an experimental tank in connection with the flow of rivers and similar hydraulic work, also a model testing tank in connection with the Pratt School of Naval Architecture. The plans for this equipment have progressed very materially and a preliminary estimate can soon be made as to the cost. By assembling this apparatus under one roof the cost of its installation may be considerably reduced.

POWER PLANT. Owing to the increased demand for electrical power in connection with experimental work, steps must soon be taken to increase the capacity of the existing generating plant or to provide for supplemental power from the public service.

DORMITORIES. The completion of the dormitory provided by the Class of '93 and the conversion of two buildings formerly occupied by fraternities into dormitory space has provided some additional room for the coming year, but the question of sufficient dormitory space is a most serious one. It is hoped that several new dormitory buildings may be provided within the coming year.

GYMNASIUM. The gymnasium facilities are entirely inadequate. It is important that the institution be provided with facilities that will accommodate the whole student body, especially during the winter months. This equipment should include a swimming tank.

LABORATORIES. To provide for graduate work and the coöperation with industries in the solution of problems more space is urgently needed for the Departments of

Physics, Chemistry and Biology. The Electrical Engineering Department is in great need of additional space for electrical communications work and the Mechanical Engineering Department for automotive engineering. By providing an extension to the physics and chemical laboratories a readjustment can be made which will satisfy some of the needs of the other departments mentioned. It is hoped that in the near future additional laboratory space of simple construction can be provided for some of the heavier work in the various departments which should not be in the academic buildings.

S. W. STRATTON.

REPORT OF THE DEAN OF STUDENTS

The Committee on First-Year Instruction has, during the past year, approved a number of changes in the procedure for the consideration of the records of first-year students in the Dean's office which lessen the routine work of the Registrar, and expedite the issuing of information and advice to students and parents. The necessary conferences with these students regarding their records are conducted by the Assistant Dean. The registration officers of the various departments, who are now closely in touch with the students of the higher years, exercise, in effect, the functions of deans of these classes with respect to academic affairs, an arrangement which has proved to be highly efficient and helpful because of their specialized knowledge of the interdependence of the subjects of the professional courses.

The Committee has again approved the application of a mental alertness test to the first-year class, under the immediate direction of Professor C. L. Stone. While the diagnostic value of the results of this test is still in doubt, the data obtained have been of assistance in the private conferences in this office, and will doubtless increase in significance as they become available for all of the classes, thus making possible a more comprehensive study of their relation to actual academic attainment. As yet no wholly satisfactory system for the expression of academic attainment for comparative purposes has been found.

Mr. Harold E. Lobdell, Assistant Dean, has received deserved promotion to the rank of Assistant Professor.

The completion of a new dormitory unit, the gift of the Class of 1893, has added much needed accommodations for eighty students. In addition, two sections of the older dormitory building formerly occupied by fraternities have been made over into student dormitories, affording quarters for forty-seven additional men. The two new sections are designated respectively as Crafts and Ware Halls. In all, three hundred students can now be housed in the dormitory buildings. As predicted in the Report of last year, the system of student control of the dormitories has been revised, the details endorsed by the Institute Committee and issued in printed form to all occupants of the dormitory rooms. The revised system gives promise of success. It is, however, obvious that the effectiveness of student control, and its ultimate fate, must depend

upon the character of the men elected to the responsible offices and the seriousness with which they recognize their responsibilities.

The conditions which confront many students who live in Boston or Cambridge, but do not live at home, do not improve. The Technology Christian Association has, at the request of the Institute authorities, undertaken a room-inspection which has proved helpful, but cannot remedy many of the evils of the situation. An attempt is being made, in which the Institute is participating, to secure concerted action by the educational institutions in and near Boston, in the hope of bringing about some improvement. It is not possible to predict the probable success of this movement. One of the factors which has introduced additional complications is the increasing tendency for groups of students to occupy entire apartments, which lessens the natural restraints which obtain in connection with single rooms in families or boarding houses.

While the attitude of the social fraternities, of which there are thirty-two chapters at the Institute, is, in general, creditable, they should realize more keenly than they do at present their influence and their opportunities with respect to an improvement of the general morale of the student body. The national organizations and the alumni are taking an increased interest in the scholastic standing of the members. The Dean's office has, for the past two years, made and caused to be published twice yearly the comparative standing of the various chapters, with generally helpful results.

The Institute Committee, as the authoritative body in student government, has maintained a high standard and compares very favorably with other similar bodies. The various student activities are in a wholesome condition. The Technology Christian Association has reorganized its staff and, under the continued capable guidance of Mr. Wallace M. Ross, is rendering valuable service to the students. One of its most effective activities is that of the Student Employment Bureau, which has obtained employment which yielded a return of about eleven thousand dollars to two hundred and six men for work done during the academic year, and an additional eleven thousand dollars to one hundred and ten men for work done during vacations.

Since the acquisition of the boat house and the development of the facilities and equipment for rowing there has been a notable

and desirable growth in interest and participation in athletics. The Institute owes an ever increasing debt of gratitude to the Alumni Advisory Council on Athletics, which, under the long-continued leadership of Dr. John A. Rockwell and Dr. Allan W. Rowe, keeps in constant touch with all branches of athletic activity. It is expected that with increased dormitory accommodations a still larger proportion of our students will participate in and benefit from the work upon track and field, and on the various teams. This phase of our student life deserves cordial support in both funds and good will.

During the year friends of the Institute have placed at the disposal of the Dean a fund to be used for small loans to needy students. This has been administered along the same lines as were adopted for a similar fund in the hands of the Bursar, and has been of great service in the solution of a number of perplexing personal problems.

The Student Hospitality Committee, again under the chairmanship of Mrs. Robert P. Bigelow, has coöperated with the student officers in charge of dances and social gatherings in the Walker Memorial with continued success. For several years past they have given a reception and dinner to the foreign students attending the Institute. This is a step in the right direction, but it remains a fact that much less hospitality is extended to students from foreign lands who come to us than is afforded to our students who go abroad for study. There is little doubt that individual members of our student body and of our Instructing Staff, as well as our fraternities, would find both pleasure and profit, and also evidences of hearty appreciation, if they would extend the hospitality of their homes to our students from other lands.

During the academic year 1923–1924 one hundred and sixty-one students have been required to discontinue their work on account of serious defects in scholarship. In addition, nine students were required to withdraw for disciplinary reasons involving academic dishonesty or misconduct. During the same year thirty-six students were placed on probation. Of these, fourteen were placed on probation by the Dean and twenty-two by the Faculty. By vote of the Institute Committee students on probation are debarred from all participation in student activities under the control of that committee, including athletics.

During the academic years 1922–1923 and 1923–1924 (two years are included to present a wider range of experience) ninety-three students who had been required to withdraw from the Institute were readmitted by the Committee on Provisional Students. Of these eight (8.5%) have now graduated; forty-four (46.8%) are still in residence; thirty-six (38.3%) have again been dropped or have withdrawn with poor records; five (4.2%) left for other causes.

H. P. TALBOT.

REPORT OF THE LIBRARIAN

The year 1923–1924 has not been marked by any change of policy or any new construction in the Library. The use of the Library, as indicated by the records of circulation, has been about the same as during the previous year. From the Central Library there were lent for home use 17,738 items, of which 1,234 were unbound periodicals. The circulation of this Library, and of the departmental libraries so far as reported, is shown in the following table:

Circulation 1923–1924

Central Library, Books	16,504	
Unbound Periodicals	1,234	17,738
Architecture, Books		3,470
Photographs		6,828
Economics and Civil Engineering		1,679
Geology		1,202
Mathematics		1,074
Mining and Metallurgy		1,885
Naval Architecture, Books	480	
Periodicals	83	563

The clerical work involved in attending to such a large circulation is considerable. During the year it was necessary to send to students 4,001 notices for books overdue, and to the Instructing Staff 253 notices were sent.

With the increased appreciation of the reference work done in the Central Library has come a very marked increase in the number of inter-library loans. During this year we have borrowed 188 volumes, and in return we have lent 189 volumes to other libraries.

The total attendance in the Central Reading Room in the evening, from October to July, was 7,064. This is a falling off of about 20 per cent from the previous record.

In reply to cards of inquiry as to special interests sent to a selected number of members of the Instructing Staff, lists of subjects were furnished by 60 members. In reply to these and to the previous lists received, 584 items were brought to the attention of those who requested this service. Fifteen bibliographies were prepared by the Reference Assistant, and 96 references were

looked up and photostat copies of the articles furnished. Of these 28 were for persons or corporations outside the Institute.

The Assistant in the Vail Library has continued to do similar work, with special regard to the needs of the Department of Electrical Engineering; especially by means of consultations with members of the staff of that department. In addition to this she has given talks to the students, in three groups; juniors, seniors, and graduate students.

Through the generosity of Mr. George F. Whipple, the Institute has received and installed in the Central Reading Room, a bound set of trade catalogues called "Catalogue Studies," accompanied by a printed index. These together with the trade catalogues, which are kept on file, form a valuable source of information concerning recent machinery and materials.

The growth of the Library has been somewhat greater than the previous year: the total accessions being 8,095 pieces, as against 7,641 last year. After deducting the books lost or worn out, the net increase of the Library consists of 6,138 volumes, 1,581 pamphlets, and 35 maps. These were classified by departments as indicated in the accompanying Table of Net Accessions, No. 1. These accessions have increased the total contents of the Library to 161,747 volumes, and 59,446 pamphlets and maps.

The number of periodical publications received during the year, not counting the newspapers sent to the Walker Memorial, was 1,010, of which 330 were gifts or exchanges. The total cost of the subscriptions, including those which are charged to departmental appropriations, was $3,993.44. The charges for periodicals which are received every year and preserved as permanent sets in the Library made a fixed charge against the appropriation for the Library. In order that these periodicals should be properly preserved, they will have to be bound, and the cost of binding should be added to the fixed charge as one of the overhead expenses. This amounted during the current year to $1,569.86, making the total cost of the periodicals including binding $5,563.30. The manner in which these periodicals are distributed among the various departments is indicated in Table No. 2.

The total number of volumes bound during the year was 2,061, which includes both periodicals and other books. The number of orders issued for the purchase of new books was 1,650.

The total number of cards added to the general catalogue was 14,934; of which 236 were for books added to the Vail Library. At the same time 650 obsolete cards were removed from the catalogue, leaving the total number of cards in the catalogue 198,045.

The expenditures of the Library, other than salaries, were:

For the purchase of books	*$10,605.65
For binding	5,273.92
For periodicals	3,584.60
For equipment	80.00
Departmental expenses	970.93
	$20,515.10

Mr. William N. Seaver has been appointed an Assistant Librarian, in the place of Mr. Van Patten, who resigned a year ago. Mr. Seaver comes to us from the Woburn Public Library, with extensive experience, both there and in the Municipal Reference Library of New York City.

In the division of labor among the library staff, the two Assistant Librarians, Mr. Seaver and Miss Trull, have been assigned jurisdiction over the external and internal relations of the Library respectively.

Gifts

The Institute has been fortunate in receiving an unusual number of valuable gifts, one of the most interesting of these being the gift of 42 volumes from the Chinese Club, including Webster's Collegiate Dictionary translated into Chinese. The Latin American Club also made a valuable contribution comprising 16 volumes.

Through the generosity of the heirs of Louis Derr, late professor of Physics in the Institute, and a member of the Faculty for over twenty years, the Institute has received the choicest part of his private library, consisting of 25 volumes of *Physical Review*, 7 volumes of *Science Abstracts*, 55 volumes — books on physics and

*Of which amount $3,702.90 was for the purchase of books for the Library of the Walker Memorial.

allied subjects, most of which are of special interest as stepping stones in the progress of the science.

Mrs. Francis A. Walker has made a further contribution of books, 83 volumes in all, which formed a part of the library of her late husband, the third President of the Institute.

Miss Martha W. Suter has given a very valuable collection of 47 books and 265 pamphlets from the library of her father, the late General C. R. Suter. These books and pamphlets are on military and engineering subjects, and for the most part were published before the organization of the Institute's Library.

The Right Honorable the Earl of Camperdown has continued his gifts by sending us the current volumes of the publications of the Institution of Civil Engineers, Institution of Naval Architects, and of the Iron and Steel Institute.

Mrs. T. Jefferson Coolidge, Jr., kindly presented the missing plate to complete a valuable book of Fiske Kimball's entitled, "Thomas Jefferson — Architect."

Mr. H. H. Razzack, '23, gave a valuable collection of 13 volumes on various subjects.

American Academy in Rome sent three beautiful volumes of the publications of the Academy.

The Technology Review presented 59 volumes which had come to them in exchange, many of them from alumni, which were added to our Alumni Collection.

Mr. Samuel S. Dale has continued his gifts of important books on the textile industry. This year he has sent to us 71 volumes and a number of pamphlets, and has continued the subscription of two important foreign textile periodicals.

Mrs. Josephine Zahorski gave to the Institute an important collection of 188 volumes of chemical literature.

The following members of the Corporation and the staff contributed books to the Library of the Institute:

Professor Henry Fay, Arthur D. Little, Professor William Emerson, Professor R. R. Lawrence, Manuel M. Green, Dr. Charles E. Ruby, Professor C. E. Turner, Professor W. S. Franklin, Professor W. Lindgren, Professor Tenney L. Davis, Professor H. G. Pearson, Professor George Owen, Charles T. Main, Esq., Capt. Elliott Snow, Professor H. W. Tyler, Harold E. Lobdell, Professor C. F. Park, Professor G. B. Waterhouse.

A notable addition to the equipment of the Central Reading Room is a clock, presented by the Class of 1874 on the occasion of its fiftieth anniversary.

The clock, which was unveiled on June 9, was designed by Samuel J. Brown, '74, and made by Messrs. Irving and Casson, A. H. Davenport and the Howard Clock Company.

This handsome clock has a frame carved from a knot of French walnut, and a face of satin wood inlaid with ebony and coramanda wood.

OTHER GIFTS DESERVING SPECIAL MENTION ARE AS FOLLOWS:

Joseph G. Butler, Jr. — Butler, J. G.: Fifty Years of Iron and Steel.
Atherton Hastings, '23. — Eight months' subscription to *The Freeman*.
Dr. William H. Pickering, '79. — Meteoric Procession of February 9, 1913. Pt. 3 and 4.
Mr. E. Burtner. — Vol. I Lloyds' Register of Shipping 1919–20.
Lloyds' Register of Shipping. — Rules and Regulations for classification of steel vessels.
American Bureau of Shipping — 1923 Record of American and Foreign Shipping.
C. C. Shah. — Three volumes Sanskrit Proverbs, Proverbs of Hindustan, Proverbs of India.
Professor Z. C. Dage. — Dage: Inorganic Chemistry.
Mr. George S. Mumford. — H-Book of Harvard Athletics.
Major Mark L. Ireland. — Ireland: Preliminary Report on the Quartermaster Tractive Resistance of Roads Research.
C. S. Hurter, '97. — Blaster's Handbook.
Yale University Library. — Six volumes Connecticut Society of Civil Engineers' Proceedings.
Professor Charles S. Sargent. — List of Publications of the Descendants of Epes Sargent.
John D. Rockefeller, Jr. — Rockefeller, J. D., Jr.: Personal Relation in Industry.
A. B. Sanger, '18. — Rock Products.
The Hon. Chauncy M. Depew. — Depew, C. M.: Speeches and Addresses on the Threshold of Eighty.
M. I. T. Class of 1927. — Freshman Gray Book.
National Aniline and Chemical Company. — "Dyestuffs" for 1923.
W. T. Sedgwick Memorial Lecture Committee. — Physical Basis of Life. Lecture given by E. B. Wilson, 1922.
James A. Tobey, '15. — Tobey, J. A.: The Quest for Health.
Henry Parker Willis. — Willis, H. P. and Byers, J. R. B.: Portland Cement Prices.
Professor Dr. Ferdinand Schulz. — First and Second Reports of Fuel Technology Institute of Czech Polytechnic High School in Prague.
Cheney Brothers Manufacturers. — The Story of Silk.
Arthur M. Kallett, '24. — Three volumes.
Guy E. Tripp. — Tripp, G. E.: Super Power as an Aid to Progress.
Tech Engineering News. — Bound volumes of *T. E. N.* for 1923.
Mr. Allen Forbes, President State Street Trust. — Two volumes.
Max Ilfeld, '24. — Three volumes.

George J. Fertig. — D'Achalme Les Edifices physico-chemiques. Tome I. (L'Atome.)
P. A. Mosman, '87. — Two volumes American Institute of Mining and Metal lurgical Engineers Transactions.
Boston Society of Civil Engineers. — Sixty-eight volumes.
P. C. Putnam, '23. — Three volumes.
Brown, Boveri & Cie. — Nine volumes Brown Boverie Review.
Professor V. Dogiel. — Ten volumes.
A. A. Johnson, '99. — Atwood & Johnson: Marine Piling Investigations.
Roumanian Educational Bureau. — Twenty-four volumes Roumanian literature.

ROBERT P. BIGELOW.

TABLE NUMBER 1

TABLE OF NET ACCESSIONS, 1923–24

LIBRARIES	Volumes	Pamphlets
Central Library		
General	1,100	1,239
Aeronautical Engineering	34	23
Biology	177	47
Chemistry	329	27
Chemical Engineering	135	—
Civil Engineering	155	3
Economics	126	4
Electrical Engineering	142	23
Vail Library	185	—
English and History	141	—
Geology	35	36
Mathematics	25	1
Mechanical Engineering	250	1
Military Science	4	—
Mining and Metallurgy	7	28
Physics	137	13
Totals — Central Library	2,982	1,445

LIBRARIES	Volumes	Pamphlets	Maps
Departmental Libraries			
Architecture	108	2	—
Civil Engineering	145	6	—
Economics	340	36	24
Geology	167	39	11
Mathematics	34	1	—
Mining and Metallurgy	194	40	—
Modern Language	7	—	—
Naval Architecture	441	9	—
Walker Memorial	1,557	—	—
Others	163	3	—
Totals — Department Libraries	3,156	136	35
Grand Totals	6,138	1,581	35

TABLE NUMBER 2

PERIODICALS RECEIVED DURING THE YEAR 1923–24
CLASSIFIED BY DEPARTMENTS

LIBRARIES	NUMBER RECEIVED			
	Subscriptions	Gifts	Department	Total
General				
Aeronautical Engineering	15	1	—	16
Biology	50	18	—	68
Central	70	132	—	202
Electrical Engineering	32	22	—	54
Vail	—	6	34	40
Mechanical Engineering	36	8	—	44
Military Science	6	—	—	6
Total	209	187	34	430
Departmental Libraries				
Architecture	25	5	—	30
Chem. and Chem. Eng.	75	27	—	102
Civil Engineering	63	30	—	93
Economics	70	42	5	117
English and History	29	—	—	29
Geology	22	3	—	25
Mathematics	14	10	—	24
Margaret Cheney Room	7	1	—	8
Mining	42	17	—	59
Modern Languagues	8	2	—	10
Naval Architecture	16	—	—	16
Physics	38	6	—	44
Total	409	143	5	557
Other Departments				
Bursar's Office	—	—	1	1
Registrar's Office	—	—	3	3
Superintendent of Buildings	—	—	1	1
Walker Memorial	—	—	18	18
Total	—	—	23	23
Grand Totals	618	330	62	1,010

DIVISION OF INDUSTRIAL COÖPERATION AND RESEARCH

The work of the division has been carried on as in earlier years. The number of personnel and technical inquiries handled through the Division is about the same as last year and a few new contracts have been written. It cannot be stated at this time just how large a percentage of the original contracts which terminate on January 1, 1925, will be renewed. We have positive assurance of renewal from a considerable number and it seems probable at this time that a large proportion of the contracts will be renewed. There appears to be need of greater definiteness in the clause in the contract which outlines the services which are to be rendered without charge by members of the staff. As in earlier years, the material for the so called "Who's Who" has been obtained by circularizing the alumni, thus giving us information as to men immediately available for service with the contracting companies.

A considerable number of men have been supplied to contractors during the year. The custom of the larger contractors, of sending their personnel managers to us at regular intervals is increasing, and with the coöperation of the heads of departments many of the younger alumni are thus finding satisfactory positions. Considerable contact has been had during the year with companies who are not yet contractors. It is believed that this work, while not exactly within the scope of the original plan of the Division, is helpful in extending the range of the Institute's industrial influence.

The services rendered to some of the contracting companies who have brought us serious research problems have progressed in a very satisfactory manner. The process of setting up their own laboratories is going on and members of our staff are being called on to plan them and supervise their operation.

An unusually large number of personal visits have been made by the Director and his associates, Doctor Millard and Professor Hayward. No great increase in the amount of work coming to us appears to be probable in the light of the information received

during these visits. Much the same reaction was noted as in earlier years. Many of the contracting companies continue to view their relations with us in the light of a sort of industrial insurance but do not call upon us in connection with the routine production or development work. The reasons most commonly given for handling problems themselves rather than sending them to us are the possible greater cost; the greater effectiveness of work done by men employed steadily at one task, without interruptions such as those caused by teaching duties; the greater security of inventions or secret processes when developed in their own laboratories, and the difficulty of preventing knowledge and examination of their work by their competitors. This last objection appears to be very serious in the minds of many contractors. We are already finding ourselves embarrassed because we cannot undertake work brought to us for the reason that the member of the staff who is best fitted to carry on the work is already engaged upon similar investigations for a competitor.

It is to be regretted that we are permitted to say very little about the nature and scope of the development work done by our staff through the Division, but the contracting companies will undoubtedly allow the publication of much of the material at a later date. It may be said, however, that the contractors for whom we are undertaking the greatest number of researches and investigations are most outspoken in commendation of the effectiveness of the work done.

Assistance has been given to the research work in the Departments of Mathematics, Biology, Chemistry and Physics from the Tech Plan Research Fund set aside in 1921 for that purpose.

C. L. NORTON, *Director.*

REPORT OF THE REGISTRAR

The plan mentioned in the last report of having registration officers act as academic advisors to students has continued to prove satisfactory and appears to be permanently established. This personal contact has not only been beneficial to the students but has also assisted the Faculty in obtaining definite information about the academic standing of each student.

The registration decrease this year was 7.3% while the decrease last year was 9.3%. From the maximum registration in 1921, there has been a total decrease of 556 or 15.9%. A large part of this falling off in registration has been due to graduating the large classes which entered after the war, and to the decrease of foreign students and transfer students from other colleges.

The usual tables of statistics follow. All figures are as of November 1, 1923.

J. C. MacKinnon.

TABLE NUMBER 1

The Corps of Instructors

November 1	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23
Professors: Emeriti	1	1	1	1	1	3	3	3	4	4	4	5	5	5	6	5	8	8
Retired	—	1	1	1	1	3	3	3	4	5	7	7	6	6	6	7	6	5
Non-Resident	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	3
Research (Not counted elsewhere)	—	—	—	—	—	4	3	1	1	—	—	—	—	—	—	—	—	—
Total	4	5	5	5	5	13	12	10	12	12	13	14	13	13	14	14	16	16
Professors	36	39	39	43	43	40	47	46	59	63	61	59	58	52	56	56	56	61
Associate Professors	17	17	17	14	18	17	16	23	23	23	30	32	29	33	34	35	40	43
Assistant Professors	21	24	32	31	30	33	35	33	36	31	36	38	33	39	49	54	48	46
Instructors (Members of Faculty)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25	30	25
Active Faculty	74	80	88	88	91	90	98	102	118	117	127	129	120	124	139	170	174	175
Instructors (Not members of Faculty)	69	72	62	69	66	64	67	74	70	79	90	70	67	99	109	84	80	92
Assistants	52	52	50	51	55	50	49	54	52	58	54	38	35	39	79	93	87	60
Faculty Instructors and Assistants	215	204	200	208	212	204	214	230	240	254	271	237	222	262	327	347	341	327
Research Associates	8	8	6	12	8	5	3	1	3	3	5	4	1	8	19	19	19	25
Research Assistants	3	3	1	1	5	6	7	8	15	11	14	7	5	10	15	13	16	17
Lecturers	31	32	31	18	21	25	16	19	23	28	31	29	13	13	14	15	15	6
Total Active Members	257	247	238	239	246	240	240	258	281	296	321	277	241	293	375	394	391	375

TABLE NUMBER 2

Yearly Registration Since the Foundation of the Institute

Year	Number of Students	Year	Number of Students	Year	Number of Students
1865–66	72	1885–86	609	1905–06	1,466
1886–67	137	1886–87	637	1906–07	1,397
1867–68	167	1887–88	720	1907–08	1,415
1868–69	172	1888–89	827	1908–09	1,462
1869–70	206	1889–90	909	1909–10	1,481
1870–71	224	1890–91	937	1910–11	1,509
1871–72	261	1891–92	1,011	1911–12	1,566
1872–73	348	1892–93	1,060	1912–13	1,611
1873–74	276	1893–94	1,157	1913–14	1,685
1874–75	248	1894–95	1,183	1914–15	1,816
1875–76	255	1895–96	1,187	1915–16	1,900
1876–77	215	1896–97	1,198	1916–17	1,957
1877–78	194	1897–98	1,198	1917–18	1,689
1878–79	188	1898–99	1,171	1918–19	1,819
1879–80	203	1899–00	1,178	1919–20	3,078
1880–81	253	1900–01	1,277	1920–21	3,436
1881–82	302	1901–02	1,415	1921–22	3,505
1882–83	368	1902–03	1,608	1922–23	3,180
1883–84	443	1903–04	1,528	1923–24	2,949
1884–85	579	1904–05	1,561		

TABLE NUMBER 3

THE STUDENTS, 1923–1924

Registration by Classes	Total
Graduate year	280
Fourth year	697
Third year	669
Second year	726
First year	559
Special	18
Total	2,949

TABLE NUMBER 4

CLASSIFICATION OF STUDENTS BY YEARS AND COURSES FOR THE YEAR 1923–24

	YEAR						
	Graduate	Fourth	Third	Second	First	Special	Total
Civil Engineering	10	72	76	83	85	—	326
Mechanical Engineering	16	127	111	114	67	—	435
Mining Engineering and Metallurgy	6	28	22	19	10	—	85
Architecture	7	30	40	53	25	—	155
Chemistry	57	14	24	21	14	—	130
Electrical Engineering	21	88	84	94	130	—	417
Electrical Engineering VI-A	28	32	49	58	43	—	210
Biology and Public Health	3	20	6	3	2	—	34
Physics	10	4	4	1	8	—	22
General Science	—	6	2	1	4	—	13
General Engineering	—	55	31	21	8	—	115
Mathematics	3	2	5	—	—	—	10
Chemical Engineering	25	67	73	76	62	—	303
Chemical Engineering Practice X-A	57	—	—	—	—	—	57
Chemical Engineering Practice X-B	—	10	—	—	—	—	10
Sanitary Engineering	1	1	1	3	3	—	9
Geology	6	3	3	3	2	—	17
Naval Architecture	1	15	13	9	8	—	46
Naval Construction	12	17	—	—	—	—	29
Electrochemical Engineering	5	20	14	21	19	—	79
Engineering Administration	—	86	111	146	74	—	417
Aeronautical Engineering	12	—	—	—	—	—	12
Total	280	697	669	726	559	18	2,949

TABLE NUMBER 5

TOTALS OF THE CLASSIFICATION* OF STUDENTS BY COURSES SINCE 193

	1913–14	1914–15	1915–16	1916–17	1917–18	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24
Engineering Courses:											
Civil Engineering	209	197	188	172	160	111	255	377	312	319	326
Mechanical Engineering	279	271	279	270	210	172	472	651	580	471	435
Mining Engineering	37	34	46	55	40	40	103	140	121	94	85
Electrical Engineering (Inc. VI-A)	196	205	235	233	186	135	305	561	657	658	627
Chemical Engineering (Inc. X-A and X-B)	141	146	157	173	164	155	381	526	492	430	370
Sanitary Engineering	65	61	60	31	21	9	24	15	16	9	9
Naval Architecture	31	25	28	38	40	75	66	95	78	59	46
Naval Construction	7	16	23	26	—	6	18	30	32	41	29
Electrochemical Engineering	38	46	50	42	37	16	74	105	98	74	79
Engineering Administration	—	57	99	139	119	67	375	529	572	484	417
Aeronautical Engineering	—	—	—	—	6	81	2	7	10	15	12
General Engineering	—	—	—	—	—	—	33	34	47	75	115
Total Engineering Courses	1,003	1,057	1,165	1,179	983	867	2,108	3,070	3,015	2,729	2,550
Architecture	130	157	163	142	80	27	119	130	141	155	155
Science Courses:											
Chemistry	78	66	59	60	45	33	66	93	106	128	130
Biology	36	44	48	61	37	49	56	24	30	26	34
Physics	12	10	14	11	10	6	15	42	41	38	22
Geology	3	3	4	9	3	1	15	19	22	20	17
General Science	3	5	4	4	1	—	—	8	8	11	13
Mathematics	—	—	—	—	1	1	1	2	1	8	10
Total Science Courses	132	128	129	145	97	116	153	188	208	231	226
School of Public Health	—	—	—	—	—	—	—	25	20	—	—
Special	—	—	—	—	—	—	—	33	121	65	18

*Previous to 1920–1921 the election of Courses by first-year students was not recorded.

TABLE NUMBER 6

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

	1918	1919	1920	1921	1922	1923	1924
Engineering Courses							
Civil	212	240	310	343	290	295	300
Mechanical	270	400	573	605	586	434	409
Mining and Metallurgy	63	78	133	130	110	83	83
Electrical	224	252	406	496	635	575	579
Chemical	258	350	428	491	431	382	351
Sanitary	22	16	26	18	13	6	8
Naval Architecture	83	78	96	104	97	90	74
Electrochemical	44	43	108	101	90	70	62
Engineering Administration	150	228	467	511	541	413	378
Aeronautical	——	2	2	6	14	15	12
General Engineering	——	——	29	43	51	95	122
Total Engineering Courses	1,326	1,687	2,578	2,848	2,858	2,458	2,378
Architecture	74	67	144	136	149	149	139
Science Courses							
Chemistry	52	58	72	96	102	116	112
Biology	35	19	47	24	38	27	28
Physics	12	15	23	41	41	29	21
Geology	3	4	14	20	28	24	15
General Science	2	2	——	5	8	8	9
Mathematics	——	——	——	——	——	11	10
Total Science Courses	104	98	156	186	217	215	334
Special and No Course Classification	130	8	6	61	105	40	17
School of Public Health	——	——	——	18	——	——	——
Grand Total	1,634	1,860	2,884	3,249	3,329	2,862	2,729

TABLE NUMBER 7

GEOGRAPHICAL CLASSIFICATION OF STUDENTS IN EACH YEAR FROM 1913

UNITED STATES

States	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
North Atlantic:	1,279	1,394	1,434	1,502	1,316	1,436	2,261	2,415	2,460	2,237	2,154
Connecticut	45	55	61	69	49	59	101	104	102	88	89
Maine	25	32	23	32	26	34	58	66	62	49	53
Massachusetts	954	1,032	1,060	1,110	1,005	1,020	1,517	1,516	1,544	1,449	1,418
New Hampshire	34	34	27	30	26	28	48	41	45	41	49
New Jersey	38	48	54	53	47	58	113	123	122	100	104
New York	102	113	121	122	101	140	264	341	346	314	265
Pennsylvania	42	42	46	57	31	58	113	143	160	134	113
Rhode Island	34	31	35	17	19	26	42	54	49	35	39
Vermont	5	7	7	12	12	11	15	27	30	27	24
South Atlantic:	66	66	72	81	43	50	129	160	166	149	142
Delaware	2	3	5	4	7	3	14	15	12	10	11
District of Columbia	21	18	19	27	10	14	37	37	38	38	39
Florida	5	2	5	7	1	6	10	14	14	13	10
Georgia	4	3	5	5	3	2	8	8	11	11	9
Maryland	16	18	13	9	4	7	13	18	33	29	28
North Carolina	4	2	4	5	4	2	9	11	7	11	4
South Carolina	5	6	9	9	4	3	5	8	7	6	7
Virginia	8	11	8	8	6	9	24	36	35	28	25
West Virginia	1	3	4	7	4	4	9	13	9	3	9
South Central:	43	50	54	49	42	41	79	91	115	113	78
Alabama	5	5	5	5	6	5	12	4	8	8	8
Arkansas	1	2	1	1	—	—	1	6	7	9	5
Kentucky	10	10	8	9	6	5	14	20	22	25	14
Louisiana	5	5	7	7	5	5	10	9	6	10	8
Mississippi	5	6	5	2	4	2	6	5	10	4	3
Tennessee	2	5	5	8	3	3	10	12	20	18	14
Texas	15	17	23	17	18	21	26	35	42	39	26
North Central:	115	115	152	146	124	118	271	337	314	279	251
Illinois	15	27	37	31	27	19	49	67	66	63	63
Indiana	9	7	12	5	9	10	18	27	27	21	14
Iowa	11	10	12	6	1	5	15	18	18	14	7
Kansas	3	4	2	3	1	3	7	6	5	4	9
Michigan	12	14	15	16	14	19	26	29	26	26	27
Minnesota	15	6	5	6	4	5	18	24	31	28	19
Missouri	3	5	10	18	15	14	37	35	33	32	31
Nebraska	8	5	5	5	3	1	4	11	11	6	6
North Dakota	2	3	3	1	—	—	2	4	5	1	3
Ohio	25	28	44	43	42	34	68	85	67	60	56
South Dakota	2	1	3	1	1	—	2	2	5	2	—
Wisconsin	10	5	4	11	7	8	25	29	20	22	16
Western:	63	72	59	52	46	42	120	139	150	130	117
Arizona	—	—	—	1	—	1	2	5	3	5	5
California	23	30	25	22	16	14	41	47	51	47	37
Colorado	13	14	11	8	7	7	26	23	28	16	19
Idaho	1	2	1	2	1	—	1	4	4	3	3
Montana	4	3	2	1	3	6	8	8	9	9	6
Nevada	—	—	—	—	—	—	1	1	—	—	—
New Mexico	1	1	1	—	—	—	4	4	4	4	3
Oklahoma	2	—	—	1	—	2	3	2	5	4	3
Oregon	11	10	5	6	6	7	9	11	14	17	15
Utah	2	—	5	5	5	—	5	10	8	5	4
Washington	5	10	7	4	4	5	15	20	21	15	19
Wyoming	—	—	2	2	3	—	5	4	2	4	3

	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Territories and Dependencies	6	5	4	5	4	5	13	27	29	25	23
Alaska	1	—	—	—	1	—	—	—	1	1	1
Canal Zone	—	—	—	—	—	1	1	2	2	2	2
Hawaii	1	2	1	—	1	1	—	3	4	6	2
Philippine Islands	2	1	1	2	—	—	7	11	14	9	7
Porto Rico	3	2	2	3	3	3	5	11	9	8	11
Total for United States	1,572	1,702	1,775	1,835	1,575	1,692	2,873	3,169	3,234	2,933	2 765

FOREIGN COUNTRIES

	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Foreign Countries	113	114	125	122	123	127	205	267	271	247	184
Abyssinia	—	—	—	—	—	—	—	—	—	1	1
Albania	—	—	—	—	1	—	—	—	1	—	—
Argentine Republic	—	—	1	1	1	—	3	5	7	8	2
Armenia	—	—	—	—	—	2	3	2	—	—	1
Australia	—	—	—	—	—	—	2	1	—	2	2
Austria-Hungary	1	2	1	1	1	—	—	—	—	1	—
Barbados	—	—	—	—	—	—	—	—	—	—	1
Belgium	—	—	—	—	—	—	—	2	5	10	4
Bermuda	—	—	—	—	—	—	—	—	—	—	1
Bolivia	—	—	—	—	—	—	—	—	1	1	—
Brazil	7	4	1	1	4	2	4	7	5	3	2
Bulgaria	—	—	1	—	—	—	—	1	1	1	2
Canada	14	15	14	16	10	10	38	41	42	29	23
Cape Colony	—	1	—	—	—	—	—	—	—	—	—
Chile	1	—	—	8	10	6	7	8	6	3	4
China	42	46	49	40	42	38	40	58	60	57	46
Colombia	1	3	4	3	2	4	6	2	1	2	—
Costa Rica	1	—	—	1	1	1	1	1	—	—	—
Cuba	7	3	2	8	6	5	4	8	8	11	10
Cyprus, Island of	—	—	1	—	—	—	—	—	—	—	—
Czechoslovakia	—	—	—	—	—	—	—	3	1	1	1
Denmark	2	1	1	1	3	1	1	3	4	2	—
Dominican Republic	—	—	—	—	—	—	—	—	—	1	—
Dutch West Indies	—	—	—	—	—	—	—	1	2	—	—
Ecuador	1	—	—	1	1	4	2	1	—	—	—
Egypt	1	1	1	1	1	—	1	—	—	1	—
England	—	1	1	1	—	—	1	3	8	4	3
France	4	2	—	—	—	—	2	2	3	3	4
Germany	2	2	3	1	—	—	—	—	—	—	—
Greece	1	1	—	—	2	3	2	4	3	2	—
Guatemala	1	2	1	—	1	—	—	1	—	—	—
Honduras	1	1	2	3	3	—	1	—	—	—	—
Hungary	—	—	—	—	—	—	—	—	—	—	1
India	1	2	2	1	—	—	2	6	5	6	6
Ireland	—	—	—	—	—	—	1	1	1	1	—
Italy	—	—	1	2	—	—	1	—	1	1	2
Jamaica	—	—	—	—	—	—	—	—	1	—	—
Japan	1	1	6	8	11	15	10	12	6	6	2
Korea	—	—	—	—	—	—	—	1	1	1	1
Mexico	7	7	10	9	5	5	9	18	15	12	11
Newfoundland	1	—	—	—	—	—	—	—	—	—	—
New Zealand	—	—	—	—	—	—	—	—	—	1	1
Nicaragua	—	—	2	—	—	—	—	—	1	—	—
Norway	—	—	2	3	6	12	38	30	21	15	6
Palestine	—	—	—	—	—	—	—	1	1	1	1
Paraguay	1	1	—	—	—	—	—	—	1	1	1
Peru	2	3	3	—	2	—	3	3	3	2	2
Portugal	1	—	1	—	—	—	—	—	—	—	—
Roumania	—	—	—	—	—	—	—	—	1	1	1
Russia	4	5	2	2	1	10	8	12	15	16	11
Salvador	1	1	3	1	—	—	—	—	—	—	—
Scotland	1	1	—	—	—	—	1	1	1	1	—
Serbia	—	—	—	—	—	—	—	—	1	1	—
Siam	—	—	1	1	—	—	5	8	8	8	6
Smyrna	—	—	—	—	—	—	—	1	1	1	—
South Africa, Union of	1	—	1	—	—	1	2	4	5	3	4
Spain	—	—	—	—	2	4	2	5	4	6	3
Straits Settlements	—	—	—	—	—	1	—	1	—	—	—
Sweden	—	—	—	—	2	—	—	2	1	—	2
Switzerland	—	—	—	—	—	—	1	—	6	2	3
Syria	2	2	—	1	—	—	—	—	2	4	2
Tahiti	—	—	—	—	—	—	—	—	1	1	2
Turkey	3	6	8	6	5	1	1	1	2	1	2
Uruguay	—	—	—	—	5	2	3	6	9	12	7
Total in School	1,685	1,816	1,900	1,957	1,698	1,819	3,078	3,436	3,505	3,180	2,949

TABLE NUMBER 8

WOMEN STUDENTS, 1923–1924

Year	COURSES												
	Civil Engineering	Mining Eng. and Metallurgy	Architecture	Chemistry	Electrical Engineering	Biology and Public Health	Physics	Mathematics	Chemical Engineering	Electrochemical Engineering	Engineering Administration	Special and Unclassified	Total
First	—	—	2	—	—	—	—	—	—	1	—	—	3
Second . . .	1	—	2	—	—	1	—	—	1	—	—	—	5
Third . . .	—	1	4	1	—	3	—	1	—	—	1	—	11
Fourth . . .	—	—	3	2	1	6	1	1	—	—	—	—	14
Graduate . .	—	1	—	4	—	1	1	—	—	—	—	—	7
Special . . .	—	—	—	—	—	—	—	—	—	—	—	3	3
Total . .	1	2	11	7	1	11	2	2	1	1	1	3	43

TABLE NUMBER 9

TOTAL REGISTRATION AND NUMBER OF NEW STUDENTS

Year	(1) Total Number of Students	(2) Number of Students of the previous year who remain in the Institute	(3) Number of New Students	(4) Number of New Students Entering from Other Colleges
1921–1922	3,505	2,151	1,354	476
1922–1923	3,180	2,024	1,156	455
1923–1924	2,949	1,886	1,063	434

TABLE NUMBER 10

GRADUATE STUDENTS, 1923–1924

American Colleges and Universities Represented

	1918–19	1919–20	1920–21	1921–22	1922–23	1923–42
Adelphi	—	—	—	1	1	—
Akron	—	1	1	2	1	—
Alabama	—	—	—	6	—	2
Alabama Polytechnic Inst.	—	2	1	—	4	2
Alfred	—	1	—	—	1	—
Allegheny	—	1	1	1	4	2
Amherst	1	5	1	1	2	3
Arizona	—	2	—	—	—	—
Arkansas	—	—	2	—	—	—
Armour Institute of Tech.	—	—	—	1	1	—
Assumption	—	1	—	—	—	—
Austin	—	1	—	1	—	—
Baker	—	2	2	—	—	—
Barnard	—	—	—	—	2	2
Bates	—	2	3	4	—	—
Baylor	—	—	—	1	—	—
Beloit	—	1	1	1	1	—
Bethany	—	—	—	1	—	—
Biddle	—	—	—	1	1	1
Birmingham-Southern	—	—	1	1	1	—
Boston College	1	6	8	10	9	5
Boston University	1	2	—	4	2	2
Bowdoin	1	3	3	4	3	1
Brooklyn Polytechnic Inst.	—	1	—	—	—	—
Brown	—	3	8	7	5	6
Bryn Mawr	—	4	3	5	1	2
Bucknell	—	2	—	—	1	1
Buffalo	—	1	1	1	—	—
Butler	—	—	—	1	1	1
California	—	1	3	5	5	8
Campion	—	2	1	—	—	—
Canisius	1	1	1	1	1	2
Carleton	—	1	3	3	1	1
Carnegie Institute of Technology	—	1	1	—	—	—
Case School of App. Science	—	—	—	—	2	3
Catholic University of Am.	1	—	—	—	1	—
Central (Pella, Ia.)	—	—	—	—	—	1
Central (Fayette, Mo.)	—	—	1	—	—	—
Centre	—	1	1	—	—	1
Chicago	—	1	1	2	2	2
Cincinnati	1	1	—	1	1	—
Citadel	—	—	—	—	2	1
City of New York	—	5	9	9	6	6
Clark	2	3	4	3	1	1
Clarkson	—	1	—	—	—	—
Clemson Agricultural	—	—	1	1	—	—
Colby	—	2	4	2	—	1
Colgate	1	—	4	5	2	1
Colorado College	—	—	1	2	1	1
Colorado School of Mines	—	—	—	—	1	2
Colorado University	—	3	2	2	1	1
Columbia	4	4	5	7	6	3
Cooper Union	—	—	1	1	1	—
Cornell University	5	4	5	5	3	2
Cotner	—	—	1	1	—	—
Dartmouth	1	11	12	12	7	11
Davidson	1	1	2	1	2	2
Dayton	—	—	—	—	1	—
Delaware	—	3	4	—	1	2
Denison	—	—	—	1	1	—
Denver	—	—	—	—	—	1
Detroit	—	—	—	—	1	—
Dickinson	—	—	—	1	1	1
Drake	—	1	1	—	1	—
Drexel Institute	—	—	—	—	1	—
Earlham	—	—	1	—	—	—
Emory	—	—	—	—	—	1
Emporia	—	—	—	—	—	1
Fairmount	—	—	—	1	—	—
Fordham	—	1	1	2	1	—
Franklin and Marshall	—	2	1	1	—	—
Friends	—	—	—	1	1	1
Furman	—	—	—	—	—	1
Georgetown	—	—	—	1	1	—
George Washington	—	1	1	—	—	—
Georgia	—	1	1	—	—	—
Georgia School of Tech.	—	1	1	2	1	1
Gettysburg	—	—	—	—	1	—
Goucher	1	—	—	—	—	—
Grinnell	—	2	5	3	1	1
Hahnemann Medical	—	—	1	—	—	—
Hamilton	—	3	3	3	3	1
Hanover	—	—	1	1	—	—
Harvard	4	21	19	14	12	14
Haverford	—	1	4	7	7	5
Hillsdale	—	—	1	1	—	—
Hobart	—	2	1	—	—	—
Holy Cross	—	3	3	2	1	1
Howard	—	—	—	2	1	1
Idaho	—	—	1	1	—	—
Illinois	1	1	4	3	4	3
Indiana University	—	1	2	4	3	2
Iowa State	1	1	1	1	5	1
Jefferson Medical	—	—	2	—	—	—
Johns Hopkins	—	1	1	3	1	—
Kalamazoo	—	1	1	1	—	—
Kansas State Agricultural	—	—	—	—	—	1
Kansas University	—	3	2	2	2	1
Kentucky	1	1	—	1	1	—
Kenyon	—	—	—	1	2	—
Lafayette	—	—	—	—	1	1
Lawrence	—	1	3	2	—	—
Lehigh	—	—	2	—	4	—
Lewis Institute	—	1	—	—	—	—
Louisiana State	—	1	1	1	—	—
Louisville	—	—	—	—	—	1
Loyola	—	1	3	2	2	1
Maine	1	1	1	2	1	1
Manhattan	1	1	1	1	—	—
Maryland	—	—	—	—	—	1
Massachusetts Agricultural	—	2	—	—	1	1
Massachusetts Institute of Technology	8	16	47	68	78	87
Mercer	—	—	—	1	1	1
Miami	—	—	1	—	2	—
Michigan	2	3	1	6	8	4
Michigan Agricultural	—	1	1	—	1	—
Michigan College of Mines	1	—	—	—	—	—
Middlebury	1	1	2	2	—	1
Minnesota	1	1	3	6	4	2
Mississippi	—	2	2	2	—	—
Mississippi Agricultural and Mechanical	—	—	1	1	—	—
Missouri	—	1	2	3	—	3
Missouri Wesleyan	—	—	—	1	—	—
Montana	—	—	—	—	1	1
Montana School of Mines	—	—	—	—	2	—
Morehouse	—	—	—	—	—	1
Mount Holyoke	1	1	3	2	2	2
Mount St. Mary	—	—	—	—	—	1
Muhlenberg	—	—	—	—	—	1

GRADUATE STUDENTS, 1923–1924 — *Continued*

American Colleges and Universities Represented

	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24		1918–19	1919–20	1920–21	1921–22	1922–23	1923–24
Nebraska	—	2	1	1	1	1	So. Dakota School of Mines	—	—	—	1	1	—
Nebraska Wesleyan	—	—	2	—	—	—	South Dakota	—	—	—	2	—	—
New Hampshire	—	—	1	2	3	2	Southwestern	1	—	—	—	—	1
New Mexico	—	—	1	1	1	1	Spring Hill	2	2	2	3	2	—
North Carolina	—	3	3	1	4	1	Stanford	—	2	1	3	2	6
North Dakota Agricultural	—	1	2	1	—	—	Stetson	—	—	—	—	—	2
Northeastern	—	—	—	2	1	2	Stevens Institute of Tech.	1	—	—	—	—	—
Northwestern	—	2	4	6	3	1	Swarthmore	—	—	—	2	—	1
Norwich	—	—	—	1	2	2	Syracuse	—	—	2	1	3	1
Notre Dame	1	—	—	—	—	1	Texas	1	1	5	4	7	2
Oberlin	—	1	3	2	2	—	Texas, Agr.and Mech.Col of	—	1	—	1	—	—
Occidental	—	—	—	—	—	2	Texas Military	—	—	—	1	—	—
Ohio Northern	—	—	—	—	3	—	Throop	—	1	1	1	—	—
Ohio State	—	1	2	1	2	1	Transylvania	—	—	3	1	1	—
Ohio Wesleyan	—	1	—	—	1	2	Trinity (Hartford, Conn.)	—	1	—	2	—	—
Oklahoma Agr. and Mech.	1	—	—	—	—	—	Trinity (Washington, D. C.)	—	—	—	—	1	—
Oklahoma University	—	—	1	—	1	—	Tri State	—	—	—	1	—	2
Oregon	1	3	5	2	2	—	Tufts	—	3	3	4	4	2
Oregon Agricultural	2	3	—	2	1	—	Tulane	—	1	2	—	—	1
Ottawa University (Kansas)	—	—	—	—	1	—	Union	—	—	—	—	—	1
Pacific	—	—	—	1	1	1	U. S. Military Academy	—	5	45	32	22	6
Pennsylvania (Gettysburg)	—	—	2	3	—	—	U. S. Naval Academy	6	6	32	39	46	25
Pennsylvania Military	—	—	—	—	3	2	Ursinus	—	—	1	1	1	—
Pennsylvania State	2	3	1	5	4	4	Utah	—	1	1	1	1	—
Pennsylvania University	—	4	2	4	3	1	Valparaiso	—	—	—	—	1	—
Pittsburgh	1	—	1	2	—	—	Vanderbilt	1	1	2	1	1	3
Pomona	—	—	2	1	1	2	Vassar	—	—	1	2	—	—
Pratt Institute	—	—	—	1	—	—	Vermont	—	—	2	1	1	1
Princeton	2	4	11	16	11	13	Virginia	—	5	6	6	6	3
Providence	—	—	—	—	—	1	Virginia Military	1	3	9	8	10	5
Purdue	1	—	1	1	—	2	Virginia Polytechnic Inst.	—	1	2	—	2	1
Radcliffe	7	1	1	2	1	2	Virginia Union	—	—	—	—	1	1
Randolph-Macon	—	—	1	—	—	—	Wabash	—	1	2	3	—	1
Reed	—	—	1	2	2	2	Washburn	—	2	2	—	—	—
Rensselaer Polytechnic Ins.	1	—	—	—	1	1	Washington	—	1	4	2	4	6
Rhode Island State	—	—	—	1	1	—	Washington and Jefferson	—	2	2	1	2	2
Rice Institute	—	—	4	2	1	1	Washington and Lee	6	3	2	1	1	2
Richmond	—	—	—	—	—	1	Washington State	—	1	—	—	1	1
Roanoke	—	—	—	—	1	1	Wellesley	2	1	2	3	5	5
Rochester	—	—	1	3	5	3	Wesleyan	2	1	—	—	6	3
Roger Williams	—	—	—	1	1	1	Western Maryland	—	—	1	2	—	—
Rose Polytechnic Institute	1	1	1	—	—	—	Western Reserve	—	—	1	1	2	—
Rutgers	—	1	—	—	—	—	Westminster (Colo.)	—	—	1	2	2	2
Sacred Heart	—	—	—	1	1	1	Whitman	—	—	2	1	—	1
St. Bonaventure	—	—	—	—	—	1	Willamette (Oregon)	—	—	—	—	1	1
St. Elizabeth	—	1	—	—	—	—	William Jewell	—	—	—	1	—	1
St. Joseph's (Philadelphia)	1	—	—	—	—	—	William and Mary	—	—	—	—	1	—
St. Louis	—	—	1	1	—	—	Williams	—	4	5	5	7	10
Saint Mary's	—	2	2	—	—	—	Wisconsin	1	—	—	1	4	5
Saint Olaf	—	2	—	—	—	—	Wittenberg	—	—	1	1	1	—
Simmons	1	—	—	—	—	1	Wofford	1	—	1	—	—	—
Simpson	—	—	—	1	1	—	Wooster	—	1	1	—	—	—
Smith	1	—	—	—	—	1	Worcester Polytechnic	2	—	—	—	1	1
South Carolina	—	1	1	—	—	—	Wyoming	—	—	1	—	—	—
South Carolina Military	—	1	1	1	—	—	Yale	1	13	15	13	9	2

NUMBER OF COLLEGES

American	137
Foreign	70
Total	207

NUMBER OF GRADUATE STUDENTS

Candidates for Advanced Degrees	264
Pursuing Undergraduate Work	150
Total	414

TABLE NUMBER 11

NEW STUDENTS FROM OTHER COLLEGES BY YEARS, 1923–1924

Class Joined at the Institute	Years Spent at College				Total
	One	Two	Three	Four or more	
First year	70	19	3	5	97
Second year	22	52	11	26	111
Third year	—	20	16	25	61
Fourth year	—	1	5	16	22
Graduate year	—	—	—	143	143
Total	92	92	35	215	434

TABLE NUMBER 12

COLLEGE STUDENTS AMONG THE COURSES, 1923–1924

Graduates and Students from Colleges 35.6% of the Total Student Body	Civil Engineering	Mechanical Engineering	Mining Eng. and Metallurgy	Architecture	Chemistry	Electrical Eng., Inc. VI-A	Biology and Public Health	Physics	General Science	General Engineering	Mathematics	Chemical Engineering	Chem. Eng. Practice X-A	Chem. Eng. Practice X-B	Sanitary Engineering	Geology	Naval Architecture	Naval Construction	Electrochemical Eng.	Engineering Administration	Aeronautical Engineering	Special	Total	Per cent of Student Body
Graduates	31	50	12	32	60	50	7	11	—	9	4	29	52	1	1	6	3	13	6	21	11	5	414	14.0
Non-graduates	79	106	21	42	16	139	7	1	3	35	1	59	—	5	2	6	8	1	10	90	—	6	637	21.6
Total	110	156	33	74	76	189	14	12	3	44	5	88	52	6	3	12	11	14	16	111	11	11	1051	35.6

TABLE NUMBER 13

AGES OF FIRST YEAR STUDENTS, OCTOBER, 1923

Under 17	21
17 to 17½	64
17½ to 18	56
18 to 18½	110
18½ to 19	66
19 to 19½	68
19½ to 20	65
20 to 20½	39
20½ to 21	17
21 to 22	32
22 to 23	5
23 to 24	5
Total	548

Over 24, 11.

Omitting those under 17, and over 24, on October 1, the average age was 18 years and 9 months.

TABLE NUMBER 14

STATISTICS OF THE SUMMER SESSION

	1923	1924
Total number of students	1,419	1,463
Number of Institute students enrolled	1,160	1,092
Number not previously connected with the Institute	259	371
Registrations at Summer Surveying Camp	84	86
Summer Session students who did not register for the school year following	296	331
Student subjects (taken to make up failures or deficiencies)	876	1004
Student subjects (taken for the first time)	3,648	3,980
Average number of subjects per student	3.19	3.40

TABLE NUMBER 15

Graduates by Years and Courses

Year	Civil Engineering	Mechanical Engineering	Mining Eng. and Metallurgy	Architecture	Chemistry	Electrical Engineering VI and VI-A	Natural History or Biology	Physics	General Course or General Science	General Eng.	Mathematics	Chemical Eng.	Chemical Eng. Practice X-B	Sanitary Eng.	Geology	Naval Arch.	Electrochemical Engineering	Engineering Adm.	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	1	5	—	2	3	4	—	—	—	—	—	—	—	—	—	43	
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	226
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	
1890	25	28	3	5	13	18	3	2	6	—	—	—	—	—	—	—	—	—	103	507
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	49	63	14	27	12	45	10	1	5	—	—	43	—	17	2	9‡	10	37	343*	
1918	45	75	10	28	10	50	7	3	4	2	—	40	—	5	1	4	11	29	322*	
1919	45	66	7	16	8	49	9	4	1	3	—	44	—	6	—	7	6	28	297*	
1920	52	55	13	19	6	30	2	2	4	1	—	62	—	2	—	12	9	48	317*	2,944
1921	98	127	24	11	9	75	3	1	—	15	—	92	—	3	3	18	15	70	563	
1922	63	56	27	32	11	109	8	8	1	25	—	98	15	7	8	16	25	126	735	
1923	64	106	23	31	16	76	6	9	2	22	3	72	19	3	8	13	16	115	603*	
1924	64	65	19	17	10	89	4	3	3	27	1	53	8	1	1	10	17	75	465*	
Total	1,638	2,105	662	710	570	1,572	136	95	130	95	4	900	42	220	37	302	185	528	9,901	

Names counted twice, students graduating in two different years	27
Bachelors of Science	9,874
Masters of Science	961
Masters in Architecture	20
Doctors of Philosophy, of Engineering, of Science, and of Public Health	95
Total	10,871

*Deducting names counted twice (students graduating in two courses) or receiving an advanced degree in addition to an S.B.

†Prior to 1909 this Course was designated as Option 3 (Electrochemistry) of Course VIII.

‡Two received the degree of XIII-B in 1916 and three in 1917

TABLE NUMBER 16

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
1919	—	—	—	1	—	1
1920	—	4	1	—	—	5
1921	1	3	—	3	—	7
1922	—	4	1	—	—	5
1923	—	5	1	—	—	6
1924	2	10	—	2	—	14
Total	4	42	10	7	6	69

TABLE NUMBER 17

DOCTOR OF ENGINEERING (*Discontinued after 1918*)

Year	Electrical Engineering	Electrochemical Engineering	Total
1910	1	—	1
1911	—	—	—
1912	—	—	—
1913	—	—	—
1914	1	—	1
1915	—	—	—
1916	1	—	1
1917	—	1	1
1918	—	—	—
Total	3	1	4

TABLE NUMBER 18

Doctor of Science

Year	Aero. Eng.	Chem. Eng.	Chem.	Elec. Eng.	Geology	Metal.	Mining Eng.	Physics	Total
1911	—	—	—	1	—	—	—	—	1
1912	—	—	—	—	—	—	—	—	—
1913	—	—	—	—	—	—	—	—	—
1914	—	—	—	—	—	—	—	—	—
1915	—	—	—	1	—	—	—	—	1
1916	1	—	—	—	—	—	—	—	1
1917	—	—	—	1	—	—	—	—	1
1918	—	—	—	—	—	—	—	—	—
1919	—	—	—	—	—	—	—	—	—
1920	1	—	—	—	1	—	1	—	3
1921	—	—	—	—	—	—	—	—	—
1922	1	—	1	1	—	—	—	—	3
1923	1	—	—	—	1	1	—	2	5
1924	—	2	—	1	1	1	—	1	6
Total	4	2	1	5	3	2	1	3	21

TABLE NUMBER 19

Doctor of Public Health

Year		Total
1924		1

TABLE NUMBER 20

Master in Architecture

Year		Total
1921		3
1922		2
1923		7
1924		8
Total		20

TABLE NUMBER 21

Master of Science

	Civil Engineering	Mechanical Engineering	Mining Engineering	Metallurgy	Architecture	Chemistry	Electrical Engineering Inc. VI-A	Biology and Pub. Health	Physics	General Science	Chemical Engineering	Chem. Eng. Practice	Sanitary Engineering	Geology	Naval Architecture	Naval Constr'n, U. S. N.	Naval Construction, Foreign Students	Electrochemical Eng.	Aeronautical Engineering	Mathematics	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	1	5	—	—	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
1919	4	1	—	—	—	3	4	—	—	—	—	—	—	—	—	—	—	1	2	1	—	16
1920	4	5	1	—	—	2	7	1	1	—	3	—	—	3	—	19	—	1	—	1	4	52
1921	2	10	—	—	1	6	4	—	—	—	29	—	—	2	—	20	—	—	3	—	17	94
1922	5	9	3	—	1	4	40	—	1	—	6	33	—	2	—	10	—	1	6	2	23	146
1923	5	10	—	1	—	1	42	—	3	—	3	33	—	2	4	21	—	—	9	—	21	155
1924	5	8	1	1	—	1	34	—	5	—	6	41	—	1	—	12	—	1	4	—	28	148
Total	49	68	13	2	86	47	170	12	16	1	67	107	10	13	7	145	5	6	39	4	94	961

COMMITTEE ON GRADUATE COURSES AND SCHOLARSHIPS

The Committee held ten meetings during the year. The only new question of policy recommended by the Committee to the Faculty was the placing of the degree of Doctor of Public Health on practically the same basis as the degree of Doctor of Philosophy and Doctor of Science, and opening this degree to all properly prepared college graduates and to Doctors of Medicine who have had the minimum of two years' training in college prior to entrance in the medical school. The Committee has had more than once to rule that research done away from the Institute and not under the general oversight of a member of the Faculty may not be presented as a thesis in partial fulfillment of the requirements of the Doctor's degree at the Institute. This question in one phase or another repeatedly comes up for consideration: the Committee believes it would be a mistake to depart from our present policy regarding this matter.

During the past year there was a decrease in the total registration of graduate students from 349 in the previous year to 280. This decrease was wholly among students working for the Master's degree, as the number of students working for the Doctorate increased from 66 to 76. The registration was as follows:

Doctor of Philosophy	49
Doctor of Science	27
Doctor of Public Health	1
Master of Science	195
Master in Architecture	8

Of these 177 completed their courses during the year and were recommended for degrees as follows:

Doctor of Philosophy	14
Doctor of Science	6
Doctor of Public Health	1

Master of Science with specification of department 120
Master in Architecture 8
Master of Science without specification of department 28

The number of Doctor's degrees conferred, namely 21, was by far the largest number ever awarded in any one year. This is a striking indication of the place which graduate work of the highest type has now assumed in the educational plan of the Institute.

The Committee considered 128 applications for scholarship aid, over $39,000 being applied for. Sixty-nine awards were made, totaling $13,300. The Committee is glad to report that for the year 1924–1925, a special appropriation has been placed at the disposal of the Committee to be used towards defraying the tuition charge of members of the Instructing Staff who are working towards higher degrees. This will relieve the pressure on the regular graduate scholarship funds materially, as it has been the policy of the Committee in the past to assist part-time assistants and instructors by grants from the general funds.

Grants were made to ten junior members of the staff from the special appropriation for the encouragement of research. Seventeen papers were published during the year by those thus aided and sixteen other papers are reported in process of preparation for the publication. The activity of the staff as a whole in productive scholarship is indicated by the increasing number of articles submitted for binding. Seventy-nine have been bound during the past year, representing an increase of ten over the preceding year.

The *Journal of Mathematics and Physics* has completed its third successful year. Number 4 of volume 2, and volume 3, complete, were published containing a total number of twenty-three articles. An increasing call has come for the *Journal* as the importance of the articles which it contains becomes more widely recognized.

H. M. Goodwin, *Chairman.*

SOCIETY OF ARTS

During the past school year four "Popular Science Lectures" were given under the auspices of the Society of Arts for the benefit of the pupils of the secondary schools and of the general public. These lectures as in past years were delivered on Friday and Saturday afternoons for the young people and on the following Sunday afternoons for the public.

Interest shown in the lectures continues unabated. The large lecture hall was filled at nearly every lecture and in one case the demand for tickets was such that the hall could have been filled a fourth time. The Sunday afternoon lectures, in particular, attracted larger audiences than in previous years; this was probably due to the somewhat wider publicity given to the lectures through the press and various clubs and social welfare organizations, and to the continued interest of those who attended the year before. The series extended from December to March — instead of from January to April as in former seasons — which contributed to the larger attendance at the last lecture.

The subjects of the lectures were selected with special reference to the more recent developments in Science and their applications, and the lectures were all illustrated by experiments and were eminently successful in arousing a lively interest.

At the last lecture the pupils were requested to indicate the four subjects upon which they would most like to have lectures given next year. The answers were interesting and suggestive. Radio headed the list with an overwhelming vote, followed by Astronomy as a close second. Two schools desired to have a lecture on Einstein's Theory of Relativity. As the lectures were inaugurated by Dr. Maclaurin primarily in the interests of the school children of greater Boston the suggestions submitted will be given consideration in the selection of subjects for next year's course.

THE SCHEDULE OF THE COMPLETE COURSE OF LECTURES IS GIVEN BELOW:

Lecture I. December 14, 15 and 16.
"The Age of the Earth as Revealed by Geology and Radio-Activity." By Professor Hervey W. Shimer of the Department of Geology.

Lecture II. January 11, 12 and 13.
"Fire and Fire Prevention." By Professor Gordon B. Wilkes of the Department of Physics.

Lecture III. February 8, 9 and 10.
"Photography and Some Recent Applications." By Professor Arthur C. Hardy of the Department of Physics.

Lecture IV. March 7, 8 and 9.
"Molecules, Atoms and Electrons." By Professor James F. Norris of the Department of Chemistry.

H. M. GOODWIN, *Secretary.*

DEPARTMENT OF CIVIL AND SANITARY ENGINEERING

The undergraduate instruction during the past year has followed the lines of the previous year without radical changes. The efforts of the department are, however, being continually applied to the problem of establishing the fundamental principles upon which professional practice depends, reducing these principles to their simplest terms and devoting the class-room instruction to their development and application. Continual progress in this direction is being made by the Instructing Staff, based upon the experience of its various members both in teaching and in practice. By such a process of elimination and concentration, the breadth of the professional field covered in the four years allotted to undergraduate instruction in Civil and Sanitary Engineering has been increased without sacrifice of thoroughness and accuracy, and the writer believes still further improvements in this direction are possible.

The foregoing statements concerning the undergraduate courses apply with even more force to the graduate courses in which much has been accomplished the last year in the way of simplification and concentration.

The twelfth session of the Summer Surveying Camp was held during the summer of 1923. The attendance consisted of eighty-six students and the cost per student for meals and miscellaneous expenses necessary for the operation of the camp was $1.60 per day as compared with $1.40 per day in 1922. The total charge for these items for the camp session was $84.80 per man.

The instructing staff consisted of Professors G. L. Hosmer, J. W. Howard, J. B. Babcock, 3d, H. L. Bowman, W. M. Fife, and Messrs. W. A. Liddell and K. C. Reynolds, and the following assistants: M. N. Clair, A. W. Davenport, A. R. Frey, O. L. Hooper, E. Hosbach, J. H. Leon, P. S. Rice, J. M. Robbins and E. Wininger. Medical supervision was given by Dr. R. M. Burgoyne.

The class in Mining Surveying, attended by twenty-one students, was held at the new mining camp at the Replogle Mine near Dover, New Jersey, this camp being occupied for the first time in the summer of 1923. The instruction was in charge of W. C. Eberhard, Instructor in the Department of Drawing,

assisted by T. F. Comber, Jr., Instructor in Civil Engineering at Johns Hopkins University. Messrs. L. Wright, a graduate of Course III, and K. W. Robbins, of the Civil Engineering Department, acted as assistants.

A certain amount of experimental research work has been done during the year by students, under the direction of the various members of the Instructing Staff, some of which work has received high commendation by officials of interested companies because of the value to their companies of the results obtained. An investigation, started this year under the direction of Professor Tyler, upon the flow through soil pipes of the Institute plumbing system, has given unanticipated results, differing from those found in experiments made in pipes not forming a part of an actual system. It is expected to continue this investigation during the coming year.

The principal new appointment during the year was that of Richard G. Tyler, S.B., C.E., as Associate Professor of Sanitary Engineering. Professor Tyler was graduated from the Civil Engineering Course of the University of Texas in June 1908, with the degree of C.E. From September, 1909 to June, 1910 he studied at the Institute, from which he received the degree of S.B. in civil engineering in June, 1910. From September, 1910 to June, 1920, he was on the staff of the University of Texas, during the latter portion of this period, holding the position of Associate Professor in charge of instruction in highway and sanitary engineering. From July, 1921 to July, 1923 he was Dean of Engineering, Oklahoma Agricultural and Mechanical College, Stillwater, Okla., and was Acting President of the same institution during August and September, 1923. In addition to his teaching experience, Professor Tyler has had a large amount of practical experience, including service as City Engineer of Paris, Tex., during which time he was in charge of construction of water purification and sewage disposal plants. While in the Army, he was in charge of the water supply and sewage disposal plant at Camp Lee, Va. In 1920 he organized and was the first President of the Texas Road Builders' Association. He also served as President of the Austin Engineers' Club for two years, and was the first Vice-President of the Texas Water Works Association.

Resignations at the end of the year include those of Olcott L.

Hooper and Percival S. Rce, assistants in Civil Engineering, who resigned in order to enter professional work. Their places have been filled by the appointments of Francis R. Morgan, S.M. and Alexander J. Bone, S.B. Other assistants who remain for another year are John E. Burchard, 2d, and Ralph R. Dresel. Harold R. Kepner, a graduate of the class of 1920, whom we were fortunate enough to secure as an assistant last year, has been promoted to the grade of instructor. Mr. Kepner has had considerable experience in water supply work since graduation and is an excellent addition to our group of instructors.

As recommended last year, the writer believes that an addition to the transportation option in the form of a graduate course in River and Harbor Engineering should be established; also that a stream flow laboratory should be built. Such a laboratory could be located in the basement of Building 3 adjoining the present Hydraulic Laboratory, and could be constructed and equipped at a moderate sum, probably less than ten thousand dollars. The space available, although somewhat cramped and requiring artificial lighting, would permit the construction of a tank equaling in size those at Dresden and Carlsruhe, the only ones known to the writer. A laboratory such as that suggested would be useful partly for instruction purposes and partly for research work upon such problems as the determination of the quantity of water passing through a stream of definite shape and slope; the effect of piers and dams upon stream flow; the determination of back-water curves, and general studies of the laws of sand bar formation.

If such a laboratory is established, it would be desirable to relieve Professor Russell of a considerable amount of undergraduate instruction in Hydraulics to enable him to devote himself more continuously to graduate instruction and to experimental work, both in the new laboratory and also in the Hydraulic Laboratory, which itself offers extended opportunities for hydraulic research.

The thanks of the department are again due to the Proprietors of Locks and Canals at Lowell for permission to occupy their stream gaging station; to the Holyoke Water Power Company, the New England Power Company, L. H. Shattuck, Inc. of Manchester, N. H., Manchester Traction, Light and Power Company, S. Morgan Smith Company, Stone & Webster, and Pacific Mills of Lawrence for courtesies extended in connection with the course in

Water Power Engineering; to the A. Piotti Company for interesting specimens of timber taken from the foundations at Faneuil Hall; to George L. Mirick, Esq. for photographs of foreign bridges, and also to the Delaware River Bridge Joint Commission, through Clement E. Chase, Principal Assistant Engineer, for a complete set of the contract documents, including plans and specifications for this great bridge.

CHARLES M. SPOFFORD.

DEPARTMENT OF MECHANICAL ENGINEERING

The instruction of undergraduate students has been along the lines followed for a number of years. Nearly all of the older members of the teaching staff have been teaching groups of from fifty to two hundred and fifty men in one section.

With the large sections it has been found advisable to adopt a method of instruction differing from that generally used with small groups. In general the plan followed has been to use the first half of the period in explaining the new work to be assigned and to use the last half of the period in questioning the students on work already covered. In the classes in Heat Engineering it has been customary to give to each student, at the beginning of the exercise, a multigraph copy of the problems to be discussed in the last part of the period. The students tell the instructor what equations to use and what values to write on the board, the instructor doing all of the work on the blackboard as directed by the student.

The instructor may find that certain points brought out by the problems have not been made clear in his previous lecture and need to be explained in more detail. With the help of an occasional suggestion which the instructor may find it necessary to make, it has been possible in a half-hour period to state the solution of three or four different problems.

Every student in the class follows the discussion and with suitable problems prepared ahead by the instructor the students may be made to progress faster than by the method followed in small sections where the men are sent to the board to work out one or more problems.

A comparison of the records obtained by two sections, one

large and one small, both under the same instructor, while not conclusive indicated that the larger section had received the better instruction.

An instructor who is to meet a large class will naturally put more time on the preparation of his lecture than if he were to meet a class of twenty-five or thirty and then repeat his lecture to another group, and frequently to a third group of twenty-five. Instruction of large groups reduces the cost per student. The lack of class rooms of sufficient capacity to seat a large section has at times necessitated repetition of lectures to groups which the rooms available would accommodate.

In the subject, Advanced Mechanics and Theory of Elasticity, it has been possible during the past year to have the class make a more complete investigation than ever before of the application of the mathematical theory to the determination of stresses in the vicinity of a circular hole in a thin flat plate; also a more thorough study of the probable error in the results obtained by the application of Stodola's method of determining the stresses in a rotating disc of non-uniform, as well as of uniform, section.

For a number of years Professor Berry has offered as one of the professional electives open to Mechanical Engineering students, two terms of Refrigeration, also an advanced course open to candidates for the S.M. degree.

The department is now offering for the first time an undergraduate option in Refrigeration and it is probable that later on a special graduate course in this subject will be arranged for a fifth year.

During the past year there were ten candidates for the degree of Master of Science with designation in Mechanical Engineering.

The research on the torpedo carried on by naval officers Lieutenants Carson and Fahrion is worthy of special mention, as is also that by Lieutenant Mitchell, U. S. A., on Road Rollers and on a Four-Cylinder Motor Roller. An investigation by Mr. Gabriel Smith on the variation in temperature in the walls of the cylinder of an internal combustion engine has been of a high order of merit. He is now trying to determine the temperature variation in the burning mixture.

Some special work involving lengthy calculations has been done for the War Department by Professor Miller.

The undergraduate option in Automotive Engineering developed by Professor Park has been selected by a large number of seniors in Mechanical Engineering, by special students from the course in General Engineering and by Army officers detailed here for instruction in this line.

The department is now offering a definite schedule of advanced work on Automotive Engineering, requiring a fifth year and leading to the degree of Master of Science. This graduate course is open to those graduates of Course II who have had the undergraduate work in the Automotive option, to Army officers and to others who have had special training in this line.

The Machine Tool Laboratory has reached its limit of growth in its present space, the floor load per square foot being now up to the safe limit. If the number of students registering for this work continues to increase more space will be required. The Textile Testing Laboratory and the room adjoining, which now contains cotton machinery, could be utilized for machine tools if space for the Textiles could be found.

The Textile Testing Laboratory should be equipped with a refrigerating machine of small rating and with conditioning apparatus, so that the air in the laboratory could be held at a constant temperature and at a constant humidity. There is also need of a room which could be similarly conditioned and kept at very low temperature in connection with the work on oil testing.

The Gasoline Engine Laboratories have been run almost continuously throughout the year, the Ordnance Gasoline Engine Laboratory during this last summer having run three classes each of five weeks — two classes of Army officers and one of Ensigns of United States Navy, in addition to the regular work of the academic year.

At the present time some of the gasoline engines are stored in the basement of Building 1, some in the north side of the Naval Hangar, in addition to those now in use in the Ordnance Laboratory and in the old Gas Laboratory. Additional space for this branch is much needed and the need will be more urgent with the development of graduate work in Automotive Engineering.

Although the use of the X-Ray in determining the metals entering into solid solution in an alloyed steel and although the development of the photo-elasticity method for determining stress

variations in irregular pieces have been so far through the efforts of physicists, the time is not far distant when the engineer will employ these methods and apply them to fields not considered by the physicists.

Instruction in these lines, together with some laboratory work, should be given our undergraduates in Civil, in Mechanical and in Electrical Engineering.

The department has lost by resignation the services of Mr. Francis A. Brown who has been Instructor in Forging, working under Mr. Lambirth, for a great many years. Mr. E. A. Mead, who has been Instructor in the Heat Treatment Laboratory, has also resigned to accept a position of responsibility with the Babcock & Wilcox Company.

During the year the department has received from manufacturers gifts of machines and equipment, the value amounting to $6,000. The gifts were for use in the Machine Tool Laboratory.

Machine Tools. — Hendey Machine Co.
Production Tools. — Lovejoy Tool Co., Inc.
Turret Lathe Tools. — Jones & Lamson Machine Co.
Air Tools. — Hannifin Manufacturing Co.
Rules and Tools. — Lufkin Rule Co.
Thread Dies. — Butterfield & Company Division, Union Twist Drill Co.
Wrenches. — Trimont Manufacturing Co.
Electric Arc Welding Machine. — Tood Oil Burner and Engineering Corporation.
Thermit Welding Equipment. — Metal and Thermit Corporation.
Chuck. — The Cushman Chuck Co.
Belt Hooks and Rivets. — W. O. and M. W. Talcott, Inc.
Belt Lacing Machines and Belt Hooks — Detroit Belt Lacer Co.
Buffing Wheels. — Peters Manufacturing Co.
Nuts and Washers. — Russell, Burdsall & Ward Bolt and Nut Co.
Lubricator Gun and Fittings. — Carr Fastener Co.
Display Case. — The Carborundum Co.
Display Case. — The Aluminum Company of America.

The gifts to the Engineering Laboratory were:

Electric Motor Operating Equipment for 24-inch Valve with Remote Control. — Chapman Valve Co.
"Autor" Lift Truck. — S. M. Ryder & Son.
American Marsh Simplex Steam Pump in Section. — American Steam Pump Co.
Four High-Pressure Gauges, One Radial Planimeter. — The Foxboro Co., Inc.
Water Softener. — Wayne Tank and Pump Co.

EDWARD F. MILLER.

DEPARTMENT OF MINING, METALLURGY AND GEOLOGY

The department with its three branches, including respectively the Mining, Metallurgical and Geological courses, has operated harmoniously and successfully through the year.

No essential changes have taken place in the teaching staff. Dr. Joseph L. Gillson was appointed Assistant Professor of Mineralogy and Petrography in June, 1924.

Special lectures were given during the year as follows:

Mr. S. Skrowronski of the American Smelting and Refining Company, Perth Amboy, on "Copper Refining."

Professor H. E. T. Haultain of the University of Toronto, on "Operation of Ball Mills."

Two lectures by Professor T. A. Jaggar, Director of the Hawaiian Volcano Observatory, on "Volcanoes and Earthquakes."

Three lectures by Professor Roswell H. Johnson of the University of Pittsburgh, on "Oil Production."

Dr. Zay Jeffries of the Aluminum Company of America, on "X-Ray Examination of Metals."

Fifteen lectures by Mr. F. B. Tough, Chief Petroleum Technologist of the United States Bureau of Mines, on "Oil Production."

In regard to Mr. Tough's lectures, which were specially well attended and very successful, it should be mentioned that the fee was graciously returned by Mr. Tough as a fund for the purpose of aiding worthy students in oil technology.

The lectures by Professor Johnson, Professor Haultain, Mr. Tough and Mr. Skrowronski were paid from the allotment granted for such purposes.

In the section of Mining Engineering the extensive course changes outlined in my report for 1921–1922 and referred to in the report for 1922–1923, have been finally adjusted. The teaching of Mining has been a difficult subject to arrange but is now in final shape. The courses in Mining have been distributed between the third and fourth year in Course III_1, and divided up in subjects as follows:

Third year, Mining Methods, three terms; fourth year, Mining Economics, two terms; Principles of Mining, one term. In addition to this a course of sixty hours in Mining Practice given at the summer mining camp, Dover, New Jersey, has been introduced. Instruction in surveying for students in Mining Engineering has been transferred to the summer mining camp, where for eight weeks surveying is taught in a mining district so

that the student acquires a familiarity with mining and its operations early in his course.

In Metallurgy, Course III_2, there were no changes of great importance except that a course of visits to metallurgical plants (3·60) was arranged to take place just before the beginning of the work of the senior year. This course takes about ten days, and the schedule usually includes important plants in Pennsylvania and New Jersey.

No extensive course changes have taken place in the section of Geology except that a field course in Geology has been added, which will occupy six days, and which was given for the first time at the summer mining camp, in September, 1924. This course, though short, promises to be of great value, as many of the classical locations in geology are found in this vicinity.

The total number of undergraduate students in the department is seventy-six. The relation between the various courses and years will be found in the appended table. Of this number thirty-nine are at present in III_1; thirty in III_2; and seven in Course XII.

DISTRIBUTION OF STUDENTS 1923–1924

	III_1	III_2	XII	Total
Undergraduates				
Second Year	10	9	2	21
Third Year	10	14	3	27
Fourth Year	19	7	2	28—76
Graduates				
Candidate S.M.	1	1	1	3
Candidate Sc.D.		4	3	7
Specials			7	7—17

A diminution is noticeable in the number of students in the Mining Option which is not surprising when the depressed character of the industry is taken into account.

In the Metallurgical Option on the other hand there seems to be a tendency towards increase, and many of those that have entered during the last year or two are iron and steel men. The plan of making the Institute an important place for the metallurgy of iron and steel seems to be justified. It is fair to say, however, that there are a considerable number of students who have specialized in Non-Ferrous Metallurgy.

Coincident with the increase in Metallurgy and specially in Non-Ferrous Metallurgy, there has been a decrease in the number

of students in Course XII. This number has never been very large. The largest graduating class has at no time exceeded seven or eight. For the first time in many years some difficulty has been experienced in placing the men who have graduated from the Institute. At times it has seemed as if economic geology were in almost stagnant condition. Largely, the activity in this branch is predicated on a rising metal market. Very few companies are undertaking new exploration and prospecting. Slowly and gradually, it is expected that this condition will change for the better.

The total number of graduate students in the department was seventeen, of which one was classified under the Mining Option, five under the Metallurgical Option, and eleven in the Geological Section.

It is not to be expected that many candidates for the higher degrees, specially for the Doctor's degree, will be found in the Mining Option. The tendency has always been for the students to go out into practical work after graduating.

In the Metallurgical Option the situation is different and a considerably larger number of students have applied for the higher degrees. The number seems from present outlook to be increasing.

In the Geological Section, four students were candidates for higher degrees, and seven were special students either from Harvard University, or from some other department of the Institute.

During the year two degrees of Doctor of Science were conferred, one in Metallurgy and one in Geology.

The old course in Chemical Mineralogy and Petrography (12'17) has been incorporated with the courses in Advanced Petrography.

There are no special recommendations and no essential changes proposed for the undergraduate and graduate work, and relating to modifications of courses or laboratory space, equipment, or personnel.

One subject, however, should be mentioned, that is, the new summer mining camp. As stated in my last report the sum of $15,000 was allotted by the Corporation and the construction of a permanent camp was begun. This camp was ready for occupancy in July, 1923, and was then attended by twenty-four students.

During the present year considerable additions have been made to the camp, which were made possible by the allotment of $10,000 during the past year. The camp is now almost complete, lacking only a number of cubicles or smaller buildings and some of its equipment. It will be necessary to spend some additional money, estimated to about $10,000 in order to provide for the completion of the buildings.

The second session was held at the camp this summer. After the closing of the surveying camp a course of Mining Practice and a course in Field Geology were conducted, these two courses occupying together about twelve days.

Regarding the needs of the Graduate School in Metallurgy:

We are sure of at least ten graduate students in Metallurgy the coming year, seven of them candidates for the Sc.D. degree. This makes us easily the first school in the country, in point of numbers, for such work. There is urgent need of laboratory facilities for these men. Also when money and space are available we need a well equipped laboratory with furnaces for making ordinary and special steels and alloys and equipment for forging, rolling, drawing and cold working. The equipment will be expensive and an overhead crane would be essential with our present metallurgical apparatus, which is practically all for non-ferrous work. This would give us the best laboratories in the country and would attract undergraduate and graduate students. There is also need for museum space, because exhibits of great educational value have been promised and others can be readily obtained when we have room for them.

Of late years the microscopic examination of building materials, slags, fire bricks, clays and similar substances has occupied an increasingly prominent place in the industry. It has been felt that the Institute has not devoted sufficient time to such work, and I strongly recommend that provision be made for such instruction in the future. For the year beginning October, 1924, the services of an instructor have been obtained and efforts will be made to complete the collections in this line of work so that a course in this subject can be given during the second or third term.

WALDEMAR LINDGREN.

DEPARTMENT OF ARCHITECTURE

The Committee on Design was satisfied that in the criticism of student work there was a tendency on the part of the instructors through an excess of good will, to give the students more assistance than was really needed, with the result that the student tended to become dependent on his teacher instead of self-reliant. Criticisms were therefore limited to two stated periods a week, and the results in the performance of the students were most satisfactory. New courses in Modeling, Estimating, and Photo-Elasticity were given in the process of carrying out schedule changes.

Within recent years the graduate thesis leading to the degree of Master in Architecture has covered a period of five weeks, in which the contestants for the coveted traveling scholarship received constant criticism from the senior professor of Design. In the past year only two weeks were devoted to this exercise, but no criticism whatsoever was given to the students, and the resulting projects were of a high standard.

It is the belief of the head of the department, confirmed by much discussion with other educators and with alumni of the department, that if the value of the Institute's degree in Architecture is to be maintained on the high plane that the profession expects of its graduates, a new schedule of courses leading to the degree of Bachelor in Architecture and covering a period of five years should be established. This should be followed by a sixth or graduate year leading to the degree of Master in Architecture, thus offering a six-year course of study in one institution to the student desiring a Master's degree in contradistinction to a course of seven years in two institutions.

The following recommendation from Professor William H. Lawrence is entitled to most serious consideration:

"There is one matter which though not exactly pertinent to this report I should like to mention at this time in connection with the summer work in Constructive Design for Option I. The results obtained this summer were so satisfactory and the interest of the students so marked, compared with that during the school year, that I believe some consideration might profitably be given to the possibility of making this course a summer requirement between the third and fourth years. The course as at present given during the regular school year when the interest of the students is con-

centrated on Design is most unsatisfactory to everyone concerned. As given this summer the attitude of the students was above criticism, and the results, I am sure, worth while. Most of the records were honors or credits."

In closing it is proper to call attention to the fine spirit of unity that characterises the department, and this in spite of the increased differentiation between the two options as indicated by the new schedules that are now in operation. Our increased enrollment when other departments were showing a loss is also a source of pride.

WILLIAM EMERSON.

DIVISION OF DRAWING

The work of the Division of Drawing has been conducted with but little change from last year.

The instruction in Descriptive Geometry for the students in General Architecture was for the first time given at the Rogers Building and by a member of the architectural staff working under the direction of the Division of Drawing. The architectural students were required to pass the same intermediate and final examinations as the students of other courses. The results were apparently satisfactory and the arrangement will be continued the coming year.

Some revision of the courses in both first and second-year work has been made, tending towards improvement and efficiency.

W. H. LAWRENCE.

DEPARTMENT OF CHEMISTRY

The undergraduate instruction work of the department has progressed satisfactorily. It has been possible with the first-year work to give better attention to details of the instruction, due to the smaller registration which has rendered less acute the overcrowded condition of the freshman inorganic laboratories.

The instructional work in Analytical Chemistry has been greatly facilitated, due to the structural changes referred to as desirable in the 1923 report and completed in time to be available for the year's work. There remains still to be worked out some modification of the time assignment of students for Analytical Chemistry which will result in a more even distribution of students

in the laboratories during the working hours. The present waste of the instructors' time is certainly undesirable.

The third edition of Professor F. J. Moore's "Outlines of Organic Chemistry" has been published and brings up to date an important text used in the instructional work in Organic Chemistry.

A new course, "Radiation Chemistry," has been added, more especially for undergraduates, for the presentation of the relation of the quantum idea to chemistry. Dr. Gerke offered the course for the first time in the spring term.

Notwithstanding the decreased total registration, the number of graduate students has increased. The total number of graduate students in the department during the past year was sixty-three, as compared with fifty-three for the year preceding. In June, ten candidates were awarded the degree of Doctor of Philosophy in chemistry, and nine candidates the degree of Master of Science. This is the largest number of advanced degrees conferred at one time in the history of the department.

The graduates have readily found positions either in educational institutions or in the research laboratories of industrial corporations. In fact, the demand for graduates possessing the higher degrees continually exceeds the number available.

Attention was directed in the last report by Professor Goodwin, Chairman of the Committee on Graduate Courses and Scholarships, to the urgent need of additional funds for graduate scholarships. The lack of sufficient funds is proving to be an increasing difficulty in securing the more capable graduate students and it is hoped that the financial assistance which should be provided can soon be secured.

The investigational work which Professor Davis is carrying out for the Ordnance Department was continued through the summer with the assistance of a number of students. A course of instruction for officers in explosives at the Ordnance School was also completed by Professor Davis and published at the Watertown Arsenal.

It is appropriate also to mention that many of the staff have undertaken a considerable amount of critical compilation and formulation of data for the "International Critical Tables" in preparation under the auspices of the National Research Council.

The investigations in Organic Chemistry under the direction of Professor Norris center around the general problem of the quantita-

tive study of the reactive qualities of organic radicals. The prosecution of the problems has required not only the application of the more specialized methods of organic chemistry per se, but also the application of physico-chemical methods. The specific studies have proved in consequence to be of special value in the broad scientific education of the graduate student in Organic Chemistry. Noteworthy results have accumulated rapidly during the past few years, and a number of papers are in preparation.

For some years the great importance of the study of certain photo-chemical problems as related to the quantum idea has been recognized, as well as the study of the infra-red absorption spectra of gases as related to the specific heat capacity dependence of gases on temperature. The specific heat-temperature variation is of fundamental importance in the extension of the application of thermodynamics to chemical equilibria. Dr. R. H. Gerke has commenced work in the field of these problems, starting with a study of the mechanism of the photochemical decomposition of the pure hydrogen halides. In connection with the specific heat-temperature dependence, a study of the infra-red absorption spectra of diatomic gases has been initiated.

THE RESEARCH LABORATORY OF PHYSICAL CHEMISTRY

The problems under investigation are in considerable part ultimately directed to providing a foundation whereby the thermodynamic theory of chemical equilibria and chemical reactions may be extended to higher pressures and temperatures. This has for the past fifteen years required the development of methods and apparatus for the precise measurement of the properties of pure substances both gaseous and liquid. Progress has reached the point where these results can be brought to bear more directly on the general theory of chemical equilibria. Professor Gillespie, for example, has under investigation certain of the more simple equilibria which are being investigated under extremes of pressure. The results of these investigations will, it is believed, yield a decision on certain important details of the theoretical treatment appropriate to chemical reactions generally.

Dr. MacInnes has continued his work on the measurement of ionic mobilities by an improved moving boundary method, and also his general investigations relating to the ionic theory of solutions.

The X-ray reflection studies on various crystals, which was furthered by Dr. Bates last year, has been continued with improvements in apparatus and manipulation to the point where several interesting lacunae in the field of crystal structure may be investigated successfully.

Dr. Beattie has returned from Leiden to resume certain investigations on the thermodynamic properties of pure substances and mixtures. Problems of fundamental importance in connection with thermometric theory have also been initiated, and facilities accumulated for their prosecution.

The phase relationships in certain hydrogen-metal mixtures are being investigated by Professor Gillespie. Studies connected with the heats of reaction in solution are also being continued with the continuous flow calorimeter.

The investigation of the properties of steam to the extremes of temperature and pressure envisaged by the Research Committee of the American Society of Mechanical Engineers has been a problem presenting many and varied difficulties. Good progress has been made, however, and measurements are about to be taken.

A particularly pleasant feature of the investigation has been the coöperative spirit of the three divisions to the general investigation, the Bureau of Standards, the Harvard Engineering Laboratory, and the Research Laboratory of Physical Chemistry. Mutual visits have been made by the respective investigators, affording an interchange of ideas, methods and results.

The Bureau of Mines investigations, which remain to be completed, are in progress and by the end of the year it is hoped to complete a further portion of the program originally outlined.

The torpedo research for the United States Navy has provided additional results of importance. The work is being continued by officers assigned by the United States Navy for the investigation.

ORGANIC CHEMICAL RESEARCH

The graduate work in Organic Chemistry has grown rapidly in the past five years, and to sustain the quality and productivity of the work it is recommended that several research associateships be created. With the large number of graduate students in Organic Chemistry, neither the proper continuity of investigations over a period of years can be maintained, nor can special investigational

technique be readily transferred to the graduate student unless it is possible to appoint research associates from the most capable of the Institute's recipients of the Ph.D. degree.

Several years ago some investigations at lower temperatures were begun. The work has been continued under great handicap because of the lack of adequate facilities for the production of liquid air. The old equipment available has been set up in the new Vassar Street building, but it is scarcely sufficient for more than the production of liquid air for demonstration purposes. Reference was made in the preceding year's report to the fact that through the courtesy of Professor Kamerlingh Onnes the department is supplied with drawings and full details of the Leiden methods for the production of liquid air, hydrogen and helium. It is earnestly hoped that funds for the apparatus necessary to produce adequate supplies of liquid air and nitrogen can be provided in the near future. The plans in readiness for adequate liquid air production include provision for the succeeding step of liquid hydrogen production in quantities sufficient for the numerous important investigations which cannot be undertaken until this facility is available.

Two advances in faculty rank have been made, Associate Professor R. S. Williams to Professor, and Associate Professor M. S. Sherrill to Professor. Miss Helen Gill resigned as research assistant under the Ellen Richards fund. Miss Katharine Rand has been appointed to succeed Miss Gill, and will work under the direction of Professor H. M. Smith. The duPont Fellowship was renewed, and has been held by Mr. Louis Harris. The Grasselli Fellowship and Scholarship have been held by Mr. Avery A. Ashdown and Mr. Spencer W. Prentiss respectively.

There have been received by gift:

Specimens of creosoted wood from the Southern Wood Preserving Co., Atlanta, Ga.

A collection of specimens illustrating the manufacture of artificial graphite from the Acheson Graphite Co.

Copper ores and products obtained in the refining of copper ores from the Raratan Copper Co., Perth Amboy, N. J.

Samples of artificial silk made by the Viscose Process, duPont Fiber Co.

Zinc specimens from the New Jersey Zinc Co.

Numerous pieces of pure nickel for apparatus construction from the International Nickel Co.

F. G. KEYES

DEPARTMENT OF ELECTRICAL ENGINEERING

Several important changes have occurred in the staff. Professor Theodore H. Dillon who entered our staff in 1919 has gone to the Harvard Business School to become Professor of Public Utility Management. Assistant Professor Frederick S. Dellenbaugh has resigned to secure full time for investigation and research, which will be continued in our laboratories. Mr. Carlton E. Tucker, Instructor in Electrical Engineering, has been promoted to the rank of Assistant Professor.

This deduction of two and the addition of only one man of faculty rank to the staff still farther reduces the ratio of faculty rank to total staff, which ratio was already unduly low, as commented on by the report of last year. It therefore will be exceedingly important to rectify this fault by early promotion of certain of our younger men.

The limitation fixed for the number of students admitted to the second year of the Electrical Engineering Course has been in effect long enough to stabilize the number coming up through the course from the first year of the Institute curriculum; but the limitation does not apply to graduates of colleges and others entering with advanced standing or men matriculating for graduate work so that the numbers of such students continue to increase. This emphasizes the importance of making more space available for the laboratories of the department, and particularly in the electrical communications work referred to in my last year's report. The research of graduate students and of others who are working on research must be provided with sufficient space to enable it to be fruitfully carried on.

In the undergraduate instruction we have continued to improve our methods by making the student's relations to his work more individual. The class sections in Electrical Engineering subjects, for some years, have been made up on the relative capacity of the students so that the intellectually speedier ones may be in one section, the least matured in another section, and students of intervening intellectual characteristics in intervening sections. During the past year we have given more emphasis to independence of work by each senior student. Many of these young men have come to accomplishment by the opening of their senior year that would enable them to do work as graduate students in a large

proportion of the colleges of the land. It is therefore reasonable for us to allow to them, under proper guidance, the individuality of work usually characteristic of graduate studies, and the results prove that it is desirable.

We have also improved the orientation contacts for the second-year men in their third term, when they first come under the instruction of this department, and we believe the results will prove serviceable. The accomplishment referred to in the two immediately foregoing paragraphs is aided by the three-term arrangement of our Institute calendar.

The graduate work of the department is closely bound up with the researches. Two additional courses of graduate lectures on Electrical Communications were added to our list (6·58 and 6·59) one ascribed to Dr. Kennelly and one to Mr. Bowles. We have also improved the work relating to electric railways and that relating to the theory of electric circuits. Mr. Dahl is now occupied in association with Professor Bush in carrying on the lectures for the latter.

The researches of the department continue to expand. The paper-insulated electric-power cable investigation continues. The kenetron equipment for studying insulating qualities is nearly ready for use. Some work of interest relating to conductivity of metals and of vacuums is going on. The National Research Council research on industrial illumination is in our charge and the Institute is the official sponsor and headquarters for this work. These are interesting examples of the work going on in the department.

Several researches are under the patronage of committees of the electrical industries, and a number of the members of the department therefore are associated with such committees as members or advisers, as for instance, Mr. Dellenbaugh and Mr. Dahl with the joint committee on interference between telephone and power transmission lines, Professor Bush with the committee on high-tension cables of the National Electric Light Association, Professor Kennelly on the Radio Conference Committee of the Department of Commerce, Professor Jackson with the Directive Board and the active committee of the industrial illumination research, and the like.

The fertility of the department is illustrated by the list of publications for the year submitted with last year's report and again by the list submitted this year.

The Visiting Committee appointed by the Corporation, and their advisory group, carefully reviewed the affairs of the department during the year and reaffirmed and emphasized their report of the preceding year, including therein the need of promotions in the staff and problems of laboratory space.

Our present needs for additional space would be satisfied by the provision of a communications laboratory which is estimated at thirteen thousand square feet; and needs for personnel would be substantially met by promotions plus the addition of instructors to fill the places from which promotions were made. This is in accord with recommendations Five and Nine of the Report of February 11, 1924, of our Visiting Committee. With added equipment for electrical communications and electric illumination in accordance with Recommendation Six, we would be able to improve our service to our students and to the sciences and industries.

DUGALD C. JACKSON.

DEPARTMENT OF BIOLOGY AND PUBLIC HEALTH

The record for the past year has been one of growth and expansion and the period has been somewhat notable because of the broad scope of the instruction which has been given. The division of the work of the department into the two special fields of Public Health and Industrial Biology appears to have been well justified, and while the number of students in each group has been small, the professional interest has been stimulated. During this year students have completed for the first time the schedules of studies in Fisheries Technology and in Food Technology which, together, make up the option in Industrial Biology.

In the undergraduate work a new and extensive laboratory course in Biochemistry, embodying both the general aspects of the subject and the practical applications in industrial processes, has been given by Professor Bunker with gratifying results. The instruction in this course is in part by the assigning of special problems with either public health or industrial significance which the student attacks on a fairly large scale. This work has been made possible through accessions of equipment by purchase and by gift. The department wishes especially to acknowledge its

indebtedness to Mr. S. C. Keith, '93, who has presented the laboratory with equipment for concentrating and drying biochemical preparations. The course in Personal Hygiene has been somewhat expanded and rearranged. One of the by-products of this course is a book entitled "Personal Hygiene for Nurses," by Dr. Bunker and Professor Turner, which is at present in press.

The course in Public Health Surveys has been given during the past year to undergraduates as well as to graduate students. Dr. Horwood has gained a high reputation among public health workers because of the excellent health surveys which he has carried out in a large number of cities and this experience has been reflected in the soundness and practicality of this course.

The undergraduate work in Industrial Microbiology has been extended and a course in the Technology of Food Products, covering the important methods of food manufacture and food preservation and control, has been developed by Professor Prescott.

The graduate work has also expanded during the year. The new degree of Doctor of Public Health was given for the first time to an officer of the Army Medical Corps, and in addition there were two candidates who received their degrees of Doctor of Philosophy. The courses in Epidemiology, Public Health Administration, Health Education and Advanced Biochemistry have proved useful and attractive to graduate students.

The most important step taken during the year has been the adoption by the Faculty of the degree of Doctor of Public Health as a degree open to civilian students of high attainment, as well as to the special Army medical officers. This step was taken in part as a result of a definite request from men engaged in public health work and much interest has been evinced in it since it has been announced.

The research work carried out during the year has included the completion of the theses of Dr. MacInnes and Dr. Hunt, a comprehensive epidemiological study of measles by Dr. Maynard, continuation of work in nutrition by Professor Bunker, and investigation work under the supervision of Professor Prescott on the carbon dioxide treatment of butter and ice cream and on some other problems of industrial biology. Professor Turner has continued his investigations in health education in coöperation with the School Department of the City of Malden. One of the fruits

of these studies in health education is a school textbook, entitled "Health," by Professor Turner and Miss Collins who has been associated with him during the past three years in this work. In this connection it is proper to mention also the investigations which have been carried out in this department by Mr. W. F. Clapp for the National Research Council on the destruction of timber used for wharves and piling by various forms of animal life.

In view of the recent authorized changes in graduate and undergraduate work, no immediate modification of courses is projected. The graduate work will, however, be expanded as occasion requires and this will necessarily involve certain changes in laboratory space or in the allocation of space from one kind of work to another. These developments frequently make most desirable new equipment and additions to the staff. I should like to recommend, therefore, that funds for the development of research should continue to be granted to the department and in increasing amount in order that research workers and equipment may be secured with as little delay as possible when needed.

The teaching staff of the department has in the past been undermanned and while the authorization has been given to appoint a new instructor, it is certain that additional increase in the staff will be required in the near future.

On the public health side I wish strongly to recommend the expansion of work in the field of Industrial Hygiene. Graduates of the Institute occupy important positions in large industries having serious health problems and it is believed that through coöperation with them the department can render great service to industry and at the same time strengthen and broaden its knowledge in this particular field. It is believed that this could be effectively done through research associates who could study the problems of the special industries and who at the same time could participate in the instruction given to graduate and undergraduate students. In a similar manner there are certain problems of industrial nature, such as the study of methods of protection of fabrics against mildew and the destructive action of moths, which have large economical importance and which can undoubtedly be solved through research. For the development of such studies funds for a paid personnel are the principal requirement, although equipment necessary for study of research problems should be made available.

No record of the work of the department would be complete without a mention of the Sedgwick Memorial Lecture which is given yearly in memory of the late head of the department. The lecturer for the past year was Dr. William H. Welch, Director of the School of Public Health of Johns Hopkins University and a man of international reputation in the public health field. The lecturer for the previous year was Dr. Edmund B. Wilson of Columbia University who ranks among the greatest biologists of the world on the pure science side. The advantages to our students in being able to hear alternately the leaders in biological thought and research and in the practical development of public health cannot be overestimated.

There have been no changes in personnel during the year. Dr. Bunker has been made Associate Professor of Biochemistry and Physiology.

It is recommended that a new instructor be appointed at once if a man of the desired training and professional interest can be secured.

SAMUEL C. PRESCOTT.

DEPARTMENT OF PHYSICS

During the year considerable progress has been made along several lines of the department's field of action.

First there has been a better organization of the teaching of Elementary Physics of the first and second year under the care of Professor Drisko and Professor Page. The co-ordination of the lectures, recitations and laboratory is closer than heretofore, and the lessening the number of recitations and increasing the number of lectures has resulted satisfactorily in two ways. It has enabled the lecturers to cover more of the constantly increasing mass of material which makes up modern physics by putting more responsibility upon the individual student.

To increase further the effectiveness of the instruction in the third and fourth years of the course in Physics (VIII) changes have been made in the curriculum. The need of these changes has come mainly from the great and rapid advances recently made in our knowledge of physical phenomena and principles, but it is also due to the change in the attitude of industry generally toward

physics and physicists. The industrial physicist must be better grounded theoretically and familiar with Mathematical Physics to a much greater degree than was thought to be necessary a few years ago. Since the need of familiarity with physical phenomena and the importance of manipulative skill are no less than before, the crowded condition of our four-year schedule becomes apparent.

Thanks largely to Dr. Heymans the Physics Seminar has been very successful and its meetings have been largely attended by members of other departments and of the instructing staff of neighboring institutions.

The department has been fortunate in having several scientists of distinction as guests who have lectured to us and to the staff and graduate students of other departments. A number of such lecturers are to be with us during the coming year and it is hoped to establish firmly the custom of having lectures or short courses of this sort from men prominent in research and teaching of Physics.

The increased activity in Theoretical Physics has led to the establishment of the laboratory of Theoretical Physics which is to be devoted to experimental investigation of theoretical problems in connection with the lecture courses in Theoretical Physics and to research in fundamental problems of pure Physics. At present the staff consists of Dr. Heymans, Dr. Vallarta, Dr. Dehlinger and John Norton. A number of important investigations are already under way.

The laboratory of Photo-Elasticity has outgrown its old quarters and is being moved to the large room in the basement of Building 2. The number of students desiring to work in this laboratory is increasing, both for instruction and research.

The X-ray laboratory has been completed and is furnishing opportunity for regular instruction and research. The laboratory is equipped with the best of modern apparatus, installed and safeguarded by Mr. Norton in such a manner as to be available for the use of a considerable number of students without sensible risk either from exposure to X-rays or to contact with the very high voltage necessary in the work. The large penetration unit is installed in a lead-lined room and the smaller units and the diffraction apparatus are also suitably safeguarded. Investigation of the protective value to X-rays of several types of wall construc-

tion has been carried on and an investigation of the effect of mechanical stress on metals is also under way with most interesting results. A number of similar researches are carried on.

The addition of a Northrup Induction Furnace to the laboratory of Electrochemistry has proved of material value in research and instruction.

The Industrial Gas Course given during the summer by Professor Wilkes in the laboratory of Industrial Physics has again proved its value and seems to be established as a permanent feature of the work of the laboratory. The appreciation of the men interested in the development of the industrial rather than domestic use of gas is evidenced by their continued donations of equipment which threatens to exceed the capacity of the laboratory, but gives us a remarkable equipment of industrial gas heating units. All of this equipment is in use for research and instruction for students of several departments during the regular school terms. The building up of this work is largely due to the zeal and enthusiasm of Professor Wilkes and his assistants.

Pressure for office room has been so great that it has been necessary to divide up the old department study and now to make similar subdivision of the department library, transferring the books to the Central library and giving us in all three new offices which are greatly needed.

By reserving the physics instrument shop for the mechanicians and by employing an additional mechanic the effectiveness of the shop is greatly increased. It is to be regretted, however, that it has been necessary to give up the course in physical instruments and that there is now no place in the department in which students or instructors can construct apparatus. A shop for students either in the department or as a general shop for students in all departments is urgently needed.

The department finds itself hampered even more than was the case last year for want of small research rooms. The need of a large lecture room suitable for experimental lectures in Physics, which can be available at suitable times for the preparation of the lectures, has been emphasized in earlier reports and can only be repeated here.

The increasing tendency of students in Physics to stay for a fifth year and the general tendency for the amount of graduate

work to increase, as well as the great increase in the amount of research done by members of the staff, will necessitate the provision of larger funds for this work and it is to be hoped that such increased provision may be made in order that the Department of Physics may properly carry on its graduate and research program.

C. L. NORTON.

ELECTROCHEMICAL ENGINEERING

The work of this course has undergone no essential change during the past year. The only modification of the curriculum has been the introduction, as a preliminary to thesis work, of a course in Precision of Measurements in the second term of the fourth year. The fundamental character of this subject is such that it will be retained in Course XIV even though it is no longer included in the schedules of other engineering courses.

The laboratory space for undergraduate instruction is adequate at present and unless there is an unforeseen increase in the number of students, should meet our needs for some time to come. Additional small research rooms properly equipped are however much needed to provide facilities for graduate students working for the Master's and Doctor's degrees. It is in this direction that expansion is most likely to occur. Particularly desirable are several rooms suitably planned and equipped for photo-chemical work as this field of research is now being actively developed in the department on account of its theoretical and increasing technical importance.

The most important addition to the laboratory equipment was the installation of a Northrup Ajax high frequency induction furnace of twenty kilowatts capacity. The electric furnace laboratory is now well equipped for illustrating practically all types of electrothermic and electrolytic processes. The large storage battery installed in 1916 had to be renewed during the year.

The research work in progress during the past year was of three general types: First, problems of a theoretical character under Dr. Goodwin's direction, *e.g.*, a new method for the measurement of dielectric constants; measurements of absolute electrode potential; and factors influencing the deposition of cobalt and the corrosion of zinc. Second, problems in applied electrochemistry under Dr. Thompson's direction; among these may be mentioned

the production of calcium silicide in the electric furnace; the electro-deposition of iron tubes; and the electrolytic separation of manganese and nickel. Third, problems relating to the photo-chemical activity of ultra-violet light carried on by Mr. Stock-barger or under his direction; among these the following are of especial interest: an investigation of the energy distribution in the mercury arc spectrum under various conditions of excitation; the effect of ultra-violet light on the drying of linseed oil, of great importance in the manufacture of patent leather; a monochromatic illuminator for ultra-violet light, and impregnated carbon electrodes as a source of such light.

An important research on the production of very fine wires of bismuth and bismuth-tin alloys and their thermo-electric properties was also completed in the electrochemical laboratory.

Professor Thompson has been engaged in preparing for publication a much needed book, covering the whole field of both theoretical and applied electrochemistry. There is at present no book of this character in this country and its appearance is awaited with much interest.

A new graduate course in Photochemistry was given for the first time in the second term by Mr. Stockbarger. The importance which this field is assuming since the perfection of the quartz mercury lamp warrants the extension of this course the coming year to two terms. Dr. Knobel, who received an appointment a year ago to a National Research Fellowship at the University of California, will return to the Institute this fall and resume his graduate courses in Organic Electrochemistry.

H. M. Goodwin.

DEPARTMENT OF CHEMICAL ENGINEERING

Including the School of Chemical Engineering Practice and the Research Laboratory of Applied Chemistry

Two years ago the department reported the introduction, at the suggestion of the Visiting Committee of the Corporation, of undergraduate instruction designed to develop the capacity of the student for oral presentation. The department has devoted particular attention to this work and feels that progress is being made. During the last year especial attention was also given to

increasing the effectiveness of the time devoted to undergraduate thesis. An important factor in making possible this increase in efficiency was the addition to the staff of Mr. John T. Ward as Assistant Professor.

Work with graduate students continued to absorb a major part of the effort of the department. Aside from research reported separately by the School of Chemical Engineering Practice and the Research Laboratory of Applied Chemistry, the department had one group of workers engaged in research problems in heat transmission, a second in distillation and a third in ceramics. The work in heat transmission included a thorough analysis of flow between liquids inside circular pipes and the pipe wall, under conditions of both turbulent and viscous motion, and involved experimental correlation of the character of the motion with the thermal resistance. Progress was made in correlating the data on heat transmission between gases and pipes with that of liquids. Experimental investigations were conducted on heat transfer between solid surfaces and both boiling liquids and condensing vapors, including those of important organic solvents. Work was also initiated on heat flow between gases and solids of irregular shape, such as are encountered in furnaces, heaters, and the like. Based upon these results there was developed a valuable postgraduate instructional course in this field. The work on distillation was directed particularly toward the study of complex mixtures such as those occurring in the petroleum industry. In ceramics, a program was initiated in the hope of determining the factors governing the changes in properties which result from burning.

As pointed out in the last report the facilities of the department were planned for about one-third our present number of students. As a consequence the most pressing need of the department is for additional space and equipment. For example, the Research Laboratory of Applied Chemistry could readily and profitably expand its activities but is intentionally avoiding such expansion because with the present facilities it could not do justice to the work. Similarly, the efficiency of undergraduate instruction has been sacrificed by conversion of drawing and conference room space into laboratories and offices.

It is hoped that the expansion of the work in the field of Gas and Fuel Engineering already under consideration will develop

successfully. Specific recommendations covering this have already been submitted. It is the purpose of the department to give during the coming year to the prosecution of this work a major part of its effort.

W. K. Lewis.

THE SCHOOL OF CHEMICAL ENGINEERING PRACTICE

In the School of Chemical Engineering Practice no essential modification of educational methods has been put into effect during the past year.

The most serious problem encountered during the year has been due to the additional expense which this course places upon its students. Registration in X-B, the undergraduate course which includes the practice school, has not developed as anticipated, due primarily to the extra cost to the student brought about by the two required summer schools. This year approximately one-third of the applicants for Course X-A dropped out the last term owing to inability to secure sufficient funds for the fifth year's work, in spite of the increased fellowships which have been provided. Because of the high cost of attending the Institute many Institute undergraduates are in this position and in consequence find themselves shut out from this unique educational opportunity. It is hoped that during the coming year effective measures may be taken to remedy this difficulty.

Additional facilities have been provided by the Merrimac Chemical Company which enable us to offer unique facilities to advanced students who desire to carry out applied chemical engineering research. Research work can now be carried through the semi-plant scale stage.

The main research investigations carried out during the year were as follows:

(1) The path of travel of the fusion zone in a by-product coke oven was followed by means of pressure measurements, and information as to the rate of travel, the width of the fusion zone and the temperature gradient across the zone was obtained. A paper on this subject is now being prepared and should prove to be of considerable interest to the gas and coke industry.

(2) A study of acid mists has resulted in the development of highly satisfactory methods for mist analysis and in the formation of basic principles governing the removal of mists from gases.

(3) Interesting results have been obtained in a study of the E. M. F. differences between the side walls and pan of a chamber sulphuric acid plant. It is hoped that from this investigation a method may be worked out for the control of plant operation.

(4) Methods of true gas temperature measurement have been investigated and the results are now being used in connection with a survey of the temperatures within an open-hearth furnace.

The staff changes include the resignation of Professor D. W. Wilson, Director of the Buffalo Station, and Mr. R. H. Price, Director of the Bangor Station. Professor Ryan was transferred to the Directorship of the Buffalo Station and Professor H. C. Weber promoted to the Directorship of the Boston Station. Mr. F. W. Adams was promoted to the Directorship of the Bangor Station.

R. T. HASLAM.

RESEARCH LABORATORY OF APPLIED CHEMISTRY

The Laboratory has continued work under contract with industrial concerns on lubrication, rubber, petroleum, corrosion and anti-detonation compounds. In addition, new contract work on leather and on paper has resulted in an expansion of activity along these lines. Other researches of general interest have been prosecuted by thesis men and by members of the staff, the expenses of this work being financed by the Laboratory itself.

The earlier work of the Laboratory on corrosion has been continued and three papers have been published on this subject. These cover quantitative investigations of the submerged corrosion of metals, particularly as affected by acidity and alkalinity, velocity, protective films and contact with dissimilar metals.

In the field of lubrication considerable advance has been made in the application of hydrodynamic methods to problems and data of practical bearing lubrication. The effect of crank-case dilution on wear in automotive engines has been investigated both by road and laboratory tests. The possibilities of motion pictures in the investigation and presentation of lubrication problems have been demonstrated by the preparation of a film showing the flow of oil in a glass bearing under varying conditions of speed and load.

Considerable thesis work has been devoted to the fundamentals of gas absorption, and it is believed that the basic principles governing such absorption processes are now definitely established.

A group of ten postgraduate students has been conducting researches on various phases of the problem of the rates of combustion reactions. This work has involved not only a direct study

of reaction rates, such for example as that of water with carbon in water gas production, that of oxygen with carbon in the fuel bed, and that of carbon monoxide and hydrogen above the fuel bed, but has also necessitated an experimental study of radiation from flames, the measurement of true gas temperature and other related problems.

The work of one member of the staff has been largely devoted to the analysis of cost data and methods for chemical engineering operations, and this study is being reported in a series of journal articles.

Senior members of the staff contributed to the instructional work of the department by giving graduate courses on Applied Colloid Chemistry, Corrosion of Metals, Automotive Fuel Problems, Lubrication, Rubber and Combustion. A total of forty-five thesis men worked under direction of the staff during the past year, of which four were studying for the Doctor's degree and twenty-three for the Master's degree.

During the year ten men resigned from the Laboratory to accept industrial positions and eight new men have been appointed, making a present total of eighteen men working full time on the staff.

R. T. HASLAM.

DEPARTMENT OF NAVAL ARCHITECTURE AND MARINE ENGINEERING

The undergraduate teaching during the past year has been on the old lines but the Visiting Committee, under Mr. Bemis, invited a number of leading men in the profession to advise on the course of study, and, as a result of their recommendations, the schedule of the fourth year has been considerably changed. Special attention is now being given to "Principles of Accounting" and some of the more highly specialized professional work has been omitted to leave room for this more general subject.

The graduate work done by the naval officers in Course XIII-A continues to be of a high standard and some especially useful investigations were made in the application of photo-elasticity to naval structures.

Modifications of the museum and library space have been

necessitated to accommodate the Clark Collection of Marine Prints. This collection has now been mounted on standardized sheets and we find it to be of even greater importance than was first thought. The department is indebted to Mr. Francis R. Hart, '89, who put his great knowledge of marine prints at the service of the department and enabled it to do justice to the collection.

Owing to the present depressing state of the ship-building industry, it is not considered advisable to enter new fields of work involving further expenditure.

Mr. Evers Burtner, '15, who has been an instructor of Faculty grade for several years was promoted to Assistant Professor.

J. R. JACK.

DEPARTMENT OF ECONOMICS AND STATISTICS

During the past year there has been little change in undergraduate teaching as far as courses and methods of instruction.

The limitation of students referred to in the report of last year and the more careful sifting of students applying for registration in the Course of Engineering Administration has proved successful. Although the number in the course is large the quality of work is better and the task of administration is considerably relieved.

At the close of the academic year, Professor Schell, who for seven years has carried on the instruction in Business Management, presented his resignation, with the gratifying notice, however, that he would continue his duties until a successor is engaged.

The most notable development of our department was the authorization of a number of advanced courses for students studying for the degree of Master of Science. In the spring seven courses were laid out, six within our own department, and one in coöperation with the Department of English and History. These courses are as follows: Manufacturers' Accounts; Tax Returns and Accounts; Personnel Management; Marketing and Manufactured Products; Business Cycles; Financial Administration and Investigation; Economic History of the United States since 1900.

Owing to the lateness of the announcement, it is not expected that many students will register for these courses this year, but a

basis is laid which it is believed will be highly stimulating to the instructing staff and of service to the student body.

At the present time the department is fairly adequately equipped in instruction for the undergraduate courses already scheduled. Arthur W. Hanson has been appointed Assistant Professor of Accounting, and this will provide for the increased demands which are being made by other departments for instruction in this subject. There is, however, a need of further strengthening, especially in the field of research work, public utilities, and transportation. It is believed that the next appointment should be for a research assistant professor, who will give special attention to the supervision of thesis investigation, and take charge of small classes in advanced or optional work. By far the larger number of students select a thesis in subjects connected with Business Management, and for their supervision we have at present only two members of our staff in that branch.

DAVIS R. DEWEY.

DEPARTMENT OF ENGLISH AND HISTORY

During the past year the department has made an experiment in differentiating the instruction given in the second year so that it may be better adapted to the needs and ability of the students taking the course. For those men who were interested in general literature and who had already obtained some skill in reading, a course in Types of Literature was offered. This option provided for a special class of men — about one-quarter of the total number — a field of study which it was believed would be more profitable to them than the intensive work of the regular course. The administrative difficulties in carrying out the plan were not slight; but the wisdom of offering an alternative course has been demonstrated.

An important portion of the department work in each term consists in offering General Study Courses. The list of subjects is varied, including music, the fine arts, and philosophy, as well as English and history; and the registration in the courses shows appreciation on the part of the students of the instruction given. These advanced courses vary the regular work of the members of the department by affording them the privilege of teaching in the fields of their special interests, and the department is very

fortunate in having the opportunity to offer them. Particular importance is attached to the courses which train men in speaking informally. In some of the professional courses they are already required as part of the regular work. The department would welcome the opportunity of extending this training.

The appointment of Mr. Winward Prescott as Assistant Professor of English and of Mr. Harold Underwood Faulkner as Assistant Professor of History are promotions of men who have done excellent work as instructors and contributed in many ways to the success of the department.

HENRY G. PEARSON.

DEPARTMENT OF MATHEMATICS

In the undergraduate teaching during the past year there have been no important changes. We have had for students in Chemical Engineering the advantage of the new text of Professors Hitchcock and Robinson on Differential Equations — corresponding with Professor Phillips' text for students in other departments.

The statistics of the principal undergraduate classes have been as follows:

	Students	Sections
In the first term:		
Elementary Calculus, M11 (first year)	534	20
Integral Calculus, M21 (second year)	599	22
In the second term:		
Analytic Geometry, M12 (first year)	511	20
Calculus and Differential Equations, M22 (second year)	527	21
In the third term:		
Analytic Geometry and Calculus, M13 (first year)	471	18
Applied Mathematics, M23 (second year)	408	15

The following graduate and elective courses have been given: Theory of Probability and Method of Least Squares, Professor Bartlett; Statics, Kinetics, Dynamics, Dr. Taylor; Advanced Calculus and Differential Equations, Professor Woods; Theoretical Aeronautics, Professor Moore; Fourier's Series and Integral Equations, Dr. Wiener; Theory of Functions, Professor Rutledge; Theory of the Gyroscope, Professor Phillips; Vector Analysis, Dr. Zeldin; Modern Algebra, Professor Rutledge; Higher Geometry,

Professor Woods; Analytical Mechanics, Professors Lipka and Hitchcock; Theoretical Physics, Professor Phillips; Mathematics of Investment, Dr. Taylor; Rigid Dynamics, Professor Moore; Bombsights, Professor Phillips; Advanced Wing Theory, Professor Moore; Mathematical Laboratory, Professor Lipka and Mr. Douglass.

I have no special recommendations to make in regard to modification of courses or personnel. As additional equipment, the department needs a computing machine, having at present to depend upon other departments for this.

I may refer to previous statements in regard to the disadvantage for this department of the present library centralization.

In regard to possible new fields of work it seems to me chiefly important that we should continue to do full justice to the requirements of other departments which depend more or less closely on our own. In this connection I may refer to the number and variety of other courses in Applied Mathematics, mentioned above. Particular mention should also be made of the Summer Course for Teachers, given this year for the first time, with the coöperation of Mr. Walter F. Downey, head master of the Boston English High School. I believe the results of this interesting experiment will fully justify its continuance.

Having been granted leave of absence during the third term I have spent the past six months in Europe, and the affairs of the department have been well managed by Professor Woods as acting head.

I have to note with deep regret the death of Professor Joseph Lipka, a valued member of the department since 1908; and the resignation of Instructor J. S. Taylor. The extent of the loss sustained in the death of Professor Lipka has been already expressed in a minute adopted by the Faculty and in an article in our *Journal* on his life and work, by Dr. Wiener. Dr. Taylor has accepted an assistant professorship in the University of Pittsburgh after five years of successful work in our own department.

The list of publications of members of the department continues to show the value of the plan for relieving junior teachers of a definite part of the normal teaching load.

H. W. Tyler.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS

This department has had several changes in personnel though all but one occurred during the past summer.

Major Peter H. Ottosen, C.A.C., Major Randolph T. Pendleton, C.A.C., and Captain William B. Wright, A.S., were all relieved from duty at this institution by War Department orders on account of expiration of term of detail allowed by law.

Major Sydney S. Winslow, C.A.C., Major Lewis E. Goodier, Jr., U.S.A., Ret. Captain Thomas Phillips, C.W.S., First Lieutenant Godfrey M. O'Connell, C.A.C., and First Lieutenant Mark R. Woodward, A.S., have all joined under War Department orders.

Major Winslow will have charge of the Coast Artillery Unit with Lieutenant O'Connell as his assistant; Lieutenant Woodward will be attached to the Air Service Unit; and Major Goodier, in addition to his other duties, will be executive.

An additional enlisted man, Sergeant Samuel L. Frey, C.W.S., has been sent here for duty in connection with the newly organized C.W.S. Unit.

Authority was received from the Secretary of War to organize a Unit of the Chemical Warfare Service at this Institution. This is the first such unit formed at any college in the country. In collaboration with Dr. Keyes, a course of instruction has been prepared which has been approved by the War Department. The preliminary instruction for this unit was given last spring term to the then Sophomore class, and the advanced course instruction begins with the present fall term.

The recommendation made last year regarding the needs of an armory and the suggested method of obtaining such a building from the State are repeated.

F. W. PHISTERER,
Colonel, C.A.C. (D.O.L.).

DEPARTMENT OF MODERN LANGUAGES

The work has gone on with success and a certain amount of enthusiasm displayed in elective courses.

We have had our classes limited to about twenty-five students in each. The German classes have been carried on by Professors Vogel and Kurrelmeyer and Mr. Moore; the French and Spanish by Professor Langley and part time by Mr. Sexton.

The department is ready to form special courses to meet the needs of any department as undergraduate or graduate courses. During this year a course was given in German for the military men in Aeronautics and during the last term also in French. These courses have given practice in advanced scientific readings and are a source of inspiration for the students as well as for the instructors.

The department feels that it would be much better for all concerned to make a uniform entrance requirement of Elementary French and German and then continue Intermediate French and German as required. By this means a number of slightly varying courses here could be better grouped and the number of courses cut down.

The head of the department has again served as chief reader in German at the College Entrance Examination Board Readings in New York. Professor Langley spent the summer in Europe.

The Summer School work was in charge of Professors Vogel and Kurrelmeyer in German and Professor Skinner of Dartmouth College and Mr. Sexton in French. The attendance was quite large.

FRANK VOGEL.

DEPARTMENT OF HYGIENE

The purpose of the Department of Hygiene is twofold:

First. To guard and improve the health of the student body, members of the Faculty, and employees of the Institute, and

Second. To take care of the sick and injured, and to see that they receive adequate treatment.

In order to preserve the health of the students the following measures were taken:

During the year 1923–24, 1,117 examinations (601 freshman examinations and 516 re-examinations) were made according to the

standards required by the United States Army, and accurate records were catalogued for further reference.

As a result of these examinations 484 freshmen, or 2 per cent, were passed and 117 men were found to have defects of more or less importance. This shows a marked improvement over last year's physical examinations, when 4½ per cent of the freshman class were found to have defects.

In each instance when a defect was discovered the man was advised concerning it, and when possible, efforts to correct it were instituted.

In an effort to prevent accidents arising from competitive sports, all men were examined before being allowed to enter.

At the beginning of the year, three lectures were given to the freshmen on Personal Hygiene, First Aid, and Sex Hygiene, special stress being given to instructing the students how to live, what to eat, and how to preserve their health.

It was the policy of the department to influence every man to go into out-of-door competitive sports, and our efforts had the desired effect as shown by the following table:

Competitive Sports	275
Compulsory Gymnastics	225

By having so many in competitive sports, the classes in compulsory gymnastics were smaller, and more effectively handled. It is the desire of the Medical Director to substitute competitive sports, especially out-of-door sports, for compulsory gymnastics as far as possible.

Another effort to preserve the health of the students was made by the isolation of infectious and contagious diseases. Every illness was at once reported to the Medical Department, and all infectious or contagious cases were handled as efficiently as possible for the welfare of the whole student body.

During the year the following contagious diseases were discovered and isolated:

Parotitis, 8	Scarlet Fever, 2
Chicken Pox, 1	Dipthheria, 3
Measles, 10	Tuberculosis, 3

Typhoid Fever, 1

During the winter months 2,302 cases of influenza, tonsilitis and bronchitis were treated and isolated.

For the care of the sick and injured, two clinics were held in the Medical Department, one from 8.30 to 9.30 a.m., and one from 4.00 to 5.00 p.m. The Medical Department was open for cases of accidents from 8.00 a.m. until 5.00 p.m., and a trained nurse was always in attendance.

During the year 11,906 visits were made at the Medical Department:

Medical cases, 6,723.
Digestive disturbances, 436.
Surgical cases, 5,183.
Nature: Appendicitis, hernia, fracture, wens, warts, etc.
Total number requiring hospital care, approximately 38.
Nature: Tuberculosis, fractures, eye injuries, contagious diseases, malaria, diseases of the gall bladder, diseases of the respiratory tract, appendicitis, infected tonsils and adenoids, etc.

They were distributed through the months as follows:

July,	278	January,	1289
August,	412	February,	1409
September,	382	March,	1147
October,	1817	April,	1565
November,	1372	May,	1469
December,	1342	June,	524

This table shows that the busiest months were October and April. Most of the cases during October were surgical. During December and January diseases of the respiratory tract were prevalent.

In order to correct the defects found during the examinations, a special class was organized for Corrective Gymnastics under the direction of a man especially trained for this work. Twenty-seven men entered this class, and the most gratifying results were obtained.

A new feature in the Physical Training Department was the taking of silhouette photographs. These photos show defects in posture very clearly and were of great assistance in correcting them. The pictures were shown to the students and where poor posture existed the ill effects which follow from such a condition were pointed out and explained to them, then remedial exercises were prescribed to overcome the faults.

A special class was organized this year to demonstrate what can be done in bringing students who are underweight up to a higher standard of physical fitness. The causes of this condition

have been found to be social as well as medical and can best be dealt with in a nutrition class. The work covered a period of twenty weeks and the results were very striking, showing an average gain of over seven pounds per man. The interest of the men was excellent as was manifested by their good attendance upon an extra class held out of hours. Two or more classes will be held during the coming year in an effort to do away as far as possible with physical unfitness.

When any serious illness was discovered, the student's parents were immediately notified, and every effort was made to carry out their requests. The parents were kept advised by telegram each day in regard to the condition of the patient.

As many of the students required treatment for which they were unable to pay, it was necessary for the department to use $615.72 of a fund provided for that purpose.

Three hundred seventy-four visits were made by the Instructing Staff.

Only four deaths occurred during the year:

2 Tuberculosis
1 Appendicitis
1 General Septicæmia

The following table shows the comparative figures of 1922–23 and 1923–24:

			1922–1923					
Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
1414	1442	996	2042	2277	1609	1426	1345	556
			1923–1924					
Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
1817	1372	1342	1289	1409	1147	1565	1469	524

Each student absent on account of illness was required to report to the Medical Department before returning to work. In several instances men were found to have let their enthusiasm overrule their good judgment, and were sent home for further convalescence.

In the course of the year 1922–23 there were 2,306 days lost from October to June, or a loss of more than one day per student. During the year 1923–24 there were but 1,001 days lost from October to June.

In the future enlargement of the scope of the Department of

Hygiene the following questions should be taken under consideration:

First. A certain standard of physical development should be required for admission to the Institute. A great many applicants for admission to the Institute are found to be physically unfit to undertake the work of intensive study, and it is an economic loss to educate men who are incapable of achieving success on account of physical defects.

Second. A physical examination of every man should be made each year or, even better, every six months. The weak link in our present methods is the fact that after a man has his first physical examination on entrance to the Institute, no more physical examinations are compulsory during the ensuing four years. Many serious diseases may develop in that length of time, and we have no provision for that under the present arrangement. Beginning as of October 4, 1924 it is compulsory that all seniors, as well as men entering the Institute, be examined. In this way we can acquire statistics to show the effect of four years' intensive study on the average student and also enable us to obtain an idea of the physical fitness of the seniors when they graduate.

GEORGE W. MORSE, M.D.
Medical Director.

SUMMER SESSION 1924

This report covers briefly the results of the Summer Session for 1924, and recommendations for next year.

The net registration was 1,463 as compared with 1,419 of the previous year. The fees received were about three thousand dollars more in 1924 than in 1923 and the expenses were about two thousand dollars less, so that there was a net gain to the Institute of about five thousand dollars in 1924.

The fees received exceeded salaries paid by about $52,000. How much of this is net profit, if any, is a matter of bookkeeping depending on the amount of overhead and plant expense charged to the Summer Session. It would seem that, while the net income for the Summer Session is more than enough to cover its marginal cost, the difference is not yet sufficient to warrant a reduction in fees.

The fees in 1924 were modified so as to include a registration fee of $5 for the first subject, plus a fixed fee for each individual

subject. The maximum fee, irrespective of the number of subjects taken, was fixed at $120, which, together with the registration fee of $5, limited the maximum payment by any student to $125. It was also arranged that students desiring to cancel subjects after entering upon the work could do so by forfeiting $5 and paying in proportion to the work done. These arrangements were satisfactory and no changes in these respects are recommended.

The Summer Session bulletin was issued earlier than last year and in combination with the 1923–1924 bulletin of courses of study which contains the necessary data and descriptive matter for the regular subjects. It is recommended that this method be continued as being less expensive and more complete, but that next year the special courses be described more fully. This catalog should then be reinforced by a general Summer Session circular for advertising purposes plus a circular for the teachers' courses. In this connection it is quite necessary to prepare the schedules and issue the bulletin before January so that information may be on hand for registration officers in approving student schedules for the second term of the regular academic year. There is no reason why this cannot be done, but, once scheduled, the summer courses ought not to be changed.

Teachers' courses were again offered in Mathematics, Physics, Chemistry and in Public Health. Those in Mathematics and in Public Health were moderately successful but can be greatly improved in attendance. The course was given in Physics but the registration was hardly worth it. The course in Chemistry was cancelled for lack of registration. I still believe that the Institute ought to give such courses and that they will ultimately be successful as they become better known. It is recommended that they be continued by again employing as instructors outside teachers well known in their respective professions.

In conclusion I would recommend that studies be continued looking towards the greater utilization of laboratories, shops and research facilities during the summer and in offering courses of sufficient interest to various industries as to warrant their sending men for short periods of concentrated study or research where it appears to be of advantage to them and to the Institute.

T. H. DILLON,
Director.

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S. D. ZELDIN. On Tautochronous Motion. *Journal of Mathematics and Physics.* Vol. 3, No. 2. April 1924.

S. D. ZELDIN. Conformal Transformations of Linear Homogeneous Difference Equations and Their Invariants. *Journal of Mathematics and Physics.* Vol. 2, No. 1. December 1922.

10-24:1200-T.P.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

TREASURER'S REPORT

FOR THE YEAR ENDED JUNE 30, 1924

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

AUDITORS' CERTIFICATE

Sirs:

We have examined the books and accounts of the Treasurer and the Bursar of the Massachusetts Institute of Technology for the year ended June 30, 1924, and we report upon the accompanying financial statements of the Treasurer, as follows:

We compared the investment accounts in detail with the certified lists of securities held by the Old Colony Trust Company, and verified the several assets and liabilities shown in the Balance-Sheet, Schedule D, in accordance with the terms of our detailed report to you.

We satisfied ourselves by an investigation of the accounting methods employed by the Treasurer and the Bursar, and by extensive tests of the recorded transactions, that income received during the year had been duly accounted for and that expenditures were properly controlled and authorized.

We hereby certify that, subject to the comments above, the accompanying Balance-Sheet and Statements of Income and Expenditure correctly set forth respectively the financial condition of the Institute at June 30, 1924, and the financial results for the year ended at that date, and that the foregoing financial statements are in accordance with the books.

We extended our examination to include the transactions relating to the accounts of the Wyeth and Hewett Funds, of which the Massachusetts Institute of Technology acts as Trustee, and satisfied ourselves that the provisions of the Trust Agreements had been fulfilled.

Respectfully submitted,

(Signed) PATTERSON, TEELE & DENNIS,
Accountants and Auditors.

131 State Street, Boston, Mass.
September 2, 1924.

REPORT OF THE AUDITING COMMITTEE TO THE CORPORATION OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

September 10, 1924.

We report that in carrying out our duties we have considered it a matter of good practice to change auditors after a period of years and we, therefore, have employed Messrs. Patterson, Teele & Dennis, Accountants and Auditors, to examine the books and audit the accounts of the Treasurer and Bursar for the fiscal year ended June 30, 1924. Their certificate is attached to our report.

It is with very great regret that we note the death of our colleague, William Lowell Putnam, a life member of the corporation, who has served this committee for many years.

AUDITING COMMITTEE,
MERTON L. EMERSON,
FRANCIS W. FABYAN.

Treasurer's Report

To the Corporation of
the Massachusetts Institute of Technology:

The statements submitted herewith show the financial condition of the Massachusetts Institute of Technology as of June 30, 1924, 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:

Alumni Fund Payments	$175.00	
Anonymous for Special Purposes	6,052.50	
Payments for New Land Purchase	109,525.00	
Boston Society of Civil Engineers, for S. E. Tinkham Scholarship	2,333.16	
Class of 1893, for New Dormitory	100,000.00	
Class of 1896, for Scholarship Fund	2,272.00	
E. H. Cox, for Special Purposes	100.00	
Estate of F. W. Emery, for General Purposes	812.50	
Payments to M. I. T. Educational Endowment	223,949.88	
Estate of A. F. Estabrook, for General Purposes	10,000.00	
Rebecca R. Joslin, for Graduate Scholarship Fund	1,540.00	
Estate of Hiram F. Mills, for General Purposes	5,175.00	
Estate of Edward S. Philbrick, for General Purposes	2,000.00	
Redfield Proctor, for Vermont Scholarship Fund	6,000.00	
Estate of George W. Richards, for General Purposes	1,000.00	
Caroline A. Verges, for Luis F. Verges Fund	10,000.00	
Estate of Morrill Wyman, addition to Fund	1.06	
		$480,936.10

Gifts for Research:

Subscriptions to Tech Plan Research Fund	$4,100.01	
American Tel. and Tel. Co., for Research	10,000.00	
American Tel. and Tel. Co., for Vail Library	2,000.00	
Knox Woolen Co., for Division Fund	500.00	
National Electric Light Association, for Research	4,000.00	
		$20,600.01

Miscellaneous Gifts:

J. E. Aldred, for Aldred Lectures	$5,000.00	
Contributions to Boat House Committee	2,700.00	
Contributions to Aldred Lecture Account	1,642.02	
Contributions to Course XV Fund	90.00	
E. I. du Pont de Nemours Co., for Fellowship	750.00	
Graselli Chemical Co., for Fellowship and Scholarship	1,250.00	
F. B. Tough, for Student Aid	465.00	
Estate of F. E. Weston, for Scholarship	400.00	
Contributions to E. and H. Music Fund	150.00	
Francis H. Williams, to Physical Chemistry	100.00	
Anonymous, for Model	250.00	
Anonymous, for Marine Exhibit	420.00	
Anonymous, for Portrait	50.00	
		$13,267.02
		$514,803.13

The M. I. T. Educational Endowment Fund on June 30, 1924, amounted to $7,268,366.39. A condensed statement follows herewith:

Subscriptions		*Payments*
$4,000,000.00	George Eastman	$4,000,000.00
2,888,129.73	Alumni and Others	2,269,076.39
1,075,930.00	Technology Plan Contracts	999,290.00
$7,964,059.73		$7,268,366.39

The Educational Plant was increased during the past year by the acquisition of about thirty acres of land west of Massachusetts Avenue and by the erection of the new Class of 1893 Dormitory Unit.

The expenditures for these additions amounted to $728,000. Although a large part was covered by special gifts we were obliged to draw heavily upon our unrestricted funds, with the result that during the year they have been reduced from $447,000 to $98,000.

This leaves our unrestricted funds at such a low ebb as to be a subject for serious concern. It is hoped that they may be augmented soon.

A new Fund called the Endowment Reserve (see page 49) has been created this past year from gains on the sale or maturity of securities, together with a credit of one per cent of the total net income from our General Investments. It is planned to increase this fund similarly each year until it is large enough to represent a substantial reserve against any reasonable depreciation or loss on the sale or maturity of any items in our list of General Investments — the income from which is shared pro rata by all but seven (7) of our one hundred fifty-two (152) Endowment Funds.

The present report contains a number of new schedules, in further support of the Operating Expenses (Schedule C) not previously exhibited in detail, but of much value in preparing and operating the budget for succeeding years.

Respectfully submitted,

EVERETT MORSS,
Treasurer.

September 30, 1924.

SCHEDULE A

FINANCIAL RESULT OF OPERATION FOR YEAR ENDED JUNE 30, 1924 COMPARED WITH THE PREVIOUS YEAR

	1922–1923	*1923–1924*
Current Operating Expense (Schedule C)	$2,083,603.31	$2,180,258.56
Current Operating Income (Schedule B)	2,096,893.11	2,144,714.41
Excess Income	$13,289.80	.....
Excess Expense	.....	$35,544.15

PROFIT AND LOSS

Net Loss	$38,550.50	
Net Profit (Schedule S)	.....	$3,764.92
	$25,260.70	$31,779.23
Excess Expenses of Funds, charged to Funds	6,651.22	32,818.37
Decrease of Current Surplus	$18,609.48	.....
Increase of Current Surplus (Schedule S)	.....	$1,039.14

SCHEDULE B

OPERATING INCOME FOR YEAR 1923–1924

	Regular Courses	*Research and Funds*	*Total*
INCOME FROM STUDENTS:			
(*a*) Tuition Fees	$896,758.11	.....	.....
(*a*) Laboratory Fees	43,731.25	.....	.....
Locker Fees	2,216.01	.....	.....
Entrance Examination Fees	3,278.00	.....	.....
Condition Examination Fees	21,805.00	.....	.....
Registration Fees	4,714.00	.....	.....
Sale of Lecture Notes (Net)	22.98	.....	.....
Dormitory Rentals (Schedule C–15)	10,425.25	.....	.....
	$982,950.60	.....	$982,950.60
INCOME FROM INVESTMENTS:			
Endowments, General Purposes, (Schedule P)	$738,294.39	$10,826.41	$749,120.80
(*a*) Endowment for Scholarships, applied	42,690.00	.....	42,690.00
Endowments, Designated Purposes	67,563.86	95,029.98	162,593.84
(*b*) Net (Schedule Q)	$848,548.25	$105,856.39	$954,404.64
INCOME FROM NATIONAL GRANTS:			
Federal Aid from Act 1862	$5,306.68	.....	.....
Act 1890	16,666.67	.....	.....
	$21,973.35	.....	$21,973.35
INCOME FROM OTHER SOURCES:			
Division of Laboratory Supplies	$3,772.20	.....	.....
Torpedo Research Account	1,797.34	.....	.....
Bank Interest	6,471.25	.....	.....
Huntington Hall	3,500.00	.....	.....
United States Smelting, Refining and Mining Co.	3,000.00	.....	.....
Walker Building, Boston	10,000.00	.....	.....
	$28,540.79	.....	$28,540.79
MINOR FUND EARNINGS:			
Total (Schedule R)	.....	$156,845.03	$156,845.03
TOTAL OPERATING INCOME (Schedule A)	$1,882,012.99	$262,701.42	$2,144,714.41

(*a*) Total Tuitions and Scholarships, including $5,855.00 from Laboratory Fees Income, $945,303.11.
(*b*) Additional Income offset by Accrued Interest, Expenses, etc., $34,911.13.

SCHEDULE C

OPERATING EXPENSE FOR YEAR 1923–1924

	Regular Courses	*Research and Funds*	*Total*
ACADEMIC EXPENSES:			
Salaries of Teachers (C–1)	$908,650.79	.....	.....
Wages Accessory to Teaching (C–1)	31,997.78	.....	.....
Wages, Laboratory Service (C–1)	48,080.59	.....	.....
Department Expenses (C–2)	128,188.62	.....	.....
General Library (Schedule C–3)	34,324.49	.....	.....
	$1,151,242.27	.....	$1,151,242.27
ADMINISTRATION EXPENSES:			
Salaries, Officers	$59,150.00	.....	.....
Wages, Clerical Staff (C–4)	63,262.76	.....	.....
Printing and Advertising (C–5)	32,189.15	.....	.....
General Expense (C–6)	66,964.00	.....	.....
	$221,565.91	.....	$221,565.91
PLANT OPERATION AND MAINTENANCE:			
Wages, Building Service (C–7)	$121,739.53	.....	.....
Power Plant Operation (C–8)	118,234.75	.....	.....
Fire Insurance (Net)	6,458.80	.....	.....
Repairs and Alterations (C–9)	125,801.59	.....	.....
	$372,234.67	.....	$372,234.67
SPECIAL APPROPRIATIONS:			
Total (C–10)	$38,429.00	.....	$38,429.00
MISCELLANEOUS EXPENSES:			
Division of I. C. and Research	$15,488.26	.....	.....
Civil Eng. Summer Camp 1923	19,586.21	.....	.....
Mining Eng. Summer Camp 1923	14,430.14	.....	.....
Athletic Field	10,756.94	.....	.....
Boat House	3,106.93	.....	.....
*Walker Memorial (Schedule C–12)	19,221.99	.....	.....
Chemical Laboratories (D. of L. S.)	6,885.41	.....	.....
New Equipment	10,061.90	.....	.....
Society of Arts	1,729.14	.....	.....
	$101,266.92	.....	$101,266.92
EXPENSES OF MINOR FUNDS:			
Total, including Salaries (Schedule R)	.....	$220,840.98	$220,840.98
AWARDS (other than Undergraduate Scholarship):			
Total (Schedule C–13)	.....	$38,258.45	$38,258.45
PAYMENTS FROM INCOME OF SPECIAL FUNDS:			
Total (Schedule C–14)	.....	$36,420.36	$36,420.36
TOTAL OPERATING EXPENSE (Schedule A)	$1,884,738.77	$295,519.79	$2,180,258.56

*Not including Dining Service (see Schedule C–11)

SCHEDULE C-1

SALARIES OF TEACHERS, WAGES ACCESSORY TO TEACHING AND LABORATORY SERVICE

Department	*Teachers Salaries (Net)*	*Wages Accessory to Teaching (Net)*	*Laboratory Service (Net)*
Summer Session	$59,720.43	.....	.....
Aeronautics	9,000.00	.....	.....
Architecture	52,125.00	$1,873.00	$2,135.62
Biology	21,100.00	1,150.00	1,369.50
Chemistry	112,074.52	2,967.50	693.75
Chemistry, Res. Lab. of Physical	17,880.00	*.....	*.....
Chemical Engineering	20,800.00	1,227.00	1,254.72
Chemical Engineering, Prac. School	23,270.00	*.....	.....
Civil Engineering	58,058.50	2,027.00	.....
Division of Laboratory Supplies	.....	.....	17,121.88
Drawing	22,500.00	1,040.00	.....
Economics	37,249.95	3,269.00	.....
Electrical Engineering	75,464.40	4,561.33	8,658.62
Electrical Engineering, Research	3,600.00	†.....	†.....
English and History	41,700.00	2,075.00	.....
General Eng. and General Science	1,000.00	.....	.....
General Studies	1,800.00	.....	.....
Hygiene	15,153.13	372.00	.....
Lantern Operation	.....	.....	485.75
Mathematics	50,900.00	*.....	.....
Mechanical Engineering	128,999.43	3,960.60	11,148.29
Military Science	4,387.04	.....	.....
Mining, Metallurgy and Geology	45,782.67	3,221.85	3,670.15
Modern Language	15,625.00	*.....	.....
Naval Architecture	23,100.00	924.00	1,392.31
Physics	61,030.72	3,329.50	150.00
Physics, Research Lab. of Indus.	6,330.00	.....	.....
Totals (Schedule C)	$908,650.79	$31,997.78	$48,080.59

*Included in appropriation for Department Expenses (Schedule C-2)
†Wages paid from Fund (Schedule R)

SCHEDULE C-2

DETAIL OF DEPARTMENT EXPENSES (Net)

Department	*Expense (Net)*	*Overdrafts*
Aeronautics	$1,097.18	$97.18
Architecture	2,618.09	168.09
Biology	2,738.42	238.42
Chemistry	16,488.08	588.08
Chemical Engineering	3,360.90	.....
Chemical Engineering Practice School	14,537.97	37.97
C. E. P. S. (Winchester Club House)	691.90	.....
C. E. P. S. (Bangor Club House)	2,500.00	.....
Chemistry, Research Laboratory of Physical	6,156.63	906.63
Civil Engineering	1,861.09	.....
Drawing	1,295.68	395.68
Economics	1,489.55	.....
Electrical Engineering	7,600.39	100.39
Electrical Engineering, Special	8,000.00	.....
English and History	488.85	.....
English and History, Special	349.42	.....
General Engineering and General Science	432.55	.....
General Studies	281.93	.....
Hygiene	1,669.80	.....
Mathematics	699.97	.....
Mechanical Engineering	19,569.38	69.38
Mechanical Engineering, Special	10,667.54	.....
Mental Tests	150.00	.....
Metallography, Special	2,000.00	.....
Military Science	1,498.40	98.40
Mining, Metallurgy and Geology	5,200.00	.....
Modern Language	547.45	47.45
Naval Architecture	526.21	.....
Physics	16,471.66	1,271.66
Physics, Special	673.53	.....
United States Ordnance Officers	545.38	.....
	$132,207.95	$4,019.33
Less Overdrafts (Schedule D-2)	4,019.33	
Net Expense (Schedule C)	$128,188.62	

SCHEDULE C–3

GENERAL LIBRARY

Salaries of Officers		$3,624.99
Wages, Clerical Staff		16,799.50
Expenses	$14,263.48	
Less Overdraft (Schedule D–2)	363.48	13,900.00
Total (Schedule C)		$34,324.49

SCHEDULE C–4

WAGES, CLERICAL STAFF, ADMINISTRATION OFFICES

Offices of the President, Dean and Secretary	$7,919.12
Registrar's Office	26,158.70
Bursar's Office	17,476.05
Superintendent's Office	10,929.05
Miscellaneous (Alumni Office)	779.84
Total (Schedule C)	$63,262.76

SCHEDULE C–5

PRINTING AND ADVERTISING

Printing, Bursar's Office	$847.70
Printing, Registrar's Office	6,065.54
Printing, Offices of President, Dean, Secretary and Superintendent	1,455.67
Publicity	718.12
Advertising in M. I. T. Publications	1,994.56
Bulletins: President's and Treasurer's Reports	1,086.00
General Information	1,304.00
Directory	968.63
Courses of Study	2,480.00
Summer Courses	2,471.96
Course Pamphlets, etc.	2,843.00
Examinations	2,161.93
Tabular Views	1,526.43
Catalog	2,587.62
Class Cards and Registration Material	2,224.95
Summer Session Advertising	1,453.04
Total (Schedule C)	$32,189.15

SCHEDULE C-6

GENERAL EXPENSE (Net)

Administration Expense		$7,462.21
Carfares, Express, Freight, Telegrams		863.92
Gees, Dues, Commissions, etc.		30,886.78
Feneral Office Supplies		3,014.51
Expenses of Graduation, etc.		8,293.49
Endowment Fund Collection		1,097.37
Postage		2,084.84
Traveling Expense		2,514.89
Telephone Service		11,642.63
Identification Photographs		465.04
Towel Supply		183.77
Miscellaneous		1,219.93
Total		$69,729.38
Less Credits, Laundry	$837.03	
Trucking	1,928.35	2,765.38
Total (Schedule C)		$66,964.00

SCHEDULE C-7

WAGES, BUILDING SERVICE

Shop Foremen	$8,316.00
Janitors: Supervisory	2,220.00
Staff	50,257.21
Night Cleaners: Supervisory	1,664.00
Staff	16,931.11
Watchmen (including Cambridge Police)	15,498.89
Window Cleaning	7,667.03
Heating and Ventilation	8,664.04
Messengers	1,247.52
Mail Service	2,575.01
Elevator, Shipper, Stockroom	4,681.72
Miscellaneous	2,017.00
Total (Schedule C)	$121,739.53

SCHEDULE C–8

POWER PLANT OPERATION (Net)

Coal	$88,731.01
Water	2,080.60
Supplies	3,273.90
Repairs	7,725.83
Ashes and Trucking	953.12
Salaries	31,187.27
Electricity (Rogers Building)	2,365.58
Total	$136,317.31
Less Transfers to Dormitories, Dining Service, Walker Memorial, etc.	18,082.56
Total (Schedule C)	$118,234.75

SCHEDULE C–9

REPAIRS, ALTERATIONS AND MAINTENANCE

	Supplies and Repairs	*Alterations*	*Total*
Buildings, etc.			
Group No. 1	$3,168.29	$62.04	$3,230.33
Group No. 2	9,152.02	736.60	9,888.62
Group No. 3	9,478.34	2,798.19	12,276.53
Group No. 4	8,569.87	394.76	8,964.63
Group No. 5	2,402.24	530.00	2,932.24
Group No. 8	3,929.99	329.08	4,259.07
Group No. 10	5,709.12	162.88	5,872.00
Rogers Building, Boston	3,395.99	588.99	3,984.98
Building 12, Hangar	758.01	324.33	1,082.34
Building 17, Storage	790.83	.....	790.83
Building 19, Industrial Chem. Lab.	184.43	.....	184.43
Building 20, Wind Tunnels	87.44	.....	87.44
Building 21, Automotive Eng. Lab.	138.99	.....	138.99
Building 29	290.61	.....	290.61
Building 30	1,339.22	.....	1,339.22
Building 35, Mechanic Arts	666.99	.....	666.99
Building 36, Garage	303.04	.....	303.04
Building 38, Gas Engine Lab.	487.77	188.85	676.62
Building 39	489.19	.....	489.19
Building 46 Compression Lab.	1,303.85	3,345.27	4,649.12
President's House	2,599.04	.....	2,599.04
Compressor House	347.60	.....	347.60
Shelter	589.92	.....	589.92
Furniture	4,496.87	.....	4,496.87
Elevators	1,735.80	.....	1,735.80
Water	9,430.14	.....	9,430.14
Gas	4,100.31	.....	4,100.31
Grounds	33,213.80	1,178.40	34,392.20
Rubbish	1,529.02	.....	1,529.02
Undistributed	4,286.64	186.83	4,473.47
Total (Schedule C)	$114,975.37	$10,826.22	$125,801.59

SCHEDULE C–10

DETAIL OF SPECIAL APPROPRIATIONS

Journal of Mathematics and Physics	$2,000.00
Food and Fisheries Engineering, Biology Dept.	5,500.00
Special Travel Expense	500.00
Historic Memorials Committee	1,000.00
Walker Memorial, Alterations to Billiard Room	3,250.00
New Construction, Summer Mining Camp	9,179.00
Tunnel under Ames Street	3,200.00
No. 215 Lectures	600.00
Special Notes, Economics Department	1,200.00
Research Laboratory of Applied Chemistry	9,000.00
Ore Dressing Laboratory, Mining Department	2,500.00
Reprints of Pamphlets	500.00
	$38,429.00

SCHEDULE C–11

DINING SERVICE (Net)

Income		
Cash	$121,522.64	
Less Outstanding Coupon Books	412.87	
Total		$121,109.77
Expenses:		
Food	$53,899.39	
Salaries	44,190.69	
Light, Heat, Power and Water	4,926.50	
Laundry	2,616.24	
Printing and Advertising	868.09	
Ice, Refrigeration	3,417.56	
Repairs	1,045.99	
Administration Expense	406.77	
Dining Room and Kitchen Utensils	2,980.05	
Soap, Cleansers	157.48	
Express, Freight, Trucking	267.32	
Insurance	366.00	
Dining Service Reserve	5,967.69	
Total		$121,109.77

SCHEDULE C–12

WALKER MEMORIAL (Net)

Income:		
Undergraduate Dues	$2,567.00	
Games	4,094.01	
Total		$6,661.01
Expenses:		
Salaries	$10,026.13	
Light, Heat, Power	4,157.50	
Water	526.50	
Repairs, Alterations, Maintenance	9,403.28	
Trucking and Administration	614.71	
Supplies	590.72	
Insurance	324.25	
Equipment	75.75	
Magazines and Papers	164.16	
Net Expense		$25,883.00
Net Loss (Schedule C)		$19,221.99

SCHEDULE C–13

AWARDS FROM FUNDS (Other than Undergraduate Scholarship)

Edward Austin Fund for Research	$5,750.00	
Edward Austin Fund for Graduate Scholarship	9,620.61	
Edward Austin Fund, Travelling Scholarship in Architecture	1,250.00	
Teachers' Fund, Retiring Allowances	7,889.84	
Robert A. Boit Fund, Prizes	225.00	
Bursar's Fund, for Student Aid	2,132.50	
Dean's Fund, for Student Aid	1,405.00	
For Graduate Scholarship and Fellowships	5,384.00	
Jonathan Whitney Fund:		
For Technology Christian Association	1,500.00	
Undergraduate Dues	2,274.00	
Student Aid	827.50	
Total (Schedule C)		$38,258.45

SCHEDULE C-14

PAYMENTS FROM INCOME OF SPECIAL FUNDS

Frank Harvey Cilley, for Books	$6,048.43
Charles Lewis Flint Library, for Books	224.12
John Hume Tod, for Books	111.74
Class of 1923 Endowment Reserve, for Premium Payments	497.47
Technology Matrons' Teas, for Teas	314.88
F. W. Boles Memorial, for Architecture Dept.	1,085.35
Edmund K. Turner, for Annuity and Tax	2,098.75
Pratt Naval Architectural, for Annuity and Tax	12,024.75
Pratt Naval Architectural, for Marine Exhibit	2,929.51
Samuel Cabot, for Applied Chemistry Research	4,500.00
C. B. Richardson, for Applied Chemistry Research	1,750.00
Technology Plan, for Research	2,570.00
Ellen H. Richards, for Research	594.67
Edward Whitney, for Volcanic Research	1,000.00
Edna Dow Cheney, for Women's Room	670.69
Total (Schedule C)	$36,420.36

SCHEDULE C-15

DORMITORY OPERATION (Net)

Income:		
From Rentals	$46,100.19	
Fees Refunds	3,206.43	
Total		$42,893.76
Expenses:		
Salaries	$10,386.24	
Laundry	1,370.46	
Heat, Light, Power	4,737.00	
Water	1,052.90	
Repairs	5,208.53	
Supplies	5,141.90	
Insurance	462.00	
Trucking	191.44	
Printing, Administration, Telephone	468.62	
New Equipment	198.47	
Interest on Mortgage Loan (Whitney Fund)	8,625.00	
Total	$37,842.56	
Less Inventory, Supplies (Schedule D-2)	5,374.05	
		$32,468.51
Net Income (Schedule B)		$10,425.25

SCHEDULE D
TREASURER'S BALANCE SHEET

1

ENDOWMENT ASSETS

Investments and Real Estate (Schedule H)	$16,871,929.95
Cash: For Investments (Schedule D–3)	189,096.13
Cash: Advanced for Educational Plant (per contra)	127,803.71
	$17,188,829.79

2

CURRENT ASSETS

Cash: For General Purposes (Schedule D–3)	$22,877.40
Accounts Receivable (Schedule D–1)	38,677.91
Students' Fees, Receivable	855.21
Students' Deposits, Receivable	699.60
Premiums Paid on Unexpired Insurance	20,559.70
Inventories and Advances for 1924–25 (Schedule D–2)	147,679.75
	$231,349.57

3

EDUCATIONAL PLANT ASSETS

Land, Buildings, and Equipment (June 30, 1923)	$11,423,691.97
Additions during year	728,510.05
Total (Schedule J)	$12,152,202.02

SCHEDULE D

JUNE 30, 1924

1

ENDOWMENT FUNDS

Funds (Schedule Q)	$17,188,829.79
	$17,188,829.79

2

CURRENT LIABILITIES

Minor Funds (Schedule R)	$101,864.38
Accounts Payable	8,395.17
Students' Fees and Deposits Payable (Schedule D–4)	86,660.77
Undergraduate Dues, Balance	4,746.66
Dining Room Coupons, Outstanding	412.87
Total	$202,079.85
Surplus, Available for Current Expenses (Schedule S)	29,269.72
Total	$231,349.57

3

EDUCATIONAL PLANT AND CAPITAL ACCOUNTS

Endowment for Educational Plant (June 30, 1923)	$11,423,691.97
Appropriated during year	600,706.34
Borrowed from Investment Assets (per contra)	127,803.71
Total (Schedule K)	$12,152,202.02

SCEHDULE D–1

DETAIL OF ACCOUNTS RECEIVABLE

United States Government, Miscellaneous Contracts	$5,052.10
For Account of Research Laboratory of Applied Chemistry	10,022.06
Class of 1923 Endowments, Premiums Paid	1,288.03
Boathouse Committee	970.55
United States Veterans' Bureau	10,031.45
Alumni Association of M. I. T.	1,945.89
Harvard Coöperative Society, Inc.	2,214.65
Miscellaneous Accounts	7,153.18
Total (Schedule D)	$38,677.91

SCHEDULE D–2

DETAIL OF INVENTORIES AND ADVANCES FOR 1924–1925

Department Overdrafts (Schedule C–2)	$4,019.33
General Library Overdrafts (Schedule C–3)	363.48
Summer Session Salaries	2,012.50
Civil Engineering Summer Camp 1924	3,437.15
Inventories — Notes held by Coöperative Society	4,749.72
Dormitory Supplies	5,374.05
Dining Service, Food, Utensils, etc.	20,410.42
Walker Memorial Games, Candy, Cigars, etc.	333.33
Stamps and Envelopes	630.80
Office Supplies	1,403.59
Building and Janitors' Supplies	3,306.23
Towel Supply	107.10
Architectural Students' Supply Room, Stock	1,753.35
Stock Room: Pipe, Fittings, Lumber, Hardware, Paint, Oil, Glass and Miscellaneous Supplies	23,540.06
Division of Laboratory Supplies: Chemicals, Glassware, Platinum, etc.	62,676.14
Coal	13,562.50
Total (Schedule D)	$147,679.75

SCHEDULE D–3

TOTAL CASH RECEIPTS AND DISBURSEMENTS FOR THE YEAR

Total Cash Disbursements	$3,594,898.73
Total Cash Receipts	3,416,625.02
Excess of Disbursements	$178,273.71
Cash, June 30, 1923	390,247.24
Cash, June 30, 1924	$211,973.53

CASH BALANCE

Cash for Investment — on Deposit		$189,096.13
Cash for Current Purposes:		
On Deposit	$21,599.53	
In Office	1,277.87	
		22,877.40
Total Cash (Schedule D)		$211,973.53

SCHEDULE D–4

STUDENTS' FEES AND DEPOSITS, PAYABLE AND IN ADVANCE

Registration Fees, Summer Session 1924	$3,855.00
Tuition Fees, 1924–1925	25.00
Tuition Fees, Summer Session 1924	60,551.68
Students' Deposits Payable	11,273.29
Students' Deposits, Summer Session 1924	5,185.00
Dormitory Deposits in Advance	1,560.00
Dormitory Rentals, Summer Session 1924	3,771.75
Deposits for Uniforms, and Military Equipment	175.80
Deposits for R. O. T. C. Uniform Account	150.00
Registration Fees, Mining Camp 1924	113.25
	$86,660.77

SCHEDULE H

INVESTMENTS, BONDS, STOCKS

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1923*
	GOVERNMENT AND MUNICIPAL BONDS			
$260,000	Canada, Dominion of, 30-Year Gold	5%	1952	$258,511.88
1,000	Cincinnati, City of, Street Imp. . .	4½%	1933	1,017.00
500	Cincinnati, City of, Street Imp. . .	4½%	1935	528.00
1,000	Cincinnati, City of, Street Imp. . .	4½%	1935	1,058·00
6,500	Cincinnati, City of, Condemnation .	4½%	1945	7,109.00
100,000	Columbus, City of, Water Ext. No. 2	4½%	1944	106,830.00
85,000	Great Britain and Ireland	5½%	1937	86,018.00
18,000	Kansas City, Sewer, 2d Issue . . .	4½%	1935	18,941.00
5,000	Kansas City, 23d St. Trafficway . .	4½%	1935	5,261.00
50,000	Los Angeles, City of, Water Works .	4½%	1942	52,301.00
10,000	Los Angeles, City of, Water Works .	4½%	1943	10,353.00
15,000	Los Angeles, City of, Water Works .	4½%	1943	15,530.00
50,000	Maisonneuve, City of (Montreal) .	5%	1954	49,000.00
19,000	Milwaukee Co. House of Correction	4½%	1927	19,280.00
19,000	Milwaukee Co. House of Correction	4½%	1928	19,365.00
19,000	Milwaukee Co. House of Correction	4½%	1929	19,445.00
19,000	Milwaukee Co. House of Correction	4½%	1930	19,519.00
19,000	Milwaukee Co. House of Correction	4½%	1931	19,591.00
5,000	Milwaukee Co. House of Correction	4½%	1932	5,081.00
25,000	Montreal, City of	5%	1936	25,000.00
100,000	Montreal, City of	5%	1942	97,500.00
60,000	New York, City of, Corporate Stock	4¼%	1964	62,286.00
5,000	New York, City of, Corporate Stock	4½%	1967	4,625.00
33,000	Norfolk, City of, Va., Appropriation	4%	1954	33,000.00
50,000	Omaha, City of, Nebraska	4½%	1934	52,364.00
50,000	Omaha, City of, Water Works . . .	4½%	1941	53,365.00
50,000	Ontario, Province of, Debenture . .	5%	1926	50,000.00
50,000	Ontario, Province of, Debenture . .	5½%	1937	50,638.00
50,000	Ontario, Province of, Debenture . .	6%	1943	54,631.00
50,000	Ontario, Province of, Debenture . .	5%	1952	49,250.00
41,000	Ottawa, City of, Ontario	4½%	1930	39,003.30
1,000	Ottawa, City of, Ontario	4½%	1935	945.00
2,000	Ottawa, City of, Ontario	5%	1930	1,995.00
10,000	Ottawa, City of, Ontario	5%	1945	9,975.00
7,000	Ottawa, City of, Ontario	5½%	1931	7,126.00
42,000	Ottawa, City of, Ontario	5½%	1932	42,840.00
60,000	Ottawa, City of, Ontario	5½%	1939	62,182.00
2,000	Ottawa, City of, Ontario	6%	1927	2,060.00
1,000	Ottawa, City of, Ontario	6%	1929	1,040.00

SCHEDULE H

REAL ESTATE AND MORTGAGES

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$258,511.88	.....	$13,000.00
.....	$2.00	1,015.00	.....	45.00
.....	3.00	525.00	.....	22.50
.....	5.00	1,053.00	.....	45.00
.....	3.00	7,106.00	.....	292.50
.....	342.00	106,488.00	.....	4,500.00
.....	78.00	85,940.00	.....	4,675.00
.....	86.00	18,855.00	.....	810.00
.....	24.00	5,237.00	.....	225.00
.....	128.00	52,173.00	.....	2,250.00
.....	19.00	10,334.00	.....	450.00
.....	28.00	15,502.00	.....	675.00
.....	.....	49,000.00	.....	2,500.00
.....	94.00	19,186.00	.....	855.00
.....	91.00	19,274.00	.....	855.00
.....	89.00	19,356.00	.....	855.00
.....	86.00	19,433.00	.....	855.00
.....	84.00	19,507.00	.....	855.00
.....	10.00	5,071.00	.....	225.00
.....	.....	25,000.00	.....	1,250.00
.....	.....	97,500.00	.....	5,000.00
.....	57.00	62,229.00	.....	2,550.00
.....	.....	4,625.00	.....	225.00
.....	.....	33,000.00	.....	1,320.00
.....	237.00	52,127.00	.....	2,250.00
.....	198.00	53,167.00	.....	2,250.00
.....	.....	50,000.00	.....	2,500.00
.....	49.00	50,589.00	.....	2,750.00
.....	244.00	54,387.00	.....	3,000.00
.....	.....	49,250.00	.....	2,500.00
.....	.....	39,003.30	.....	1,845.00
.....	.....	945.00	.....	45.00
.....	.....	1,995.00	.....	100.00
.....	.....	9,975.00	.....	500.00
.....	18.00	7,108.00	.....	385.00
.....	105.00	42,735.00	.....	2,310.00
.....	146.00	62,036.00	.....	3,300.00
.....	20.00	2,040.00	.....	120.00
.....	8.00	1,032.00	.....	60.00

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1923*
	GOVERNMENT AND MUNICIPAL BONDS (*Continued*)			
$1,000	Ottawa, City of, Ontario	6%	1931	$1,048.00
5,000	Ottawa, City of, Ontario	6%	1936	5,360.00
1,000	Ottawa, City of, Ontario	6%	1938	1,085.00
8,000	Ottawa, City of, Ontario	6%	1939	8,671.00
8,000	Ottawa, City of, Ontario	6%	1940	8,698.00
1,000	Ottawa, City of, Ontario	6%	1948	1,096.00
10,000	Ottawa, City of, Ontario	6%	1951	10,964.00
50,000	Toronto, City of, Ontario, Gen. Loan	5%	1932	50,000.00
5,000	Toronto, City of, Ontario	6%	1934	5,234.00
10,000	Toronto, City of, Ontario	5%	1935	9,845.00
35,000	Toronto, City of, Ontario	5%	1936	34,475.00
18,000	Toronto, City of, Ontario	5%	1937	17,721.00
23,000	Toronto, City of, Ontario	5%	1939	22,655.00
9,000	Toronto, City of, Ontario	5%	1942	8,830.80
23,000	Toronto, City of, Consolidated Loan	6%	1944	24,336.00
18,000	Toronto, City of, Consolidated Loan	6%	1945	19,073.00
9,000	Toronto, City of, Consolidated Loan	6%	1946	9,549.00
446,800	United States of A., 3d Liberty Loan	4¼%	1928	446,277.05
75,400	United States of A., 4th Liberty Loan	4¼%	1938	74,898.81
40,000	Winnipeg, City of, Debenture . . .	5%	1926	39,350.00
50,000	Winnipeg, City of, Debenture . . .	5%	1943	48,750.00
7,000	Winnipeg, City of, Gr. Water Dist. .	5%	1952	6,790.00
25,000	Winnipeg, City of	6%	1946	26,913.00
$2,269,200	*Total Government and Municipal Bonds*			$2,296,183.84
	INDUSTRIAL BONDS			
$25,000	Aluminum Co. of America	7%	1925	$25,437.00
50,000	Am. Agri. Chem. Co., 1st Ref. S. F. .	7½%	1941	48,500.00
88,000	American Sugar Ref. Co.	6%	1937	90,369.00
100,000	American Thread Co., 1st Mtg. . . .	6%	1928	99,500.00
50,000	Anaconda Cop. Min. Co., 1st Con. "A"	6%	1953	49,125.00
100,000	Armour & Co., Real Estate 1st Mtg.	4½%	1939	86,618.75
25,000	Armour & Co. of Del., 1st Mtg. "A"	5½%	1943	24,000.00
10,000	Brown Co., Serial Gold Deb. "C" .	6%	1929	9,912.50
10,000	Brown Co., Serial Gold Deb. "C" .	6%	1930	9,912.50
10,000	Brown Co., Serial Gold Deb. "C" .	6%	1931	9,912.50
10,000	Brown Co., Serial Gold Deb. "C" .	6%	1932	9,912.50
5,000	Brown Co., Serial Gold Deb. "C" .	6%	1933	4,950.00

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	$7.00	$1,041.00	.....	$60.00
.....	30.00	5,330.00	.....	300.00
.....	6.00	1,079.00	.....	60.00
.....	45.00	8,626.00	.....	480.00
.....	44.00	8,654.00	.....	480.00
.....	4.00	1,092.00	.....	60.00
.....	36.00	10,928.00	.....	600.00
.....	.....	50,000.00	.....	2,500.00
.....	23.00	5,211.00	.....	300.00
.....	.....	9,845.00	.....	500.00
.....	.....	34,475.00	.....	1,750.00
.....	.....	17,721.00	.....	900.00
.....	.....	22,655.00	.....	1,150.00
.....	.....	8,830.80	.....	450.00
.....	66.00	24,270.00	.....	1,380.00
.....	51.00	19,022.00	.....	1,080.00
.....	25.00	9,524.00	.....	540.00
.....	.....	446,277.05	.....	18,988.91
$400.00	.....	75,298.81	.....	3,193.75
.....	.....	39,350.00	.....	2,000.00
.....	.....	48,750.00	.....	2,500.00
.....	.....	6,790.00	.....	350.00
.....	87.00	26,826.00	.....	1,500.00
$400.00	$2,678.00	$2,293,905.84	.....	$109,372.66
.....	$437.00	$25,000.00	.....	$1,750.00
.....	.....	48,500.00	.....	3,750.00
.....	183.00	90,186.00	.....	5,280.00
.....	.....	99,500.00	.....	6,000.00
.....	.....	49,125.00	.....	3,000.00
.....	.....	86,618.75	.....	4,500.00
.....	.....	24,000.00	.....	1,375.00
.....	.....	9,912.50	.....	600.00
.....	.....	9,912.50	.....	600.00
.....	.....	9,912.50	.....	600.00
.....	.....	9,912.50	.....	600.00
.....	.....	4,950.00	.....	300.00

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1923*
	INDUSTRIAL BONDS (*Continued*)			
$5,000	Brown Co., Serial Gold Deb. "C"	6%	1934	$4,950.00
50,000	Central Leather Co., 1st Lien	5%	1925	49,625.00
150,000	Consol. Coal Co., 1st & Ref. Mtg. S. F.	5%	1950	135,243.75
50,000	Corning Gl. Wks.S.F. Gold Deb. "A"	5½%	1937	49,500.00
32,000	General Electric, Gold Deb.	5%	1952	32,896.00
100,000	Gulf Oil Corp. of Pennsylvania	5%	1937	96,750.00
25,000	Simonds Saw & Steel Co., Deb. "F"	5½%	1929	24,687.50
25,000	Simonds Saw & Steel Co., Deb. "G"	5½%	1930	24,645.00
50,000	Smith & Wesson Inc., 1st Mtg. S. F.	5½%	1938	49,500.00
75,000	Swift & Co., 1st S. F.	5%	1944	70,827.50
50,000	Union Twist Drill Co., 1st Mtg. S. F.	7%	1932	48,875.00
75,000	U. S. Steel, 10–60 Yr. S. F.	5%	1963	99,993.00
50,000	Waltham Watch & Clock Co.	6%	1943	49,000.00
$1,220,000	*Total Industrial Bonds*			$1,204,642.50
	INDUSTRIAL STOCKS		*Shares*	
$5,000	American Sugar Refining Co., Pref.	7%	50	$5,900.00
50,000	Amoskeag Mfg. Co., Pref.	4½%	500	41,395.00
34,200	Amoskeag Mfg. Co., Common	3%	342	25,285.50
50,000	Anaconda Copper Co., Capital	...	1,000	47,500.00
50,000	Campbell's Soup, Pfd.	7%	500	52,000.00
11,500	Charlton Mills, Capital	8%	115	11,486.04
50,000	Eastern Mfg., Pref.	...	500	49,000.00
*1,250,000	Eastman Kodak Co., Common	5%	12,500	614,998.59
17,500	Flint Mills, Capital	...	175	26,827.04
50,000	General Electric Company, Capital	13%	500	77,833.10
10,460	General Electric Co., Special	6%	1,046	8,600.00
*10,500	Gillette Safety Razor Co.	12%	105	.....
10,100	Goodyear Tire & Rubber Co., Pref.	...	101	10,000.00
14,300	Lancaster Mills, Capital	10%	143	18,882.64
29,000	Merchants' Mfg. Co., Capital	8%	290	49,300.00
50,000	Nashua Mfg. Company, Common	...	500	27,911.51
13,600	Naumkeag Steam Cotton Co., Capital	15%	136	17,136.00
50,000	Norton Company, Cumulative Pref.	7%	500	50,000.00
*32,500	Pacific Oil Co., Capital	...	650	29,981.25
7,700	Pepperell Mfg. Co., Common	8%	77	6,845.50
8,700	Phila. Reading C'l & Iron Corp. Com.	...	87	.....

*No par value

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$4,950.00	.....	$300.00
.....	.....	49,625.00	.....	2,500.00
.....	.....	135,243.75	.....	7,500.00
.....	.....	49,500.00	.....	2,750.00
.....	$32.00	32,864.00	.....	1,600.00
.....	.....	96,750.00	.....	5,000.00
.....	.....	24,687.50	.....	1,375.00
.....	.....	24,645.00	.....	1,375.00
.....	.....	49,500.00	.....	2,750.00
.....	.....	70,827.50	.....	3,750.00
.....	.....	48,875.00	.....	3,500.00
.....	23,967.00	76,026.00	.....	4,100.00
.....	.....	49,000.00	.....	3,000.00
.....	$24,619.00	$1,180,023.50	.....	$67,855.00
.....	.....	$5,900.00	.....	$350.00
.....	.....	41,395.00	.....	2,250.00
.....	.....	25,285.50	.....	1,026.00
.....	.....	47,500.00	.....	2,250.00
.....	.....	52,000.00	.....	3,500.00
.....	.....	11,486.04	.....	920.00
.....	.....	49,000.00	.....	.....
.....	.....	614,998.59	.....	96,875.00
.....	.....	26,827.04	.....	1,400.00
.....	.....	77,833.10	.....	6,500.00
$2,500.00	.....	11,100.00	.....	552.60
28,350.00	.....	28,350.00	.....	1,650.00
100.00	.....	10,100.00	.....	.....
.....	.....	18,882.64	.....	1,430.00
.....	.....	49,300.00	.....	2,175.00
.....	.....	27,911.51	.....	.....
.....	.....	17,136.00	.....	2,108.00
.....	.....	50,000.00	.....	3,500.00
.....	.....	29,981.25	.....	1,300.00
.....	.....	6,845.50	.....	616.00
872.93	.....	872.93	.....	.....

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Shares*	*Balance June 30, 1923*
	INDUSTRIAL STOCKS (*Continued*)			
$12,600	Plymouth Cordage Company	7%	126	$11,970.00
19,700	Pullman Company, Capital	8%	197	31,520.00
6,500	Queen City Cotton Co., Capital	6%	65	5,850.00
*7,500	Samson Cordage Company	8%	75	5,000.00
36,000	Sanford Mills, Pref.	7%	360	35,300.00
16,500	Southern Pipe Line Co., Capital	8%	165	16,500.00
24,000	Union Cotton Mfg. Co., Capital	6%	240	36,000.00
160,000	United Fruit Company, Capital	10%	1,600	127,362.50
50,000	U. S. Steel Corp., Cum. Pref.	7%	500	55,162.50
32,100	Wamsutta Mills, Capital	6%	321	32,528.00
5,000	Westinghouse Elec. & Mfg. Co., Pref.	8%	100	6,393.90
51,100	Westinghouse Elec. & Mfg. Co., Com.	8%	1,022	41,413.35
50,000	Winnsboro Mills, Pref.	7%	500	51,000.00
	Sold during year			32,146.78
$2,276,060	*Total Industrial Stocks*			$1,659,029.20

	PUBLIC UTILITY BONDS		*Maturity*	
$100,000	Adirondack P'r & Lt. Corp., 1st Ref. Gold	6%	1950	$101,925.00
100,000	Alabama Power Co.	5%	1946	94,000.00
141,000	Am. Tel. & Tel. Co., Col. Trust	4%	1929	138,025.00
82,000	Am. Tel. & Tel. Co., Col. Trust	5%	1946	80,547.90
500	Beaumont Gas Lt. Co., 1st Mtge. Gold	6%	1944	500.00
50,000	Bell Telephone Co. of Canada, Ltd.	7%	1925	50,812.00
50,000	Blackstone Valley Gas & El. Co., Mtg.	5%	1939	50,162.00
45,000	Boston Elevated Ry. Co.	6%	1933	44,100.00
77,000	Brooklyn-Manhattan Tr. Corp. S. F."A"	6%	1968	.....
190,000	Cedars Rapids Mfg. & P. Co., 1st Mt. S.F.	5%	1953	178,175.00
50,000	Central Maine Power Co., Gold	6%	1926	49,625.00
25,000	Chesapeake & Potomac Tel.Co.,S.F."A"	5%	1943	24,500.00
50,000	Chicago City Railway Co., 1st Mtge.	5%	1927	49,750.00
150,000	Cleveland Elec. Ill. Co., 1st Mtge.	5%	1939	151,145.00
120,000	Commonwealth Edison Co., 1st Mtge.	5%	1943	119,400.00
50,000	Commonwealth Electric Co., 1st Mtge.	5%	1943	47,937.50
49,000	Conn.Lt.& Power Co.,1st Mtge.S.F."A"	7%	1951	46,150.00
100,000	Con. Gas, Elec. Lt. & Power Co., Mtge.	4½%	1935	93,190.00
100,000	Consumers Power Co., 1st L. & Ref.	5%	1936	99,000.00
50,000	Cumberland County Power & Lt. Co.	5%	1942	46,000.00
51,000	Cumberland Tel. & Tel. Co., 1st Mtge.	5%	1937	50,305.75

*No par value

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$11,970.00	.....	$1,134.00
.....	.....	31,520.00	.....	1,576.00
.....	.....	5,850.00	.....	390.00
.....	.....	5,000.00	.....	600.00
.....	.....	35,300.00	.....	2,520.00
.....	.....	16,500.00	.....	1,320.00
.....	.....	36,000.00	.....	1,440.00
.....	.....	127,362.50	.....	16,800.00
.....	.....	55,162.50	.....	3,500.00
.....	.....	32,528.00	.....	1,926.00
.....	.....	6,393.90	.....	400.00
$8,925.00	.....	50,338.35	.....	3,000.00
.....	.....	51,000.00	.....	3,500.00
.....	32,146.78	.....	.....	149.00
$40,747.93	$32,146.78	$1,667,630.35	.....	$166,657.60
.....	$75.00	$101,850.00	.....	$6,000.00
.....	.....	94,000.00	.....	5,000.00
.....	.....	138,025.00	.....	5,640.00
.....	.....	80,547.90	.....	4,100.00
.....	.....	500.00	.....	30.00
.....	812.00	50,000.00	.....	3,500.00
.....	11.00	50,151.00	.....	2,500.00
.....	.....	44,100.00	.....	2,700.00
$77,000.00	.....	77,000.00	.....	2,310.00
.....	.....	178,175.00	.....	9,500.00
.....	.....	49,625.00	.....	3,000.00
.....	.....	24,500.00	.....	1,250.00
.....	.....	49,750.00	.....	2,500.00
.....	76.00	151,069.00	.....	7,500.00
.....	.....	119,400.00	.....	6,000.00
.....	.....	47,937.50	.....	2,500.00
1,100.00	1,100.00	46,150.00	.....	3,430.00
.....	.....	93,190.00	.....	4,500.00
.....	.....	99,000.00	.....	5,000.00
.....	.....	46,000.00	.....	2,500.00
.....	.....	50,305.75	.....	2,550.00

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1923*
	PUBLIC UTILITY BONDS (*Continued*)			
$25,000	Detroit Edison Co., 1st Mtge.	5%	1933	$25,297.00
151,000	Detroit Edison Co., 1st & Ref. Mtge. "A"	5%	1940	148,370.00
100,000	Duquesne Lt. Co., 1st Mtge., Coll. Tr. "A"	6%	1949	108,250.00
35,000	East. Mass. St. Ry. Co., Ref. Mtge.	4½%	1948	35,000.00
200,000	Edison Elec. Ill. Co., 3-Year Notes	5½%	1925	199,406.25
17,000	Elec. Securities Corp., Col. Tr. S. F.	5%	1940	16,830.00
2,000	Elec. Securities Corp., Col. Tr. S. F.	5%	1942	1,958.75
44,000	Elec. Securities Corp., Col. Tr. S. F.	5%	1943	43,406.25
25,000	Em. Gas & El. Co. & Em. Coke Co., Jt.	5%	1941	18,250.00
41,000	Georgia Ry. & El. Co., 1st Cons. Mt.	5%	1932	47,568.00
1,000	Georgia & Southern Utilities Co.	8%	1922	1,000.00
50,000	Great Lakes Power Co., Ltd., 1st Mtge.	6%	1943	43,187.50
25,000	Great Western Power Co.	6%	1925	25,000.00
150,000	Hydraulic Pr. Co. of Niag. F'lls, Ref.& Im.	5%	1951	142,000.00
50,000	Illinois Bell Telephone Co.	5%	1956	47,375.00
7,000	Illinois Gas Co., 1st Mtge. Gold	6%	1933	5,460.00
25,000	Indianapolis Water Co., 1st Lien & Ref.	5½%	1953	24,000.00
50,000	Interboro Rapid Transit Co.,1st Mtge.Ref.	5%	1966	49,562.50
50,000	Laclede Gas Lt. Co., 1st Mtge. Coll. & Ref.	5½%	1953	48,100.00
200,000	Laurentide Power Co., Ltd., 1st Mtge. S.F.	5%	1946	190,730.00
100,000	Los Angeles Gas & Elec. Corp., Ref. "F"	5½%	1943	95,750.00
100,000	Louisville Gas & Elec. Co., 1st & Ref. Mtge.	5%	1952	91,250.00
100,000	Massachusetts Gas Co., Consolidated	4½%	1931	96,812.50
50,000	Milwaukee Elec. Ry. & Lt. Co.	5%	1961	46,125.00
100,000	Milwaukee Gas Light Co., 1st Mtge.	4%	1927	93,297.50
50,000	Minneapolis Gen. Elec. Co., Mtge.	5%	1934	50,295.00
75,000	Mississippi River Power Co., 1st Mtge.	5%	1951	65,633.75
100,000	Montreal Light, Heat & Power Co.	4½%	1932	93,812.50
50,000	New England Tel. & Tel. Co., Deb.	5%	1932	50,528.00
50,000	New England Tel. & Tel. Co., Deb.	4%	1930	50,132.00
100,000	New Orleans Pub.Serv.Inc.,1st Ref. Mtge.	5%	1952	89,875.00
55,000	New York Telephone Co., 1st Mtge.	4½%	1939	53,130.86
50,000	Northern States Pr. Co., 1st & Ref. Mtge.	5%	1941	45,000.00
25,000	Northwestern Bell Tel. Co., 1st Mtge.	7%	1941	24,151.88
50,000	Ontario Power Company	5%	1943	49,312.50
25,000	Pacific Gas & Elec. Co., 1st & Ref. "C"	5½%	1952	24,562.50
75,000	Pacific Gas & El. Co., 1st Ref. Mtge. "B"	6%	1941	79,060.00
75,000	Pacific Tel.&Tel.Co., 1st Mt., Col. Tr.S.F.	5%	1937	73,915.10
25,000	Portland Gen. Electric Co., 1st Mtge.	5%	1935	25,300.00

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	$33.00	$25,264.00	.....	$1,250.00
.....	.....	148,370.00	.....	7,550.00
.....	5,280.00	102,970.00	.....	6,300.00
.....	.....	35,000.00	.....	1,575.00
.....	.....	199,406.25	.....	11,000.00
.....	.....	16,830.00	.....	850.00
.....	.....	1,958.75	.....	100.00
.....	.....	43,406.25	.....	2,200.00
.....	.....	18,250.00	.....	1,250.00
.....	6,416.00	41,152.00	.....	2,350.00
.....	.....	1,000.00	.....	.....
.....	.....	43,187.50	.....	3,000.00
.....	.....	25,000.00	.....	1,500.00
.....	.....	142,000.00	.....	7,500.00
.....	.....	47,375.00	.....	2,500.00
.....	.....	5,460.00	.....	.....
.....	.....	24,000.00	.....	1,375.00
.....	.....	49,562.50	.....	2,500.00
.....	.....	48,100.00	.....	2,750.00
.....	.....	190,730.00	.....	10,000.00
.....	.....	95,750.00	.....	5,500.00
.....	.....	91,250.00	.....	5,000.00
.....	.....	96,812.50	.....	4,500.00
.....	.....	46,125.00	.....	2,500.00
.....	.....	93,297.50	.....	4,000.00
.....	30.00	50,265.00	.....	2,500.00
.....	.....	65,633.75	.....	3,750.00
.....	.....	93,812.50	.....	4,500.00
.....	66.00	50,462.00	.....	2,500.00
.....	22.00	50,110.00	.....	2,000.00
.....	.....	89,875.00	.....	5,000.00
.....	.....	53,130.86	.....	2,475.00
.....	.....	45,000.00	.....	2,500.00
.....	.....	24,151.88	.....	1,750.00
.....	.....	49,312.50	.....	2,500.00
.....	.....	24,562.50	.....	1,375.00
.....	233.00	78,827.00	.....	4,500.00
.....	.....	73,915.10	.....	3,750.00
.....	28.00	25,272.00	.....	1,250.00

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1925*
	PUBLIC UTILITY BONDS (*Continued*)			
$25,000	Potomac Edison Co., 1st Mtge. "A"	6½%	1948	$24,250.00
50,000	Potomac Elec. Power Co., Mtge. "B"	6%	1953	50,625.00
50,000	Public Service Elec. Pr. Co. 1st Mtge. S. F.	6%	1948	.....
50,000	Salmon River Power Co., 1st Mtge.	5%	1952	47,625.00
19,000	Seattle Electric Co., Cons. Mtge.	5%	1929	18,430.00
101,000	Shawinigan Wr. & Pr. Co., 1st Mtge. Ref.	6%	1950	103,744.00
100,000	Southern Bell Tel. & Tel. Co., 1st Mt. S. F.	5%	1941	101,017.00
160,000	Southern Calif. Edison Co., Gen. Mtge.	5%	1939	158,125.00
25,000	Terre Haute Tract. & Light Co., Mtge.	5%	1944	25,000.00
100,000	Texas Power & Light Company	5%	1937	95,500.00
4,000	United Elec. Securities Co., Col. Tr. S. F.	5%	1940	4,020.00
50,000	Virginia Ry. & Pr. Co. 1st Mtge.	5%	1936	46,375.00
50,000	West Penn. Power Co., 1st Mtge. "E"	5%	1963	44,875.00
2,500	Western Pub. Serv. Co., Mtge. Lien Conv.	6½%	1924	2,500.00
75,000	Western Tel. & Tel. Co., Col. Tr.	5%	1932	75,560.00
	Sold or matured during year			72,600.00
$4,995,000	*Total Public Utility Bonds*			$4,804,191.49

Par Value	*Description of Securities*	*Rate*	*Shares*	*Balance June 30, 1925*
	PUBLIC UTILITY STOCKS			
$50,000	American Tel. & Tel. Co., Capital	9%	500	$59,534.81
19,800	Boston Elevated Ry. Co., Common	6%	198	16,636.00
12,600	Brook.-Manhattan Trans. Corp. Pfd. "A"	6%	126	.....
*15,000	Brooklyn Union Gas Co., Capital	8%	150	8,587.50
16,800	Cambridge Gas Light Co., Capital	12%	672	37,088.00
2,000	Mass. Gas Companies, Common	...	20	.....
5,000	Mass. Gas Companies, Preferred	4%	50	4,100.00
10,300	Salem Gas Light Co., Common	10%	103	18,889.21
	Sold during year			180.00
$131,500	*Total Public Utility Stocks*			$145,015.52

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1925*
	RAILROAD BONDS			
$75,000	Atch., Top. & S. F., Cal. & Ariz. Lines	4½%	1962	$73,143.75
100,000	Atch. Top. & Santa Fe, Gen. Mtge.	4%	1995	96,470.00
60,000	Baltimore & Ohio R.R. Co., S.W. Div.	3½%	1925	54,200.00
40,000	Balt. & Ohio Co., S.W. Div., Reg.	3½%	1925	37,600.00
50,000	Cen. Pacific Ry. Co., Short Line Mtge.	4%	1954	40,918.75
100,000	Chesapeake & Ohio Ry. Co., Mtge.	5%	1939	105,670.00

* No par value.

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$24,250.00	.....	$1,625.00
.....	$22.00	50,603.00	.....	3,000.00
$48,500.00	.....	48,500.00	1,008.33	3,000.00
.....	.....	47,625.00	.....	2,500.00
.....	.....	18,430.00	.....	950.00
1,025.00	144.00	104,625.00	.....	6,000.00
.....	60.00	100,957.00	.....	5,000.00
.....	.....	158,125.00	.....	8,000.00
.....	.....	25,000.00	.....	1,250.00
.....	.....	95,500.00	.....	5,000.00
.....	2.00	4,018.00	.....	200.00
.....	.....	46,375.00	.....	2,500.00
.....	.....	44,875.00	.....	2,500.00
.....	.....	2,500.00	.....	162.50
.....	70.00	75,490.00	.....	3,750.00
.....	72,600.00	.....	.....	2,531.25
$127,625.00	$87,080.00	$4,844,736.49	$1,008.33	$257,378.75
.....	.....	$59,534.81	.....	$4,500.00
.....	.....	16,636.00	.....	1,188.00
$12,600.00	.....	12,600.00	.....	189.00
.....	.....	8,587.50	.....	600.00
.....	.....	37,088.00	.....	2,520.00
1,540.00	.....	1,540.00	.....	25.00
.....	.....	4,100.00	.....	200.00
.....	.....	18,889.21	.....	1,030.00
.....	$180.00	.....	.....	16.00
$14,140.00	$180.00	$158,975.52	.....	$10,268.00
.....	.....	$73,143.75	.....	$3,375.00
.....	.....	96,470.00	.....	4,000.00
.....	.....	54,200.00	.....	2,100.00
.....	.....	37,600.00	.....	1,400.00
.....	.....	40,918.75	.....	2,000.00
.....	$378.00	105,292.00	.....	5,000.00

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1923*
	RAILROAD BONDS (*Continued*)			
$51,000	Chicago, Burlington & Quincy, Mtge.	4%	1958	$50,307.00
50,000	Chic.Junc.Rys.& Un.St.Yds.Mt. & Co. Tr.	4%	1940	49,250.00
75,000	Chic.J.Ry.& Un.St.Yd.Ref.Mt. & Co. Tr.	5%	1940	74,143.75
55,000	Chic. Mil. & St. Paul, Conv. Mtge.	5%	2014	56,031.00
25,000	Chic. Milwaukee & St. Paul, R.R. Deb.	4%	1934	23,406.25
135,000	Chicago Union Station, 1st Mtge. "C"	6½%	1963	155,326.00
65,000	Chicago Union Station, 1st Mtge. "A"	4½%	1963	65,416.00
100,000	Chicago & Northwestern Ry. Co., Mtge.	4%	1987	96,500.00
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1925	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1926	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1927	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1928	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1929	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1930	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1931	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1932	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1933	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1934	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1935	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1936	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1937	.....
5,000	Chic. & N. W. Ry. Co., Equip. Tr. of 1922	5%	1938	.....
25,000	Cleveland & Pittsburg R.R. Co., Mtge.	4½%	1942	25,534.00
100,000	Delaware & Hudson Co., 20-Yr. Con.	5%	1935	104,076.00
35,000	Fort St. Union Depot Co., 1st Mtge.	4½%	1941	34,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1928	9,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1929	9,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1930	9,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1931	9,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1932	9,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1933	9,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1934	9,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1935	9,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1936	9,825.00
10,000	Illinois Central Equip. Trust "J"	5%	1937	9,825.00
75,000	Illinois Central R.R. Co., Sec. Gold	4%	1952	67,875.00
59,000	Ill. Cen. R.R. Co., West. Lines Mtge.	4%	1951	54,526.25
9,000	Ill. Cen. R.R. Co.,West. Lines Mtge.(Reg.)	4%	1951	8,291.25
50,000	Indianapolis Un. Ry. Co., Gen. Mtge.	5%	1965	49,468.75

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$50,307.00	.....	$2,040.00
.....	.....	49,250.00	.....	2,000.00
.....	.....	74,143.75	.....	3,750.00
.....	$12.00	56,019.00	.....	2,750.00
.....	.....	23,406.25	.....	1,000.00
.....	521.00	154,805.00	.....	8,775.00
.....	11.00	65,405.00	.....	2,925.00
.....	.....	96,500.00	.....	4,000.00
$4,955.10	.....	4,955.10	$41.52	250.00
4,948.50	.....	4,948.50	41.52	250.00
4,942.50	.....	4,942.50	41.52	250.00
4,936.50	.....	4,936.50	41.52	250.00
4,931.10	.....	4,931.10	41.52	250.00
4,925.70	.....	4,925.70	41.52	250.00
4,920.60	.....	4,920.60	41.52	250.00
4,916.10	.....	4,916.10	41.53	250.00
4,911.30	.....	4,911.30	41.53	250.00
4,907.10	.....	4,907.10	41.54	250.00
4,902.90	.....	4,902.90	41.54	250.00
4,899.30	.....	4,899.30	41.54	250.00
4,895.40	.....	4,895.40	41.54	250.00
4,892.10	.....	4,892.10	41.54	250.00
.....	30.00	25,504.00	.....	1,125.00
.....	371.00	103,705.00	.....	5,000.00
.....	.....	34,825.00	.....	1,575.00
.....	.....	9,825.00	.....	500.00
.....	.....	9,825.00	.....	500.00
.....	.....	9,825.00	.....	500.00
.....	.....	9,825.00	.....	500.00
.....	.....	9,825.00	.....	500.00
.....	.....	9,825.00	.....	500.00
.....	.....	9,825.00	.....	500.00
.....	.....	9,825.00	.....	500.00
.....	.....	67,875.00	.....	3,000.00
.....	.....	54,526.25	.....	2,360.00
.....	.....	8,291.25	.....	360.00
.....	.....	49,468.75	.....	2,500.00

Schedule H (*Continued*)

Par Value	Description of Securities	Rate	Maturity	Balance June 30, 1923
	RAILROAD BONDS (*Continued*)			
$7,000	Kan. City, Clinton & Springfield R.R. Co.	5%	1925	$6,289.21
8,500	Kan. City, Mem. & Birm. R.R. Co., Mtge.	4%	1934	8,287.50
37,000	Kan. City, Mem. & Birm. R.R. Co. In. Mt.	5%	1934	34,225.00
50,000	Kan. City, Ft.Scott & Mem.R.R. Co., Mt.	6%	1928	51,452.00
50,000	Kansas City Terminal Co., 1st Mtge.	4%	1960	44,187.50
85,000	Lake Shore & Michigan South. R.R. Co.	4%	1931	84,087.50
50,000	Long Island R.R. Co., Unified Mtge.	4%	1949	48,068.75
50,000	Long Island R.R. Co., Un. Mtge. Reg.	4%	1949	48,068.75
75,000	Maine Central R.R. Co., 1st Mtge.	4½%	1935	75,055.00
100,000	Minn., St. Paul & S. St. Marie Ry. Co.	4%	1938	93,425.00
10,000	Minn., St.Paul & S. St. Marie Ry.Co. Gold	5½%	1949	.....
21,000	Miss. & Ill. Bridge & Belt R.R. Co., Mtge.	4%	1951	13,650.00
31,000	N. Y. C. & H. R. R.R.	4%	1934	30,225.00
4,000	New York Central R.R., Equip. Trust	7%	1928	4,255.00
18,000	New York Central R.R., Equip. Trust	7%	1932	20,066.00
6,000	New York Central R.R., Equip. Trust	7%	1933	6,756.00
11,000	New York Central R.R., Equip. Trust	7%	1934	12,500.00
52,000	New York Cen. R.R. Co., Cons. Mt. "A"	4%	1998	46,046.65
22,000	New York Central Lines Equip., Trust	4½%	1928	21,478.36
43,000	New York Central Lines Equip., Trust	4½%	1929	41,822.36
42,000	New York Central Lines Equip., Trust	4½%	1930	40,702.79
15,000	New York Central Lines Equip., Trust	4½%	1932	14,439.21
14,000	New York Central Lines Equip., Trust	4½%	1933	13,434.36
7,000	New York Central Lines Equip., Trust	4½%	1935	6,674.50
9,000	New York Central Lines Equip., Trust	4½%	1936	8,558.10
9,000	New York Central Lines Equip., Trust	4½%	1937	8,536.50
100,000	New York Connect. R.R., 1st Mtge.	4½%	1953	98,625.00
31,200	N. Y., N. H. & Hart. Co., Con. Deb. Reg.	6%	1948	34,052.00
75,000	No. Pacific R.R. Co., Prior Lien Ry.	4%	1997	67,875.00
100,000	No. Pacific Ry. Co., Ref. & Imp.	6%	2047	96,500.00
84,000	Oregon R.R. & Nav. Co., Cons. Mtge.	4%	1946	82,668.25
50,000	Oregon Short Line R.R. Co., Ref. Reg.	4%	1929	48,500.00
14,500	Oregon Short Line R.R., Cons. Mtge.	5%	1946	15,151.00
18,000	Pennsylvania R.R. Co., Cons. Mtge.	4½%	1960	18,540.00
10,000	Pennsylvania R.R. Co., Equip. Trust	5%	1926	9,953.00
10,000	Pennsylvania R.R. Co., Equip. Trust	5%	1927	9,946.00
15,000	Pennsylvania R.R. Co., Equip. Trust	5%	1928	14,910.00
15,000	Pennsylvania R.R. Co., Equip. Trust	5%	1929	14,901.00
15,000	Pennsylvania R.R. Co., Equip. Trust	5%	1930	14,892.00

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$6,289.21	.....	$350.00
.....	.....	8,287.50	.....	340.00
.....	.....	34,225.00	.....	1,850.00
.....	$363.00	51,089.00	.....	3,000.00
.....	.....	44,187.50	.....	2,000.00
.....	.....	84,087.50	.....	3,400.00
.....	.....	48,068.75	.....	2,000.00
.....	.....	48,068.75	.....	2,000.00
.....	5.00	75,050.00	.....	3,375.00
.....	.....	93,425.00	.....	4,000.00
$7,438.10	.....	7,438.10	$4.63	.....
.....	.....	13,650.00	.....	840.00
.....	.....	30,225.00	.....	1,240.00
.....	64.00	4,191.00	.....	280.00
.....	258.00	19,808.00	.....	1,260.00
.. ...	84.00	6,672.00	.....	420.00
.....	150.00	12,350.00	.....	770.00
.. ...	.....	46,046.65	.....	2,080.00
.....	.....	21,478.36	.....	990.00
.....	.....	41,822.36	.....	1,935.00
.....	.....	40,702.79	.....	1,890.00
.....	.....	14,439.21	.....	675.00
.....	.....	13,434.36	.....	630.00
.....	.....	6,674.50	.....	315.00
.....	.....	8,558.10	.....	405.00
.....	.....	8,536.50	.....	405.00
.....	.....	98,625.00	.....	4,500.00
.....	119.00	33,933.00	.....	1,872.00
.....	.....	67,875.00	.....	3,000.00
.....	.....	96,500.00	.....	6,000.00
.....	.....	82,668.25	.....	3,360.00
.....	.....	48,500.00	.....	2,000.00
.....	31.00	15,120.00	.....	725.00
.....	15.00	18,525.00	.....	810.00
.....	.....	9,953.00	.....	500.00
.....	.....	9,946.00	.....	500.00
.....	.....	14,910.00	.....	750.00
.....	.....	14,901.00	.....	750.00
.....	.....	14,892.00	.....	750.00

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1923*
	RAILROAD BONDS (*Continued*)			
$5,000	Pennsylvania R.R. Co., Equip. Trust	5%	1931	$4,961.50
5,000	Pennsylvania R.R. Co., Equip. Trust	5%	1932	4,959.00
5,000	Pennsylvania R.R. Co., Equip. Trust	5%	1933	4,956.50
5,000	Pennsylvania R.R. Co., Equip. Trust	5%	1934	4,954.00
5,000	Pennsylvania R.R. Co., Equip. Trust	5%	1935	4,952.00
5,000	Pennsylvania R.R. Co., Equip. Trust	5%	1936	4,950.00
5,000	Pennsylvania R.R. Co., Equip. Trust	5%	1937	4,948.00
100,000	Pennsylvania R.R. Co., Gen. Mtge.	4½%	1965	100,960.00
117,900	Pere Marquette Ry., 1st Mtge. "A"	5%	1956	104,719.59
37,500	Pere Marquette Ry. Co., 1st Mtge. "B"	4%	1956	37,500.00
51,000	Rio Grande Western Ry. Co., Mtge.	4%	1939	49,935.00
1,000	Somerset Ry. Co., 1st & Ref. Mtge.	4%	1955	850.00
25,000	So. Ry. Co., St. Louis Div., 1st Mtge.	4%	1951	24,875.00
100,000	Term. R.R. Asso. of St. Louis, Mtge.	4½%	1939	100,256.00
100,000	Un. Pac. R.R. Co., 1st Mtge. & L. Gr.	4%	1947	100,872.00
10,000	Western Pacific R.R. Co., 1st Mtge.	5%	1946	8,000.00
50,000	Winston Salem South. Ry. Co., Mtge.	4%	1960	43,875.00
	Sold or matured during year			2,000.00
$3,495,600	*Total Railroad Bonds*			$3,338,556.63

	RAILROAD STOCKS		*Shares*	
$33,600	Atchison, Topeka & Santa Fe Co., Pref.	5%	336	$25,200.00
60,800	Atchison, Topeka & Santa Fe Co., Com.	6%	608	51,680.00
35,000	Baltimore & Ohio R.R., Common	5%	350	16,100.00
34,000	Boston & Albany R.R. Co., Capital	8¾%	340	68,921.50
19,200	B. & M. Co., Class A, 1st Pref.	...	192	14,699.00
20,000	Chicago & Northwestern Ry., Common	4%	200	16,975.00
103,200	Delaware & Hudson R.R. Co., Cap.	9%	1,032	126,604.00
12,500	Del., Lack. & Western R.R.	6%	250	35,050.00
72,500	Great Northern Ry. Co., Preferred	5%	725	62,815.00
4,000	Illinois Central R.R. "A"	6%	40	.....
40,000	Illinois Central R.R. Co., Capital	7%	400	43,400.00
95,000	Louisville & Nashville R.R.	5%	950	79,621.04
31,600	Maine Central R.R. Co., Capital	...	316	20,275.00
17,600	Minn., St. Paul & S. St. Marie Co., Pref.	4%	176	9,680.00
86,900	New York Central R.R. Co., Capital	7%	869	74,273.13
33,500	Norfolk & Western Ry. Co., Common	8%	335	38,860.00
33,000	Northern Pacific Ry., Capital	5%	330	26,523.75
8,800	Old Colony R.R. Co., Capital	7%	88	12,050.00

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$4,961.50	.....	$250.00
.....	.....	4,959.00	.....	250.00
.....	.....	4,956.50	.....	250.00
.....	.....	4,954.00	.....	250.00
.....	.....	4,952.00	.....	250.00
.....	.....	4,950.00	.....	250.00
.....	.....	4,948.00	.....	250.00
.....	$24.00	100,936.00	.....	4,500.00
.....	.....	104,719.59	.....	5,895.00
.....	.....	37,500.00	.....	1,500.00
.....	.....	49,935.00	.....	2,040.00
.....	.....	850.00	.....	40.00
.....	.....	24,875.00	.....	1,000.00
.....	17.00	100,239.00	.....	4,500.00
.....	38.00	100,834.00	.....	4,000.00
.....	.....	8,000.00	.....	500.00
.....	.....	43,875.00	.....	2,000.00
.....	2,000.00	.....	$41.52	350.00
$76,322.30	$4,491.00	$3,410,387.93	$627.55	$159,577.00
.....	.....	$25,200.00	.....	$1,680.00
.....	.....	51,680.00	.....	3,648.00
.....	.....	16,100.00	.....	1,312.50
.....	.....	68,921.50	.....	2,975.00
.....	.....	14,699.00	.....	.....
.....	.....	16,975.00	.....	800.00
.....	.....	126,604.00	.....	9,288.00
.....	.....	35,050.00	.....	1,500.00
.....	.....	62,815.00	.....	3,625.00
$4,000.00	.....	4,000.00	.....	60.00
.....	.....	43,400.00	.....	2,800.00
.....	.....	79,621.04	.....	4,750.00
.....	.....	20,275.00	.....	.....
.....	.....	9,680.00	.....	704.00
7,900.00	.....	82,173.13	.....	5,668.25
.....	.....	38,860.00	.....	2,680.00
.....	.....	26,523.75	.....	1,650.00
.....	.....	12,050.00	.....	616.00

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Shares*	*Balance June 30, 1923*
	RAILROAD STOCKS (*Continued*)			
$25,000	Pere Marquette Ry. Co., Pr. Pref.	5%	250	$17,030.65
65,000	Southern Pacific Co., Capital	6%	650	58,500.00
63,500	Union Pacific R.R., Common	10%	635	88,205.00
	Sold during year			7,168.00
$894,700	*Total Railroad Stocks*			$893,631.07
	REAL ESTATE BONDS		*Maturity*	
$5,000	Cent. Mfg. Dist., 1st Mfg. R. E. Imp.	5½%	1926	$5,000.00
15,000	Cent. Mfg. Dist., 1st Mfg. R. E. Imp.	5½%	1928	14,925.00
10,000	Cent. Mfg. Dist., 1st Mfg. R. E. Imp.	5½%	1931	9,925.00
7,000	Cent. Mfg. Dist., 1st Mfg. R. E. Imp.	5½%	1937	6,947.50
4,000	Cent. Mfg. Dist., 1st Mfg. R. E. Imp.	5½%	1940	3,970.00
9,000	Cent. Mfg. Dist., 1st Mfg. R. E. Imp.	5½%	1941	8,955.00
480,000	Equip., Office Build. Corp., 35-Yr. Deb.	5%	1952	487,000.00
50,000	43 Exchange Place Bldg., 1st Mtge. S. F.	6%	1938	49,625.00
400	Technology Club of New York W. F.	5%	...	400.00
98,000	Trinity Building Corp. of N. Y., 1st Mtge.	5½%	1939	94,750.00
$678,400	*Total Real Estate Bonds*			$681,497.50
	REAL ESTATE STOCKS		*Shares*	
$58,800	Alaska Building Trust	4¼%	588	$58,251.22
68,000	Boston Real Estate Trust Capital	5%	68	71,661.64
$126,800	*Total Real Estate Stocks*			$129,912.86
	MISCELLANEOUS STOCKS			
$3,600	National Shawmut Bank, Capital	12%	36	$8,640.00
	Sold during year			20,801.36
$3,600	*Total Miscellaneous Stocks*			$29,441.36
	MORTGAGE NOTES		*Maturity*	
$4,500.00	E. V. and C. T. Bigelow	5%	1923	$4,500.00
30,000.00	Cambridge Tobacco Co.	6%	1924	30,000.00
70,000.00	Charles H. Connelly	5½%	1927	70,000.00
44,000.00	F. J. Holderried (2 at $22,000 each)	6%	1927	44,000.00
35,000.00	Edward F. Kakas & Sons, Inc.	5¼%	1926	50,000.00
127,579.37	The Park Sq. Real Estate Trust	6½%	1924	250,000.00

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$17,030.65	.....	$1,250.00
.....	.....	58,500.00	.....	3,900.00
.....	.....	88,205.00	.....	6,350.00
.....	$7,168.00	.....	.....	.....
$11,900.00	$7,168.00	$898,363.07	.....	$55,256.75
.....	.....	$5,000.00	.....	$275.00
.....	.....	14,925.00	.....	825.00
.....	.....	9,925.00	.....	550.00
.....	.....	6,947.50	.....	385.00
.....	.....	3,970.00	.....	220.00
.....	.....	8,955.00	.....	495.00
.....	$7,000.00	480,000.00	.....	24,350.00
.....	.....	49,625.00	.....	3,000.00
.....	.....	400.00	.....	10.00
.....	.....	94,750.00	.....	5,390.00
.....	$7,000.00	$674,497.50	.....	$35,500.00
.....	.....	$58,251.22	.....	$2,499.00
.....	.....	71,661.64	.....	3,400.00
.....	.....	$129,912.86	.....	$5,899.00
.....	.....	$8,640.00	.....	$432.00
.....	$20,801.36	.....	.....	1,125.00
.....	$20,801.36	$8,640.00	.....	$1,557.00
.....	.....	$4,500.00	.....	$225.00
.....	.....	30,000.00	.....	1,800.00
.....	.....	70,000.00	.....	3,850.00
.....	.....	44,000.00	.....	2,640.00
.....	15,000.00	35,000.00	.....	2,543.75
.....	122,420.63	127,579.37	.....	19,452.18

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1923*
	MORTGAGE NOTES (*Continued*)			
$7,000.00	Phineas Matlin	5%	....	$7,000.00
29,500.00	W. J. Stober	5%	1925	30,000.00
24,000.00	Theta Chi	6%	1925	25,000.00
	Sold or matured during year			200,000.00
$371,579.37	*Total Mortgage Notes*			$710,500.00
	REAL ESTATE			
$75,732.55	Avon St. Land and Building Equity			$75,732.55
385,364.53	Franklin St. Land and Building			135,364.53
200.00	Dorchester Land			200.00
$461,297.08	*Total Real Estate*			$211,297.08

	RECAPITULATION, GENERAL INVESTMENTS	*Percent of Total 1924*	*Percent of Total 1923*	
$2,269,200.00	Government & Municipal Bonds	14.20	14.25	$2,296,183.84
1,220,000.00	Industrial Bonds	7.33	7.50	1,204,642.50
2,276,060.00	Industrial Stocks	10.30	10.30	1,659,029.20
4,995,000.00	Public Utility Bonds	30.09	29.80	4,804,191.49
131,500.00	Public Utility Stocks	.98	.90	145,015.52
3,495,600.00	Railroad Bonds	21.20	20.80	3,338,556.63
894,700.00	Railroad Stocks	5.70	5.55	893,631.07
678,400.00	Real Estate Bonds	4.18	4.30	681,497.50
126,800.00	Real Estate Stocks	.81	.82	129,912.86
3,600.00	Miscellaneous Stocks	.05	.08	29,441.36
371,579.37	Mortgage Notes	2.30	4.40	710,500.00
461,297.08	Real Estate	2.86	1.30	211,297.08
$16,923,736.45	*Total General Investments*	100.00	100.00	$16,103,899.05

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$7,000.00	.....	$350.00
.....	$500.00	29,500.00	.....	1,500.00
.....	1,000.00	24,000.00	.....	1,488.00
.....	200,000.00	.....	.....	10,715.97
.....	$338,920.63	$371,579.37	.....	$44,564.90
.....	.....	$75,732.55	$10,753.23	$7,680.64
$250,000.00	.....	385,364.53	22,441.68	28,945.09
.....	.....	200.00	80.34	.....
$250,000.00	.....	$461,297.08	$33,275.25	$36,625.73
$400.00	$2,678.00	$2,293,905.84	.....	$109,372.66
.....	24,619.00	1,180,023.50	.....	67,855.00
40,747.93	32,146.78	1,667,630.35	.....	166,657.60
127,625.00	87,080.00	4,844,736.49	$1,008.33	257,378.75
14,140.00	180.00	158,975.52	.....	10,268.00
76,322.30	4,491.00	3,410,387.93	627.55	159,577.00
11,900.00	7,168.00	898,363.07	.....	55,256.75
.....	7,000.00	674,497.50	.....	35,500.00
.....	.....	129,912.86	.....	5,899.00
.....	20,801.36	8,640.00	.....	1,557.00
.....	338,920.63	371,579.37	.....	44,564.90
250,000.00	.....	461,297.08	33,275.25	36,625.73
$521,135.23	$525,084.77	$16,099,949.51	$34,911.13	$950,512.39

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1923*
	INVESTMENTS, MALCOLM COTTON BROWN FUND			
$15,000	Metro. West Side Elev. Ry. Co., Mtge.	4%	1938	$6,750.00
10,000	Metro. West Side Elev. Ry. Co., Mtge.	4%	1938	4,100.00
$25,000	*Total*			$10,850.00
	INVESTMENTS, FRANK HARVEY CILLEY FUND		*Shares*	
$10,000	New York, City of, Corp. Stock	4¼%	1964	$10,390.00
6,000	Gen. Elec. Co., Deb.	5%	1952	6,168.00
5,000	Cedars Rapids Mfg. & Pr. C., 1st Mt. S. F.	5%	1953	4,075.00
8,000	Elec. Securities Corp., Col. Tr. S. F.	5%	1940	7,960.00
5,000	St. Louis Iron Mt. & So. R.R. Mtge.	4%	1933	4,812.50
$2,500	Boston Elev. Ry. Co., 2d Pfd.	7%	25	$3,600.00
4,300	Edison Electric Ill. Co., Capital	12%	43	8,783.74
7,500	Mass. Gas Companies, Pref.	4%	75	6,825.00
1,250	Springfield Ry. Com., Pref.	8%	25	2,125.00
4,000	Boston & Albany R.R. Co., Capital	8¾%	40	8,000.00
5,000	B. & M. R.R. Co., Class A, 1st Pref.	...	50	5,000.00
1,000	Boston & Providence R.R. Corp.	10%	10	2,500.00
5,000	N. Y., N. H. & H. R.R., Capital	...	50	600.00
*1	South American Properties	...	....	1.00
1,600	Mortgage Note, Isabella Aznive	6%	....	1,600.00
2,400	Mortgage Note, E. and A. Orlogski	5%	....	2,400.00
$68,551	*Total*			$74,840.24
	INVESTMENTS EBEN S. DRAPER FUND		*Maturity*	
$16,000	Georgia Ry. & Elec. Co., 1st Mtge. S. F.	5%	1932	$16,144.00
20,000	New York Tel. Co., 1st & Gen. Mtge.	4½%	1939	19,395.00
20,000	Wilmington City Elec. Co., 1st Mtge.	5%	1951	19,600.00
20,000	Chicago, Mil. & St. Paul, Conv. Gold	5%	2014	20,364.00
24,000	Indianapolis Un. Ry. Co., Gen. Mtge.	5%	1965	23,880.00
$100,000	*Total*			$99,383.00
	INVESTMENTS, JOY SCHOLARSHIP FUND			
$5,000	Cedars Rapids Mfg. & Pr. Co., 1st Mt. S.F.	5%	1953	$4,075.00
5,000	Mass. Hospital Life Insurance Co.	5%	....	5,000.00
$10,000	*Total*			$9,075.00

*Book value.

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$6,750.00	.....	$600.00
.....	.....	4,100.00	.....	400.00
.....	.....	$10,850.00	.....	$1,000.00
.....	$10.00	$10,380.00	.....	$425.00
.....	6.00	6,162.00	.....	300.00
.....	.....	4,075.00	.....	250.00
.....	.....	7,960.00	.....	400.00
.....	.....	4,812.50	.....	200.00
.....	.....	$3,600.00	.....	$175.00
$980.00	$2.44	9,761.30	.....	457.38
.....	.....	6,825.00	.....	300.00
.....	.....	2,125.00	.....	100.00
.....	.....	8,000.00	.....	350.00
.....	.....	5,000.00	.....	.....
.....	.....	2,500.00	.....	100.00
.....	.....	600.00	.....	.....
.....	.....	1.00	.....	.....
.....	.....	1,600.00	.....	96.00
.....	.....	2,400.00	.....	120.00
$980.00	$18.44	$75,801.80	.....	$3,273.38
.....	$18.00	$16,126.00	.....	$800.00
.....	.....	19,395.00	.....	900.00
.....	.....	19,600.00	.....	1,000.00
.....	4.00	20,360.00	.....	1,000.00
.....	.....	23,880.00	.....	1,200.00
.....	$22.00	$99,361.00	.....	$4,900.00
.....	.....	$4,075.00	.....	$250.00
.....	.....	5,000.00	.....	250.00
.....	.....	$9,075.00	.....	$500.00

Schedule H (*Continued*)

Par Value	*Description of Securities*	*Rate*	*Maturity*	*Balance June 30, 1923*
	INVESTMENTS, RICHARD LEE RUSSEL FELLOWSHIP FUND			
$2,000	Trinity Build. Corp. of N. Y., 1st Mtge.	5½%	1939	$2,000.00
	INVESTMENTS, SUSAN H. SWETT SCHOLARSHIP FUND			
$10,000	Mass. Hospital Life Insurance Co.	5%	....	$10,000.00
	INVESTMENTS, JONATHAN WHITNEY FUND			
$25,000	Montreal, City of, Canada	5%	1936	$25,000.00
25,000	New York, City of, Corporate Stock	4¼%	1964	26,036.00
29,000	United States of America, 3d Lib. Loan	4¼%	1928	29,000.00
25,000	American Thread Co., 1st Mtge.	6%	1928	26,249.00
25,000	Gen. Elec. Co., Deb.	5%	1952	25,700.00
25,000	Swift & Co., 1st Sinking Fund	5%	1944	22,625.00
32,000	U. S. Steel Corp., S. F.	5%	1963	16,117.00
25,000	Detroit Edison Co., 1st Mtge.	5%	1933	25,270.00
25,000	Georgia Rail. & Elec. Co., 1st Mtge.	5%	1932	25,336.00
25,000	N. Y. Tel. Co., 1st & Gen. Mtge.	4½%	1939	24,150.39
21,000	United Elec. Securities Co., Tr. S. F.	5%	1940	21,066.00
25,000	Western Tel. & Tel. Co., Co. Tr.	5%	1932	25,376.00
25,000	Atch., Top.& S.F.,Cal.& Ar. Lines, 1st Mt.	4½%	1962	24,381.25
35,000	Chicago Union Station, 1st Mtge.	4½%	1963	35,225.00
25,000	Illinois Cen. R.R. Co., Sec. Gold	4%	1952	22,625.00
25,000	Maine Cen. R.R. Co., 1st & Ref. Mtge.	4½%	1935	25,017.00
150,000	Mortgage Note, M. I. T. Dormitory	5¾%	1924	150,000.00
$567,000	*Total*			$549,173.64
$17,706,287.45	*Grand Total, All Investments (Schedule D)*			$16,859,220.93

Schedule H (*Continued*)

Purchases and Charges during the year	*Sales and Credits during the year*	*Balance June 30, 1924*	*Accrued Interest, etc.*	*Income Received*
.....	.....	$2,000.00	.....	$110.00
.....	.....	$10,000.00	.....	$500.00
.....	.....	$25,000.00	.....	$1,250.00
.....	$26.00	26,010.00	.....	1,062.50
.....	.....	29,000.00	.....	1,232.50
.....	312.00	25,937.00	.....	1,500.00
.....	25.00	25,675.00	.....	1,250.00
.....	.....	22,625.00	.....	1,250.00
$16,216.00	3.00	32,330.00	.....	1,600.00
.....	30.00	25,240.00	.....	1,250.00
.....	42.00	25,294.00	.....	1,250.00
.....	.....	24,150.39	.....	1,125.00
.....	4.00	21,062.00	.....	1,050.00
.....	47.00	25,329.00	.....	1,250.00
.....	.....	24,381.25	.....	1,125.00
.....	6.00	35,219.00	.....	1,575.00
.....	.....	22,625.00	.....	1,000.00
.....	2.00	25,015.00	.....	1,125.00
.....	.....	150,000.00	.....	8,625.00
$16,216.00	$497.00	$564,892.64	.....	$28,520.00
$538,331.23	$525,622.21	$16,871,929.95	$34,911.13	$989,315.77

SCHEDULE J

EDUCATIONAL PLANT

Land, Buildings and Equipment

Land, Boylston, Clarendon and Newbury Streets, Boston	$1,500,000.00
Rogers Building, Boylston Street, Boston	204,534.76
Walker Building, Boylston Street, Boston	150,000.00
Land, east of Massachusetts Avenue, Cambridge	1,119,266.67
Land, west of Massachusetts Avenue, Cambridge (new)	544,380.64
Main Educational Building Group, Cambridge	4,071,492.13
Pratt School of Naval Architecture, Cambridge	674,971.70
Mechanic Arts Building, Cambridge	83,658.89
Power Plant (inc. Machinery and Equipment), Cambridge	262,026.08
Educational Equipment, Cambridge	1,806,414.29
Steam and Electrical Distribution System, Cambridge	155,448.64
Gas Engine Laboratory, Cambridge	26,301.88
Service Garage, Cambridge	5,981.54
Athletic Field, Cambridge	19,815.14
Summer Camp, East Machias, Maine	102,558.00
Walker Memorial Building, Cambridge	575,111.50
Walker Memorial Building, Equipment	139,475.52
Dormitories (1916) ($331,357.67 less mortgage $150,000)	181,357.67
Dormitories (1916) Equipment	20,707.57
Dormitory, Class of '93 (new)	184,129.41
New Service Building, Cambridge	42,988.20
Boathouse, Cambridge	15,000.00
Miscellaneous and Undistributed	266,581.79
Total, June 30, 1924 (Schedule D)	$12,152,202.02

SCHEDULE K

PRINCIPAL GIFTS AND APPROPRIATIONS FOR EDUCATIONAL PLANT

George Eastman, for New Buildings	$3,500,000.00
Maria A. Evans, for Dormitories	161,192.55
Class of 1893, for New Dormitory	100,000.00
Appropriation, Maria A. Evans Fund	169,080.60
T. C. du Pont, Donation for Land	500,000.00
T. C. du Pont, Donation for Dormitories	100,000.00
T. C. and P. S. du Pont, Charles Hayden, for Mining Building	215,000.00
Pratt Fund, for School of Naval Architecture	675,150.00
Alumni Fund, Equipment, Dormitories and Walker Memorial	622,119.38
Walker Memorial Fund, for Walker Memorial	167,303.96
Improvement Fund for Walker Memorial	24,491.04
Appropriation of Emma Rogers' Fund, for Equipment	528,077.06
Estate of F. W. Emery, for New Equipment	125,611.30
Appropriation of Charles C. Drew Fund	305,171.52
Appropriation of Lucius Tuttle Fund for New Equipment	50,000.00
Appropriation of Frank E. Peabody Fund	50,000.00
Appropriation of Nathaniel Thayer Fund for New Equipment	25,000.00
Appropriation of French Fund for New Equipment	100,843.34
Appropriation of George B. Dorr Fund for New Equipment	49,573.47
Land in Boston, Grant of Commonwealth	1,500,000.00
Appropriation of A. F. Estabrook Fund for New Land	75,000.00
Appropriation of Miscel. Unrestricted Funds for New Land	151,697.89
Subscriptions for New Land	109,525.00
Sale of Land and Buildings in Boston	656,919.45
Equipment from Buildings in Boston (estimated)	500,000.00
Other Funds, Donations, etc.	1,562,641.75
Total, June 30, 1924 (Schedule D)	$12,024,398.31

SCHEDULE P

ENDOWMENT FUNDS FOR GENERAL PURPOSES

Restricted Funds	*Funds, June 30, 1923*	*Investment Income*	*Other Income*	*Expended or Transferred*	*Funds June 30, 1924*
George Eastman (Building)	$2,500,000.00	$138,062.00	.....	$138,062.00	$2,500,000.00
Educational Endowment	7,068,797.51	395,576.00	$199,568.88	395,576.00	7,268,366.39
General Endowment	1,527,549.00	84,383.00	.....	84,383.00	1,527,549.00
*Anonymous	10,507.81	220.88	.....	10,000.00	728.69
George Robert Armstrong	5,000.00	276.10	.....	276.10	5,000.00
Charles Choate	35,858.15	1,987.92	.....	1,987.92	35,858.15
Eben S. Draper	100,000.00	4,900.00	.....	4,900.00	100,000.00
Martha Ann Edwards	30,000.00	1,656.60	.....	1,656.60	30,000.00
William Endicott	25,000.00	1,380.50	.....	1,380.50	25,000.00
Francis Appleton Foster	1,000,000.00	55,225.00	.....	55,225.00	1,000,000.00
Jonathan French	25,212.48	1,380.50	.....	1,380.50	25,212.48
James Fund	163,654.21	9,056.08	.....	9,056.08	163,654.21
Katharine B. Lowell	5,000.00	276.10	.....	276.10	5,000.00
M. I. T. Alumni Fund (Bal.)	18,119.38	496.98	175.00	18,119.38	671.98
Richard Perkins	50,000.00	2,761.00	.....	2,761.00	50,000.00
J. W. and B. L. Randall	83,452.36	4,583.26	.....	4,583.26	83,452.36
Wm. Barton Rogers Mem.	250,225.00	13,805.00	.....	13,805.00	250,225.00
†Saltonstall Fund	51,217.28	2,816.22	.....	2,112.17	51,921.33
Samuel E. Sawyer	4,764.40	276.10	.....	276.10	4,764.40
Andrew Hastings Spring	50,000.00	2,761.00	.....	2,761.00	50,000.00
Seth K. Sweetser	25,061.62	1,380.50	.....	1,380.50	25,061.62
William J. Walker	23,663.59	1,325.28	.....	1,325.28	23,663.59
Albion K. P. Welch	5,000.00	276.10	.....	276.10	5,000.00
	$13,058,082.79	$724,862.12	$199,743.88	$751,559.59	$13,231,129.20
Unrestricted Funds					
*Anonymous	.....	$138.05	$5,000.00	.....	$5,138.05
Sidney Bartlett	$10,000.00	276.10	.....	$10,276.10	.....
A. Farwell Bemis	10,000.00	276.10	.....	10,276.10	.....
Stanton Blake	5,000.00	276.10	.....	276.10	5,000.00
Helen Collamore	12,483.97	331.32	.....	12,815.29	.....
Samuel P. Colt	10,000.00	276.10	.....	10,276.10	.....
Charles C. Drew (Bal.)	75,171.52	2,098.36	.....	77,269.88	.....
Frederick W. Emery	.....	27.61	812.50	27.61	812.50
Arthur F. Estabrook (Bal.)	75,000.00	2,208.80	10,000.00	77,208.80	10,000.00
Maria A. Evans (Bal.)	61,192.55	1,711.82	.....	62,904.37	.....
Walter L. Frisbie	7,614.98	414.15	.....	414.15	7,614.98
Arthur T. Lyman	5,000.00	276.10	.....	276.10	5,000.00

*Income added to Fund.
†One-fourth Income added to Fund.

Schedule P (*Continued*)

Unrestricted Funds (Continued)	*Funds June 30, 1923*	*Investment Income*	*Other Income*	*Expended or Transferred*	*Funds June 30, 1924*
James McGregor	$2,500.00	$138.05	.....	$138.05	$2,500.00
Hiram F. Mills	5,000.00	496.98	$5,175.00	496.98	10,175.00
Albert H. Munsell	7,908.28	441.76	.....	441.76	7,908.28
Margaret A. Munsell	1,105.32	55.22	.....	55.22	1,105.32
Nathaniel C. Nash	10,000.00	276.10	.....	10,276.10	.....
Moses W. Oliver	11,220.49	607.42	.....	607.42	11,220.49
Frank E. Peabody (Bal.)	2,238.89	110.44	.....	110.44	2,238.89
Frances M. Perkins	16,525.00	938.74	.....	938.74	16,525.00
Edward S. Philbrick (Bal.)	34,213.92	993.96	2,000.00	35,207.88	2,000.00
George W. Richards	.....	27.61	1,000.00	27.61	1,000.00
Robert E. Rogers	7,680.77	414.15	.....	414.15	7,680.77
Richard B. Sewall	30,000.00	828.30	.....	30,828.30	.....
Horace W. Wadleigh	2,143.14	110.44	.....	110.44	2,143.14
Charles G. Weld	15,000.00	414.15	.....	15,414.15	.....
Alexander S. Wheeler	30,000.00	828.30	.....	30,828.30	.....
	$446,998.83	$14,992.23	$23,987.50	$387,916.14	$98,062.42
Special Deposit Funds					
†Endowment Reserve	.....	$9,156.01	$31,199.84	$7,879.00	$32,476.85
*Anonymous (1924)	.....	.....	1,052.50	.....	1,052.50
*1923 Endowment Reserve	.....	.....	497.47	497.47	.....
*1924 Endowment Reserve	.....	.....	477.96	.....	477.96
*Special (Avon St.)	.....	110.44	3,000.00	.....	3,110.44
	.....	$9,266.45	$36,227.77	$8,376.47	$37,117.75

*Income added to Fund
†One per cent of total net income from General Investments carried to this Fund

SCHEDULE Q

ENDOWMENT FUNDS FOR DESIGNATED PURPOSES

Invested Funds	*Funds June 30, 1923*	*Investment Income*	*Other Income*	*Expended or Transferred*	*Funds June 30, 1924*
FUNDS FOR SALARIES:					
Samuel C. Cobb For General Salaries . . .	$36,000.00	$1,987.92	.....	$1,987.92	$36,000.00
Sarah H. Forbes For General Salaries . . .	500.00	27.61	.....	27.61	500.00
George A. Gardner For General Salaries . . .	20,000.00	1,104.40	.....	1,104.40	20,000.00
James Hayward Professorship of Engineering	18,800.00	1,049.18	.....	1,049.18	18,800.00
William P. Mason Professorship of Geology .	18,800.00	1,049.18	.....	1,049.18	18,800.00
Henry B. Rogers For General Salaries . . .	25,000.00	1,380.50	.....	1,380.50	25,000.00
Nathaniel Thayer Professorship of Physics .	25,000.00	1,380.50	.....	1,380.50	25,000.00
	$144,100.00	$7,979.29	.....	$7,979.29	$144,100.00
FUNDS FOR LIBRARY, READING ROOMS AND GYMNASIUM:					
Frank Harvey Cilley	$75,357.95	$3,273.38	.....	$6,048.43	$72,582.90
Charles Lewis Flint Library	5,000.00	276.10	.....	276.10	5,000.00
William Hall Kerr Library .	2,196.37	110.44	.....	80.00	2,226.81
Arthur Rotch Architectural Library	5,000.00	276.10	.....	276.10	5,000.00
Technology Matrons' Teas .	6,314.88	331.32	$253.62	314.88	6,584.94
John Hume Tod	2,665.63	138.05	.....	111.74	2,691.94
Edna Dow Cheney	14,176.71	773.08	.....	670.69	14,279.10
	$110,711.54	$5,178.47	$253.62	$7,777.94	$108,365.69
FUNDS FOR DEPARTMENTS:					
George Eastman, Chemistry and Physics	$400,000.00	$22,090.00	.....	$22,090.00	$400,000.00
William Parsons Atkinson .	13,082.20	717.86	.....	717.86	13,082.20
Frank Walter Boles Memorial	15,644.48	828.30	.....	1,085.35	15,387.43
William E. Chamberlain . .	7,309.77	414.15	.....	414.15	7,309.77
Chemical Engineering Practice	257,772.97	14,247.76	.....	14,247.76	257,772.97
Susan E. Dorr	95,955.67	5,301.62	.....	5,301.62	95,955.67
George Henry May, Chemistry	5,000.00	276.10	.....	276.10	5,000.00
Pratt Naval Architectural .	396,172.75	21,869.02	$420.00	28,832.58	389,629.19
Arthur Rotch Architectural .	25,000.00	1,380.50	.....	1,380.50	25,000.00
*Edmund K. Turner	216,847.94	11,983.74	.....	9,512.49	219,319.19
	$1,432,785.78	$79,109.05	$420.00	$83,858.41	$1,428,456.42

*One-fourth of net income added.

Schedule Q (*Continued*)

Invested Funds	*Funds June 30, 1923*	*Investment Income*	*Other Income*	*Expended or Transferred*	*Funds June 30, 1924*
FUNDS FOR RESEARCH:					
Samuel Cabot	$69,846.23	$3,865.40	.....	$4,500.00	$69,211.63
Ellen H. Richards	16,477.70	911.13	.....	594.67	16,794.16
Charlotte B. Richardson	37,709.37	2,098.36	.....	1,750.00	38,057.73
Technology Plan Research	11,627.72	662.64	$4,100.01	2,570.00	13,820.37
Edward Whitney	47,115.03	2,595.34	.....	1,000.00	48,710.37
	$182,776.05	$10,132.87	$4,100.01	$10,414.67	$186,594.26
FUNDS FOR FELLOWSHIPS:					
Malcolm Cotton Brown	$12,080.00	$1,000.00	.....	$667.00	$12,413.00
Collamore	11,833.23	662.64	.....	500.00	11,995.87
Dalton Graduate Chemical	6,072.56	331.32	.....	292.00	6,111.88
du Pont Fellowship	.....	.....	$750.00	750.00	.....
Graselli Fellowship	750.00	.....	750.00	750.00	750.00
Rebecca R. Joslin	.....	38.65	1,540.00	.....	1,578.65
Monsanto Fellowship	*50.00	.....	50.00	.....	.....
Moore	6,629.88	358.93	.....	300.00	6,688.81
Willard B. Perkins	8,486.93	469.37	.....	625.00	8,331.30
Henry Bromfield Rogers	21,790.09	1,214.84	.....	750.00	22,254.93
Richard Lee Russel	2,236.57	110.00	.....	150.00	2,196.57
Henry Saltonstall	10,211.28	552.20	.....	150.00	10,613.48
James Savage	10,665.95	579.81	.....	300.00	10,945.76
Susan H. Swett	10,520.45	500.00	.....	150.00	10,870.45
Louis Francisco Verges	.....	165.66	10,000.00	.....	10,165.66
	$101,226.94	$5,983.42	$13,090.00	$5,384.00	$114,916.36
FUNDS FOR SCHOLARSHIPS:					
Elisha Atkins	$5,361.68	$292.66	.....	$300.00	$5,354.34
Billings Student	52,547.46	2,926.66	.....	3,000.00	52,474.12
Jonathan Bourne	10,723.92	607.42	.....	500.00	10,831.34
Harriet L. Brown	6,212.89	331.32	.....	.....	6,544.21
Lucius Clapp	5,254.55	287.16	.....	300.00	5,241.71
Class of 1896	.....	110.44	$2,272.00	.....	2,382.44
Lucretia Crocker	65,510.38	3,644.52	.....	1,200.00	67,954.90
Isaac W. Danforth	5,432.39	298.20	.....	300.00	5,430.59
Ann White Dickinson	43,347.61	2,374.46	.....	2,000.00	43,722.07
Farnsworth	5,416.13	298.20	.....	300.00	5,414.33
Charles Lewis Flint	5,498.17	303.72	.....	300.00	5,501.89
Sarah S. Forbes	3,535.80	193.27	.....	300.00	3,429.07

*Overdrawn

Schedule Q (*Continued*)

Invested Funds	*Funds June 30, 1923*	*Investment Income*	*Other Income*	*Expended or Transferred*	*Funds, June 30, 1924*
Graselli Scholarship	$500.00	.....	$500.00	$500.00	$500.00
George Hollingsworth	5,289.45	$287.16	.....	300.00	5,276.61
T. Sterry Hunt	3,257.60	176.70	.....	200.00	3,234.30
William F. Huntington	5,446.40	298.20	.....	300.00	5,444.60
Joy Scholarships	10,000.00	.....	.....	.....	10,000.00
Income, Joy Scholarships	5,584.60	776.10	.....	300.00	6,060.70
William Litchfield	5,471.66	298.20	.....	300.00	5,469.86
Elisha T. Loring	5,481.45	298.20	.....	300.00	5,479.65
Lowell Institute Scholarship	2,314.76	127.01	.....	.....	2,441.77
George Henry May	5,000.00	276.10	250.00	300.00	5,226.10
James H. Mirrlees	2,916.53	160.14	.....	300.00	2,776.67
Nichols Scholarship	5,416.13	298.20	.....	300.00	5,414.33
Charles C. Nichols	5,471.95	298.20	.....	300.00	5,470.15
John Felt Osgood	5,407.13	298.20	.....	300.00	5,405.33
George L. Parmelee	18,979.34	1,049.18	.....	300.00	19,728.52
Richard Perkins	56,379.63	3,092.32	.....	3,000.00	56,471.95
John P. Schenkl	20,342.01	1,104.40	.....	200.00	21,246.41
Thomas Sherwin	5,480.66	298.20	.....	300.00	5,478.86
Samuel E. Tinkham	.....	33.13	2,333.16	.....	2,366.29
F. B. Tough	.....	.....	465.00	.....	465.00
Susan Upham	1,073.72	55.22	.....	50.00	1,078.94
Vermont Scholarship	.....	.....	6,000.00	.....	6,000.00
Ann White Vose	64,698.52	3,589.30	.....	3,700.00	64,587.82
Louis Weissbein	4,226.95	231.92	.....	200.00	4,258.87
Frances Erving Weston	1,172.11	60.74	200.00	600.00	832.85
Samuel Martin Weston	219.56	11.04	200.00	200.00	230.60
	$448,971.14	$24,785.89	$12,220.16	$20,750.00	$465,227.19

FUNDS FOR PRIZES:

Robert A. Boit	$5,176.06	$276.10	.....	$225.00	$5,227.16
Arthur Rotch	5,446.78	298.20	.....	.....	5,744.98
Arthur Rotch, Special	6,637.32	364.45	.....	.....	7,001.77
	$17,260.16	$938.75	.....	$225.00	$17,973.91

Schedule Q (*Continued*)

Invested Funds	*Funds June 30, 1923*	*Investment Income*	*Other Income*	*Expended or Transferred*	*Funds, June 30 1924*
FUNDS FOR RELIEF:					
Architectural Society . .	$1,266.20	$66.26	.....	$240.00	$1,092.46
Edward Austin	429,782.74	23,746.60	.....	18,620.61	434,908.73
Thomas Wendell Bailey	2,437.77	132.52	.....	100.00	2,470.29
Levi Boles	11,321.33	623.99	.....	1,000.00	10,945.32
Bursar's Fund	6,429.90	366.13	$2,248.09	2,132.50	6,911.62
Dean's Fund	.....	138.05	3,350.00	1,405.00	2,083.05
Dormitory Fund . . .	3,432.67	187.75	.....	.....	3,620.42
*Charles Tidd Baker . .	20,871.00	1,159.62	.....	300.00	21,730.62
Mabel Blake Case . .	26,901.49	1,490.94	.....	800.00	27,592.43
Norman H. George . .	75,471.90	4,141.50	.....	3,500.00	76,113.40
Teachers' Fund	113,416.26	6,240.36	.....	7,889.84	111,766.78
Jonathan Whitney . . .	565,758.84	28,520.00	.....	16,107.50	578,171.34
Morrill Wyman	78,616.69	4,362.38	1.06	3,500.00	79,480.13
	$1,335,706.79	$71,176.10	$5,599.15	$55,595.45	$1,356,886.59

RECAPITULATION OF FUNDS:

FOR GENERAL PURPOSES:					
Restricted	$13,058,082.79	$724,862.12	$199,743.88	$751,559.59	$13,231,129.20
Unrestricted	446,998.83	14,992.23	23,987.50	387,916.14	98,062.42
Special Deposit Funds	.....	9,266.45	36,227.77	8,376.47	37,117.75
FOR DESIGNATED PURPOSES:					
Salaries	144,100.00	7,979.29	.....	7,979.29	144,100.00
Libraries, etc.	110,711.54	5,178.47	253.62	7,777.94	108,365.69
Departments	1,432,785.78	79,109.05	420.00	83,858.41	1,428,456.42
Research	182,776.05	10,132.87	4,100.01	10,414.67	186,594.26
Fellowships	101,226.94	5,983.42	13,090.00	5,384.00	114,916.36
Scholarships	448,971.14	24,785.89	12,220.16	20,750.00	465,227.19
Prizes	17,260.16	938.75	.....	225.00	17,973.91
Relief	1,335,706.79	71,176.10	5,599.15	55,595.45	1,356,886.59
Total (Schedule D). .	$17,278,620.02	$954,404.64	$295,642.09	$1,339,836.96	$17,188,829.79

*One-half of the income to be added to the principal each year.

SCHEDULE R

MINOR FUNDS

Name	Balance June 30, 1923	Income	Other Increases	Salaries and Expenses	Balance June 30, 1924
Aeronautics	*$2,511.70	$23,121.28	.....	$18,009.83	$2,599.75
Aldred Lectures	.....	5,000.00	.....	2,111.22	2,888.78
No. 215 Lectures	.....	.....	†$600.00	392.20	207.80
Alumni Dormitory Committee	608.45	.....	.....	608.45	.....
Alumni Office	634.08	21,346.37	.....	21,015.78	964.67
A. T. and T. Library	2,330.95	2,000.00	.....	2,323.88	2,007.07
Ames St. Tunnel (App. 179)	.....	.....	†3,200.00	.....	3,200.00
Biology, Special No. 1	368.97	.....	56.78	425.75	.....
Biology, Special (F. and F.)	.....	.....	†5,556.53	2,050.49	3.506.04
Chemistry, Special	.....	.....	‡1,500.00	.....	1,500.00
Chemical Eng. Cabot No. 2	110.01	.....	.....	110.01	.....
Chemical Eng., Cabot No. 4	1,194.78	.....	.....	1,194.78	.....
Course XV	357.90	97.50	.....	.....	455.40
E. H. Cox Fund	.....	100.00	.....	.....	100.00
Dining Service Reserve	5,420.38	.....	§5,967.69	3,263.36	8,124.71
Division Fund	1,010.00	520.00	.....	.....	1,530.00
Electrical Engineering Research	*557.31	10,000.00	¶8,000.00	16,719.32	723.37
Food Engineering Research	56.53	.....	.....	56.53	.....
General Library, Special	653.20	.....	.....	107.93	545.27
Hale Spectroscopic	2,793.36	56.00	.....	.....	2,849.36
Historic Memorials	.....	50.00	†1,000.00	360.06	689.94
Journal of Mathematics and Physics	1,167.58	277.13	†2,221.17	3,555.58	110.30
Mechanical Eng., Special No. 2	602.71	12.00	°600.00	.....	1,214.71
Medical Department, Special	4,508.93	163.00	.....	652.72	4,019.21
National Res. Com. on Indus. Ltg.	.....	.....	.....	466.27	*466.27
Nutrition Research	2,857.08	.....	.....	1,756.41	1,100.67
Ore Dressing Laboratory	.....	.....	†3,075.73	.....	3,075.73
Paper Ins. Cable Research	*629.46	4,000.00	.....	2,039.05	1,331.49

(*Continued page 55*)

*Overdraft.
†Appropriation from Current Funds.
‡Transfer from D. of I. C. and R.
§Transfer from Dining Service Earnings.
¶Transfer from Electrical Engineering Department Appropriation.
°Transfer from Mechanical Engineering Department Appropriation.

Schedule R (*Continued*)

	Balance June 30, 1923	*Income*	*Other Increases*	*Salaries and Expenses*	*Balance June 30, 1924*
Petroleum	$88.62	.....	.....	$88.62	.....
Photostat Account	.....	$2,551.18	.....	2,213.23	$337.95
Presidents	212.42	.....	.....	.....	212.42
Public Health	1,020.00	20.00	.....	250.00	790.00
Research Lab. Applied Chemistry	27,785.97	71,618.99	†15,250.00	87,196.27	27,458.69
Research Lab. Industrial Physics	5,144.50	9,888.23	.....	9,024.46	6,008.27
Res. Lab. Phys. Chem. (Royalties)	166.55	100.00	.....	158.50	108.05
Research on Explosives, No. 34161	5,413.07	.....	‡2,881.60	2,391.85	5,902.82
Roentgen Ray	1,641.63	32.00	.....	.....	1,673.63
Sargent Fund	1,020.00	20.00	.....	.....	1,040.00
Special Research No. 6003	1,311.28	.....	58.50	1,369.78	.....
Special Research No. 13101	8,464.46	.....	.....	8,464.46	.....
Special Research No. 13101a	.....	.....	‡6,000.00	4,040.97	1,959.03
Steam Table Research	*534.47	5,871.35	.....	5,278.99	57.89
Summer Mining Camp (Const.)	.....	.....	§9,179.00	541.16	8,637.84
Travel. Scholarship in Architecture	.....	.....	°1,875.00	1,250.00	625.00
W. M. (Billiard Room App.)	.....	.....	§3,250.00	460.10	2,789.90
W. M. (Library App.)	.....	.....	¶5,800.00	3,815.11	1,984.89
X-Ray Research	15,000.00	.....	‖2,077.86	17,077.86	.....
Total	$87,710.47	$156,845.03 (Schedule B)	$78,149.86	$220,840.98 (Schedule C)	$101,864.38 (Schedule D)

*Overdraft.
†Appropriation from Current Funds $9,000, Richardson Fund $1,750, Cabot Fund $4,500.
‡Transfer from Special Research No. 13101.
§Appropriation from Current Funds.
¶Appropriation from Cilley Fund.
°$1250 from Austin Fund — $625 from Perkins' Fund.
‖$500 from Tech Plan Research — $1577.86 from Physics Department.

SCHEDULE S

Current Surplus

Balance, July 1, 1923	$28,230.58
Net Increase (Schedule A)	1,039.14
Balance, June 30, 1924 (Schedule D)	$29,269.72

Detail of Profit and Loss Account

Losses and Charges:

Accounts Receivable, charged off	$460.40
Students' Fees and Deposits (previous years), charged off	847.63
Uniform Account, charged off	201.21
Stockroom, charged off	697.29
Drawing Keys, charged off	116.11
Miscellaneous Debits	50.19
Total Losses	$2,372.83

Gains and Credits:

Interest due in 1922–1923	$5,263.32
Students' Fees and Deposits (previous years)	635.21
Accounts Receivable (previous years)	15.69
Miscellaneous Credits	223.53
Total Gains	$6,137.75
Profit and Loss. Net Profit (Schedule A)	$3,764.92