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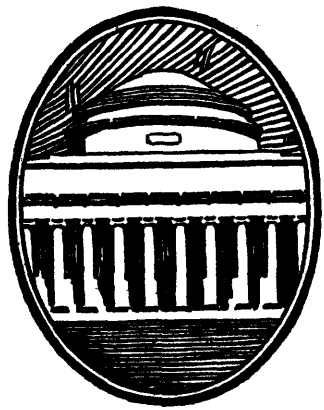

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BULLETIN

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REPORT OF THE PRESIDENT

To the Members of the Corporation:

THIS annual report upon the affairs of the Massachusetts Institute of Technology covers a year during which the most noteworthy developments in its program have been related to the national program of defense. I wish consequently to give primary attention to this aspect of our work and to suggest some of the ways it bears upon the future of this institution.

It is not surprising that the Institute has been called upon to play an important rôle in the defense effort. From its founding one of its intrinsic qualities has been an ideal of public service, a recognition by members of its staff of an institutional obligation and opportunity to extend and implement its regular program by service to industry, governmental agencies, and society generally.

Combined with this ideal and making it effective has been the Institute's concentration upon a defined and very specific objective of fundamental social importance — *through education and research, the development and application of science and technology as mainsprings of social progress.* As Thomas Huxley once observed and as we in America acutely realize now in this grim national emergency, "modern civilization rests upon physical science; take away her gifts to our own country and our position among the leading nations of the world is gone tomorrow; for it is physical science only that makes intelligence stronger than brute force."

If this truth was challenged in some quarters during the depression and before the war, there is a startling change today. *No need in the country is so urgent as that for more and better technically trained men,* no objective more important than

increased productive power, and the pure scientist has been drafted as an indispensable factor in defense work. Let me add, parenthetically, that I believe that this change was coming even without the war, and that the present defense activity has only switched into temporary channels and accelerated a movement which was already under way. I believe that thoughtful people have reacted against the panicky confusion of the depression and that they see in technological progress, in new development and in new production, essential elements of continuing national prosperity.

Coöperation in the National Defense Program

With these conditions prevailing, a technological institution such as ours is in a position of great strategic importance, and the extent of the Institute's participation in the defense program is a measure of this importance. Let me first describe the events and activities at the Institute which are associated with the defense program, dividing them into three groups: personnel contributions, education, and research.

Personnel. The first way in which the Institute responded to the national emergency was to release experts from its staff to serve in various operating or advisory agencies of the government. Nearly two hundred officers and members of our staff are now engaged in this type of service. Those in this group whose salaries continue to be paid by the Institute contributed during the past year approximately fifty thousand man-hours of time to defense, and the others have been temporarily transferred to governmental pay rolls, usually requiring new substitute staff appointments to carry the teaching loads which they have temporarily relinquished. There will be deposited in the records, as an appendix to this report, a list of the staff members engaged in defense work, so let me mention here only a few typical activities of those under auspices outside the Institute. Dean Caldwell has been associated with Mr. Nelson

Rockefeller and with the State Department in the government's important program of cultural relations with the South American Republics. Dean Moreland is Administrator for Northern New England in the National Defense Training Program and serves on a regional committee of the Office of Production Management. Dean Prescott is a special consultant on subsistence to the Office of Quartermaster General. Professor Hunsaker holds the new post of Coördinator of Scientific Research in the Office of the Secretary of the Navy and this summer was appointed chairman of the National Advisory Committee for Aeronautics when Dr. Bush resigned this office upon his appointment as Director of the Office of Scientific Research and Development. Professor Douglass Brown of the Department of Economics served this last year as business specialist in the Office of Production Management and at present is in Russia as economic adviser to the Commission sent by our government to that country. Professor Whitman is serving as special adviser in the O.P.M., Professor Waterhouse is a consultant on Metallurgy in the O.P.M., and Professors Bennett, Bitter, Horton and Lamar have been called to an important new technical service with the Navy. A large group of members of the staff, including Professors Harrison, Samuel H. Caldwell, W. K. Lewis, Bowles, Burchard, Robert S. Williams, Sherwood, Trump, Boyce, Bemis, and Houghton and myself, are serving on the National Defense Research Committee and its subcommittees. Many others also deserve special mention.

The defense activities of these staff members would be impossible were it not for the cheerful readiness with which other members of the staff have accepted additional responsibility. Those who continue to man the normal program of the Institute are contributing no less than those who are engaged directly in defense work.

Educational Activities. As the Nation's gigantic defense program got under way it quickly became evident that the

supply of men with an engineering type of training was very inadequate. Consequently last October Congress appropriated $9,000,000 to finance an engineering defense training program to be conducted in qualified colleges under the auspices of the United States Office of Education. The Institute has participated in this program by offering during the second term of last year and this past summer twenty-seven intensive tuition-free courses of college or postgraduate grade, with an enrollment of 929 students. Examples of the subjects offered are: three courses in Aeronautical Engineering, two in Aircraft Engines, and one in Naval Architecture — all for Naval officers. One course in Naval Architecture and another in Marine Engineering were requested by the Civil Service Commission, a course in Ultrahigh Frequency Radio technique was jointly requested by the Army and Navy, a course in Ordnance Inspection was given five times for the Watertown Arsenal, a night course in Naval Architecture was offered for men at the Fore River Shipyard of the Bethlehem Steel Company, and a six-weeks course on the application of meteorology to field artillery problems was given at the request of the Commanding Officer at Camp Edwards.

The instruction in this program was given by ninety-four instructors, of whom eighty-one were from the regular staff of the Institute. These instructors carried this program as an addition to their normal Institute work. The funds, provided by the Office of Education, totalled approximately $128,000 which covered salaries, instructional material and supplies, maintenance and repair of equipment used in the courses, and the purchase or rental of equipment. The basic financial policy of this engineering defense training program of the United States Office of Education is to reimburse the coöperating colleges for all direct out-of-pocket expenses, but with no allowance for overhead.

This work at the Institute is part of a larger local program

coöperatively organized by the four institutions offering engineering training in Metropolitan Boston: Harvard, Tufts, Northeastern and M. I. T. Publicity and general management for all four of the schools was handled at the Institute by a coöperative central office known as the Engineering Defense Training Bureau.

This summer Congress made a new appropriation of $17,500,000 to continue this program and to extend it to include training for chemists, physicists, and production supervisors. Under this enlarged Engineering, Science, and Management Defense Training Program, the Institute will continue to offer intensive courses during the current academic year.

Apart from this special defense training program under the Office of Education, we are engaged in a variety of other types of defense training. The Navy continues to send us a group of Naval officers for graduate study, and of the sixty officers who were detailed here last year, forty studied Naval Construction and Naval Engineering and the remainder took special work in Meteorology, Electrical Engineering, Mechanical Engineering, or Aeronautical Engineering.

Last summer a special intensive course in meteorology was given to recruits for the Army Air Corps, and during the past academic year another group of approximately sixty post-graduate students came for training for the Army Air Corps and the United States Weather Bureau. This course is now being repeated for a considerably enlarged group.

This work in meteorology provides a striking example of the mounting demand for men in highly specialized fields. For about ten years our meteorological course was a pioneer in this country in application and new development of scientific methods to meteorological art. There were enthusiasm in the staff, an important research program, but very few students and large per capita cost. The justification of the expense was frequently questioned. But now the investment justifies itself.

In 1939–40 our full-time postgraduate enrollment in meteorology totalled thirty, in 1940–41, ninety-eight, and in 1941–42, one hundred and seventeen. During the interval essentially similar courses have been established at California Institute of Technology, New York University and University of Chicago, and the new methods have been adopted by the United States Weather Bureau.

Still another type of defense training is represented by a seminar for technical apprentices in industry which we are offering in connection with one of the research projects carried on here for the National Defense Research Committee. This seminar was requested by a group of companies now entering into large scale manufacture of new equipment based upon research developments, in order to train their personnel in the new art. About fifty men sent here by the Radio Corporation of America, the General Electric Company, and the Westinghouse Electric and Manufacturing Company are participating in the three months' seminar.

Defense Research. Some measure of the Institute's third and major defense activity, the prosecution of special research, is given by the number of contracts currently in force, the amounts involved, and the personnel required. Let me summarize this information in the following table:

Sponsor	*No. of Contracts*	*Amount*	*Scientific Personnel*	*Accessory Personnel*
United States Government (including Army, Navy, N.A.C.A., N.D.R.C.)	35	$3,594,375	262	126
Industries Engaged in Defense	20	194,120	58	20
TOTAL	55	$3,788,495	320	146

This personnel total includes part-time as well as full-time workers: the approximately seventy part-time scientific personnel are almost entirely members of the Institute's regular staff; the number of full-time men engaged, exclusive of acces-

sory personnel such as mechanics, watchmen, and stenographers, totals about two hundred and fifty. Of these, about five per cent have been drawn from the Institute's regular staff and the remainder have been brought in from the outside, most of them with leaves of absence from some forty-two educational institutions and eleven industrial concerns throughout the country.

A program of such magnitude and representative staff is obviously more than an M. I. T. research program; it is a coöperative defense program in which many institutions and organizations are assisting importantly and generously, with the Institute providing its administrative, operating, housing and laboratory facilities. A somewhat similar situation exists at a few other institutions, where a combination of suitable location, available facilities of the right sort and a nucleus of personnel in a special field has led to the organization of large defense projects which are essentially coöperative rather than institutional.

To administer and house this program has required strenuous readjustments in our administrative and operative organizations and in our space arrangements. While our general administrative organization has been increased but slightly, we have considerably expanded the staff of the Division of Industrial Coöperation through which all of the contracts are handled, and the officers of the Institute have diverted much of their time to the details of the program.

All told we have allocated to this program existing space in the Institute's buildings, or provided new space, totalling 135,000 square feet or over ten per cent of the total space available at the Institute. Last March we completed a small storage building to take care of the needs of our Department of Military Science and to relieve congestion in the main buildings. Hardly was it finished when we found it necessary to devote the entire building to defense work. Defense needs also

prompted the Executive Committee of the Corporation, on recommendation of its Visiting Committee for Chemical Engineering, to authorize the construction of a building costing $500,000 which ultimately will house the Chemical Engineering Department, but which will house for an indefinite period during the war emergency, following its completion next month, the new development laboratory established here by the Chemical Warfare Service. A third building approved by the Executive Committee this summer and built with government funds (to be ultimately purchased by M. I. T. at an adjusted price) will provide an additional 38,000 square feet for defense research when it is completed in November. Another major addition to our defense research facilities was obtained this summer when the Commonwealth of Massachusetts generously placed at our disposal the large National Guard Hangar at the East Boston Airport. Even with all these buildings available we continue to have such a high degree of congestion in all of our buildings, old and new, that we have for some time been refusing to undertake additional defense research projects unless they are of first priority and unless no other arrangement for their prosecution appears feasible and comparably favorable for successful and rapid prosecution of the work.

Financing the Research Program. In undertaking research for governmental agencies the Institute contributes what it can without out-of-pocket expense beyond normal budget provisions. When costs exceed this, the arrangements for reimbursement have been governed by the principle that the Institute should in the long run neither gain nor lose financially. The contracts all provide for payment by the government of all direct costs such as labor, materials and expendable equipment. All indirect costs are covered by a standard overhead allowance, equivalent to fifty per cent of the salary and wages involved. This overhead payment is expected to cover direct and indirect overhead costs such as the proportionate salaries

of administrative officers, plant maintenance and operation, library and infirmary service, insurance, advance of funds and other services. An analysis of the Institute's ordinary operating budget in recent years indicates that the normal overhead cost of operating the Institute, when the above items are included, slightly exceeds one-half of the total budget devoted explicitly to salaries and wages in teaching and research. This fact provides the basis for the similar overhead charge on government work.

This policy on reimbursement was independently arrived at, but is the same as that adopted after investigation by the National Defense Research Committee for its standard contracts with educational institutions. A similar study of industrial research costs by this committee indicated that here the overhead allowance should be more nearly one hundred per cent of the labor item in contracts with industrial laboratories, since industrial organizations have all the expenses of educational institutions plus interest on capital investments and taxes.

Some have argued that educational institutions should also include interest on capital investment in their overhead charges, and this argument has point when the research is undertaken for the direct and sole benefit of a business enterprise. In serving the government, however, particularly in defense work, it has not seemed to us proper to include a charge for interest on an investment which has been derived entirely from the gifts of public-spirited citizens and which was given by them to be used in the public service.

I have reviewed this matter in some detail because the defense research program has grown to such a magnitude in our budget that we must be exceedingly careful lest we, unawares, financially penalize and permanently weaken the Institute through undertaking it. I am aware, too, that friends of the Institute have expressed surprise that we could operate the

program on so low an overhead allowance. We now have had over a year's experience in the situation and a careful analysis indicates that the overhead allowance on contracts now in force provides reasonable coverage for the overhead costs of the program. The total overhead allowance is of the order of $585,000, and we have visible costs chargeable to this overhead of approximately $320,000. These expenses include such items as additions to our administrative staff, insurance, carrying charges on funds advanced, depreciation of Institute equipment used, prorated plant maintenance and operation, and future commitments which may include the purchase of buildings paid for by the government and that would not now have been built except for defense needs.

Against the remaining $265,000 of the current overhead allowance and future allowances must be assessed many other costs or liabilities which are real but impossible to itemize. Among these are such items as the cost of government equipment lost, damaged, or destroyed and for which we are responsible; expenses incurred which are later determined to be non-recoverable under Government regulations, but which should be incurred for the benefit of the program; the restoration and readjustment of Institute space and facilities for normal use after the program is terminated; and liabilities sure to arise when the program is liquidated or contracts cancelled. Last spring, to cite an example of risks incurred, a Congressional appropriation for defense was delayed and we were faced with the impossible alternative of discontinuing a project of vital importance to the defense effort. To avoid this shut-down, the Institute underwrote the project to the extent of $500,000 and an anonymous citizen underwrote an additional $500,000. This underwriting was subsequently cancelled by the appropriation of Federal funds, but a similar emergency has again arisen and the Institute may have to underwrite a total of $260,000 to permit commitments to personnel which should be made prior

to a new allotment of Federal funds. Although there is no expectation that such underwriting will not be ultimately covered by the Government, it nevertheless involves a risk which should be considered in relation to the overhead received by the Institute on defense research contracts.

Another type of indirect loss incurred by the Institute is the necessity of foregoing the solicitation of funds as a result of the diversion of administrative time and energy to defense activities. For example, we had to abandon plans of the Visiting Committee of the Department of Chemical Engineering and of the Administration to raise funds for the new Chemical Engineering Laboratory. Instead, we financed the building out of the Institute's capital funds in order that the new facilities might immediately be available for defense use.

Another impressive measure of the Institute's contribution to national defense is given by the following fact. A careful estimate of the aggregate salary value of the time contributed by all regular members of the Institute staff who are engaged full or part-time in defense work but are wholly paid by the Institute comes to $250,000 for the past year and for known commitments this academic year.

Obviously this matter of overhead is more than an elementary accounting problem; it involves questions of public service, of institutional policy, and of fiduciary responsibility. In the light of these considerations I believe that we are carrying on our program of defense research without an ultimate drain on Institute resources and without profit, as nearly as these items can be estimated, and that our policy is a proper one for an institution operated in the public service. Indeed it is gratifying that an overhead policy so simple in statement and easy of administration should fit the needs of the situation within the range of accuracy of possible evaluation.

Some Educational Effects and Implications of the Defense Program

I can say with propriety that our defense work is concerned with problems of urgent importance to our country's military effectiveness and that gratifying progress is being made in attaining objectives. These statements are true not only of the activities under way at this institution, but of the over-all Federal scientific research program in which more than a hundred other educational institutions and many industrial organizations are collaborating in the greatest scientific mobilization in the history of our country.

While the diversion of energies to defense work has disrupted many normal activities and retarded important developments in both education and research, the defense program promises some important gains in terms of the peace-time objectives of educational institutions which are actively engaged in it. It is serving to bring educational staffs into closer contact with industry and operating agencies of the government. It is promoting cross-fertilization among many different fields and many fine minds from different backgrounds. Much of the research is actually an intensification of investigations already under way and is so fundamental that we would have welcomed at any time the opportunity to undertake it with the effectiveness that subventions from government and industry now make possible. While contributing directly to war-time needs, it is yielding new developments, new techniques, and new understanding which will have important peace-time applications and which presage a new prosperity for science and engineering after the war.

The program has likewise provided a dramatic demonstration of the national usefulness of an educational institution which maintains a great staff and facilities for research and development in those forward-flowing streams of science which become the reservoirs of power when engineering art has har-

nessed them. This harnessing of science is accelerated in a time of national emergency. Nowhere else in our country, except in our great educational centers of research, is there a comparable reserve of scientific man-power, of new technological ideas, of laboratory facilities. A few such outstanding institutions become, in time of emergency, centers of concentration on objectives of first magnitude. Other institutions, less powerful in research facilities, play their important rôles as centers for other important work of less magnitude and as reservoirs of technical man-power. In normal times, each and all contribute to the education of our people, the operation of our industrial economy, and the increase of scientific knowledge in this technological age.

From the lessons of the present situation I see emerging as a clear objective the outlines of an educational and research institution based upon the present ideals and objectives but incorporating a greatly magnified capacity for national service and commanding a wider recognition of the availability of its technological assets for use by government and industry.

Let me describe this institution of tomorrow as a "super institute of technology" and suggest some of its features, as drawn from the lessons of past and present. It should possess an operating organization flexible enough to meet emergency conditions, alert enough to provide the *modus operandi* for meeting unusual needs in normal times and farsighted enough to provide the means of dealing with new needs or opportunities in advance of their urgent demands. The institution must be organized quickly and effectively to assist industry and government in the solution of both normal and emergency problems and in obtaining highly qualified men. Through the possession of advanced and specialized equipment and laboratories it must have investigatory resources anticipating future needs and not available elsewhere. Of major importance, it must have a staff of outstanding experts marked not alone by individual

brilliancies but by a homogeneous strength that insures coöperative, creative work, capable of developing a body of advanced thought and applying it to new problems. And finally, it must have a student body of the highest possible caliber — graduate students of distinction and undergraduates of honors caliber and treated as honors students.

In idealized terms this is the type of institution toward which we should aspire. Our trend has been in this direction; our resources, traditions and prestige give us a good basis from which to proceed. The experiences of the present emergency serve to re-enforce our faith in the social values and the practical feasibility of this educational ideal. What we need to have are considerably ampler financial resources and wisdom in using them.

Of our actual trend in this direction there have been many evidences, aside from the defense program, in the past few years. The increasingly careful selection of undergraduate students, the growth of our graduate school without prejudice to the undergraduate program, the mounting volume of pure scientific research and of research and development projects brought to us by government and industry, the increasing number of graduate fellowships supported by industry, and the growing demand for technically trained men, especially those with graduate training are indications of the trend. Certainly it is not idle speculation to observe that when the demands of the present emergency have been fulfilled, science and engineering will be faced with the task of creating new wealth to replace the colossal waste of war, and that this will require technological institutions of ampler resources and instrumentalities for public service than we have today, and that the Massachusetts Institute of Technology should serve in these directions with all the effectiveness and resource which we can muster.

Trends in Our Normal Operations

Turning now from this discussion of our position in relation to defense, I wish next to report in summary fashion on several aspects of our normal operations which are of perennial interest. More detailed presentation of every phase of our work is given in the reports of other administrative officers.

Finances. The Institute again completed its fiscal year with a balanced budget. This was accomplished through the astuteness of the Finance Committee in handling investments, through rigorous budgetary control, and through a small overall reduction in departmental expenditures.

Of the Institute's total budgeted expenditure of $3,311,000, 68 per cent was Academic Expense (*i.e.* teaching and research), 27 per cent Plant and Administration, and five per cent Miscellaneous Expense. Forty-five per cent of operating income was derived from students, 34 per cent from investments, 10 per cent from loans and scholarships, and 11 per cent from other sources, compared with 45.5, 37, 10, and 7.5 per cent respectively for the preceding year.

The yield on all investments, based on market values as of June 30, was 4.36 per cent, compared with 4.32 per cent one year ago and 3.89 per cent two years ago. Investment income distributed to the pooled funds was at the rate of 4.10 per cent, compared with 4.38 per cent in 1940 and 4.02 per cent in 1939. The market value of the Institute's investments as of June 30 was 98 per cent of book value. In 1940 it was 95 per cent, and in 1939, 100 per cent. The June 30 investment portfolio showed 37.5 per cent in bonds, 4.6 per cent in preferred stocks, 43.5 per cent in common stocks, and 14.4 per cent in mortgages, real estate and cash. Comparable percentages for the preceding year were 43.7, 4.1, 44, and 8.2 respectively.

The table below shows the status and trend of operating income and gifts:

FINANCIAL TRENDS

	Operating Income Budget	*Total Gifts*
1930–31	$2,880,131	$1,339,280
1931–32	3,029,881	1,781,473
1932–33	2,779,815	306,295
1933–34	2,646,648	208,635
1934–35	2,694,799	580,695
1935–36	2,714,301	429,533
1936–37	2,977,573	812,421
1937–38	3,008,530	2,347,693
1938–39	3,203,300	1,362,392
1939–40	3,334,271	790,559
1940–41	3,361,052	888,180

The larger gifts of the past year include $63,075 additional from the Stephen L. Bartlett Estate, $32,514 from the Frank A. Briggs Estate, $65,588 from the Arthur E. Kennelly Estate, $60,209 additional from the Alexander G. Mercer Estate, $53,390 from the Harriette A. Nevins Estate, $100,000 from Alfred P. Sloan, Jr. (to enlarge the Sloan Laboratories for Aircraft and Automotive Engines), $40,000 from the Charles Hayden Foundation, $31,030 from Research Corporation, $54,500 from the Rockefeller Foundation, and $32,500 from the Alfred P. Sloan Foundation. Of the total donations $511,949 were capital additions and $376,230 miscellaneous gifts.

The Alumni Fund ended its first year in a successful manner, having received $63,526 from 7,865 alumni. This is the largest number of alumni ever to contribute to the support of an Institute project.

Enrollment. The trend of student registration since 1930 is shown in the table below. It should be remembered that registration is stabilized by a quota system. During the past year 1,844 applications were received for admission to the freshman class as compared with 1,705 in 1940.

ENROLLMENT AT M. I. T.
(As of November 1)

	Total Undergraduate	*Freshmen*	*Total Graduate*	*Total Enrollment*
1930–31.....	2,670	734	539	3,209
1931–32.....	2,610	628	578	3,188
1932–33.....	2,308	562	523	2,831
1933–34.....	2,106	485	500	2,606
1934–35.....	2,009	542	498	2,507
1935–36.....	2,018	561	522	2,540
1936–37.....	2,174	650	619	2,793
1937–38.....	2,305	605	661	2,966
1938–39.....	2,401	656	692	3,093
1939–40.....	2,379	605	721	3,100
1940–41.....	2,379	605	759	3,138
1941–42*.....	2,378	647	654	3,032

*As of second day of term; late registrations will increase these figures to give a total enrollment of approximately 3,100.

The Selective Service System has recognized that students in fields essential to national defense should be permitted to continue their education, and the principle of occupational deferment is used to keep these students at their studies. At the Institute we have undertaken in accord with this policy to request occupational deferment for students who are subject to draft, who are in essential fields, and whose performance indicates that they hold promise of becoming good scientists or engineers, and almost without exception, we are meeting with sympathetic consideration on the part of draft boards.

Student Aid. The distribution of aid to students during 1940–1941 as compared with the preceding year is given in the table below:

SUMMARY OF STUDENT AID

	1939–40		*1940–41*	
	Number	*Amount*	*Number*	*Amount*
Undergraduate Scholarships	557	$93,830	506	$ 85,965
Graduate Scholarships and Fellowships.....	334	111,618	315	112,036
Loans.....	373	162,843	338	141,796
Student Employment Service	550	66,675	486	59,592
TOTAL STUDENT AID		$434,966		$399,389

The decline in the undergraduate scholarships awarded and in loans made to both graduate and undergraduate students reflects the better business conditions prevailing in the country.

The above tabulation does not include grants totalling $7,200 to twenty-four undergraduates of the three upper classes "born in Massachusetts" made possible by the trustees of the James Melvin Trust in Boston; nor does it include William Barton Rogers Awards of $300 each made to six members of the Class of 1941 who had in the opinion of the Faculty Committee on Undergraduate Scholarships demonstrated outstanding qualities, judged on the dual basis of their academic records and extra-curricular accomplishments.

Neither does the total shown for graduate scholarships include the many gifts to the Institute from industrial sources for the support of fellowships in various fields. This support of graduate research by industrial organizations is welcomed as evidence of a growing appreciation of the value to industry of promoting graduate study and research.

Placement. The number of positions available to our graduates last June was the greatest on record. Graduates who were placed averaged better than two offers per man, and had we enough graduates available in fields such as Mechanical, Aeronautical and Chemical Engineering and in Business and Engineering Administration, Chemistry, Meteorology, and Naval Architecture, we could have placed an almost unlimited number. Just now, demand for men with postgraduate training in physics and communications engineering is rapidly growing. The crucial need for scientists and engineers in the defense emergency and their contributions to the public welfare has brought a wider recognition of the value of technological education which will persist, I believe, long after the emergency is over.

The 563 positions which were accepted by our graduates were distributed among 191 companies and government agen-

cies. The most significant change in employment was that 168 men went with the Army, Navy, or Federal Government, compared to 69 men in 1940.

The number of alumni placements was the greatest in the history of our Placement Bureau. Two-thirds of the alumni placed were graduates of the last ten years while the remaining one-third were largely from classes ranging from 1915 to 1930. During the year requests for men to fill positions totalled over a thousand.

Personnel. During the year the Corporation suffered the loss of Charles Augustus Stone '88, who died on February 25. Mr. Stone was elected a Life Member of the Corporation in 1902, and in 1906 he began a decade of service on the Executive Committee, one of the first Institute alumni to be appointed to this body. In this office he played an influential part in establishing the Institute in its new home in Cambridge, and in securing for it an adequate endowment. In 1916, alumni of the Institute voiced their appreciation of Mr. Stone's devoted and effective service to the Institute by electing him President of their Association. He was at the time of his death, with but one exception, the senior member of the Corporation.

The three Alumni Term Members whose five-year terms expired in June were: Frederick W. Garber, B. Edwin Hutchinson and William S. Newell. The Special Term Membership of Colonel Edward A. Deeds expired in January. As President of the Alumni Association for 1941–1942, Mr. Hutchinson continues as a member of the Corporation.

New members elected to the Corporation during the year include one Life Member, Thomas C. Desmond, one Special Term Member, Charles E. Spencer, Jr., and three Alumni Term Members, Edward P. Brooks, George J. Mead, and Robert E. Wilson.

By death during the year we lost from the active staff of the Institute Professor Louis J. Gillespie of the Department of

Chemistry, and Professor Robert E. Rogers of the Department of English and History. Professor Gillespie, who died January 24, had been a member of the staff since 1920, and Professor Rogers, who died May 13, since 1913. Emeritus Professor Allyne L. Merrill, a member of the Mechanical Engineering staff since 1885, and Secretary of the Faculty from 1906 until his retirement in June 1934, died February 26. Emeritus Professor Nathan R. George, a member of the Mathematics Department staff from 1891 until his retirement in 1936, died March 26.

Retirements from the Faculty included Arthur A. Blanchard, Professor of Chemistry and a member of the staff since 1903; Charles E. Fuller, Professor of Mechanical Engineering and a member of the staff since 1892; Ralph R. Lawrence, Professor of Electrical Engineering and a member of the staff since 1896; George Owen, Professor of Naval Architecture and a member of the staff since 1915; Archer T. Robinson, Professor of English and a member of the staff since 1896; Charles E. Locke, Professor of Mining Engineering and Ore Dressing and a member of the staff since 1901; and Edward E. Bugbee, Associate Professor of Metallurgy and a member of the staff since 1900. Each of these was given the title of Emeritus Professor, and Professors Fuller and Locke were appointed Honorary Lecturers for 1941–1942 in Mechanical Engineering and in Metallurgy respectively.

Francis O. Schmitt has been appointed Professor of Biology, in charge of the Course in Biological Engineering. He comes to the Institute from Washington University in St. Louis, where as Professor of Zoölogy and Head of the Department of Biology, he has had a distinguished record of achievement. Other new appointments include Colonel Edward W. Putney, Head of the Department of Military Science and Tactics; Richard S. Bear, Associate Professor of Biophysical Chemistry; Bernhard Haurwitz, Associate Professor of Mete-

orology; Paul Pigors, Associate Professor of Industrial Relations; Burdette H. Buckingham, Frank S. Post and Charles H. Thyng, Assistant Professors of Military Science and Tactics, and David F. Waugh, Assistant Professor of Physical Biology. George C. Manning was reappointed Associate Professor of Naval Architecture after an absence of two years, and Bissell Alderman has been reappointed to the staff in the Department of Architecture as Assistant Professor.

Promotions were as follows: Dr. Sverre Petterssen to Head of the new Department of Meteorology. To the grade of *Professor:* Hoyt C. Hottel, Ernest H. Huntress, Thomas K. Sherwood, Julius A. Stratton, and Harold C. Weber. To the grade of *Associate Professor:* Wilmer L. Barrow, Gordon S. Brown, Samuel C. Collins, Arthur R. Davis, Gerhard Dietrichson, Robert S. Harris, Robert C. Hockett, Marshall W. Jennison, Nicholas A. Milas, John G. Trump, and Charles M. Wareham. To the grade of *Assistant Professor:* James M. Austin, Joseph A. Bergantz, William H. Brown, Alfred H. Clifford, Lyman M. Dawes, Albert G. Dietz, Arthur E. Fitzgerald, John A. Hrones, Walter McKay, James E. Mulligan, Charles A. Myers, Charles H. Norris, William H. Radford, Herman J. Shea, and Walter F. Urbach. Donald P. Severance was appointed Assistant Registrar.

Leaves of Absence were granted to the following in order that they might accept assignments in defense work: Professor Karl D. Fernstrom, Associate Professors Douglass V. Brown, James Holt, and Assistant Professor John D. Trimmer and Assistant Medical Director John W. Chamberlain for the balance of last year. For 1941–1942 additional defense leaves have been granted to Professors Ralph D. Bennett, Louis B. Slichter, Julius A. Stratton and George B. Waterhouse; Associate Professors Francis Bitter, Joseph C. Boyce, J. Warren Horton and John G. Trump; Assistant Professors Walter S. Albertson, Cecil G. Dunn, William M. Hall, Edward S. Lamar and John

D. Trimmer, and to several junior members of the staff. Associate Professor Kenneth C. Reynolds has been granted leave for one year to enable him to accept an Exchange Professorship with Professor Franklin O. Rose of the University of Southern California, and the leave of Associate Professor John L. Reid has been extended for a second year.

Resignations were accepted from Colonel Clarence T. Marsh, Head of the Department of Military Science and Tactics, who was transferred to another post by the Army, and from Professor Carl G. A. Rossby, who becomes Head of the new Department of Meteorology at the University of Chicago. Other resignations included Associate Professors Albert N. Pigg and Heinrich Peters; Assistant Professors George A. Akin, Conrad M. Arensberg, H. Carleton Moore, Lester C. Van Atta, and Robert S. Woodbury. Professor Alvar Aalto, who was appointed Research Professor of Architecture last year, was recalled to Finland after serving only two months of his appointment on our staff.

Some Important Gains

Along with maintaining our normal educational activities we have been able to initiate or put into effect some highly significant additions and improvements in our facilities and educational programs. Many of these have already been separately reported to the Corporation Visiting Committees since they resulted from recommendations made by these committees, and I will attempt here to brief only some of the most noteworthy ones.

For a number of years the Visiting Committee of our Medical Department repeatedly has recommended the addition of both a dental clinic and a psychiatric clinic to our Medical Service. During the year the Charles Hayden Foundation, upon recommendation of Mr. Willard Hayden, made a grant of $10,000 to equip and start a dental clinic which is now in operation. With the opening of School this fall we also initiated

a psychiatric service. A physician trained as a specialist in this field is available for consultation and other services for a two-hour period twice a week.

Last January the Corporation authorized a new degree, Doctor of Philosophy in Industrial Economics, based upon a new program of graduate study and research in the social sciences. Subsequently friends of the Institute have contributed $8,000 for fellowships in this field, and last month the Rockefeller Foundation authorized a grant of $30,000, payable over three years, for a research study of the economic effects of technological change. This research, which requires a combined technological and economic approach, will seek to clarify the rôle of invention in the business cycle and will involve investigation of factors in an individual firm influencing technological change together with case studies of the effect of inventions on labor policies.

These developments reflect the steady growth of our work in social studies, particularly in relation to the economic and labor problems of industry. Our very active Industrial Relations Section, which was established three years ago and which has been generously supported by industry will play an important part in this new program of professional training and research.

Our Biological Engineering program, which went into full gear this past summer under the direction of its new head, Dr. Francis Schmitt, has received an additional grant of $70,000 from the Rockefeller Foundation for the establishment of a Sub-Microscope Center for studying the application and improvement of the electron microscope, particularly in the biological field.

Recent years have brought increased emphasis at the Institute on industrial or applied mathematics and the more extensive application of mathematical techniques to special problems. One example of this is our Center of Analysis which provides

a wide range of machines for the analysis of technical problems. The new differential analyzer, the major unit in this center and one of the great scientific instruments of modern times, is now nearing completion. In still another direction, a laboratory has been established for the application of mathematical statistics to industrial problems, particularly to quality control. The Department of Mathematics and the Department of Economics and Social Science have joined forces in this program and they are assisted by a group of coöperating companies which by their support are aiding fundamental research in this field while at the same time receiving assistance from our specialists in the solution of specific problems. As the rôle of the applied mathematician becomes more defined and recognized we plan the establishment of a more formal program of instruction in the field.

Some Objectives Under Study

Two of our Visiting Committees are at present giving intensive study to two impending needs of the Institute: better library facilities and more adequate dormitory accommodations for our undergraduates. The Visiting Committee on the Library in collaboration with the Friends of the Library is developing plans for a library building which will aid the Institute to create and operate the most serviceable scientific and technical library in America. Our present Central Library, located under the central dome, is difficult of access, has disgracefully inadequate offices for the staff, and fails in its facilities to permit effective use of the books which it houses.

The Visiting Committee on Student Life, appointed for the first time last year, has in progress an exhaustive study of the housing of our undergraduates and of the social and cultural environment in which they live outside the classroom. At the suggestion of this committee, a study has been made of the probable demand for dormitory facilities, particularly on the

part of students who now live in rooming houses. The results show that we could fill additional dormitories housing at least one hundred students and probably more. This committee is also concerning itself with better and more attractive facilities in our existing dormitory system toward the end that our resident students may live under conditions most conducive to their cultural and social growth. In accordance with a recommendation of this Committee and of the Undergraduate Dormitory Committee, table service has been substituted for cafeteria service at the evening meal in Walker Memorial, and other arrangements have been made for promoting social and cultural development among our students.

Still another problem, and one of fundamental importance, is that of staff salaries and of a tenure and promotion policy adjusted to a stabilized income as an optimum condition. The Institute, along with other endowed institutions, is faced with new conditions which require the most careful long-term control of staff distribution to prevent unbalance and to insure the maintenance of salary levels adequate to attract and hold first-class teachers. With the coöperation of a faculty committee, the administrative officers are intensively studying this problem and during the current academic year I hope to present to the Corporation specific recommendations.

Tenure and promotion policies, however carefully devised, cannot cure a basic condition of inadequate funds for salaries. It has been recognized for the past twenty years that our salary scale is inadequate, based on any reasonable standard of comparison. We must either soon obtain additional funds to maintain a faculty of the desired ability and distinction, or severely prune our activities to concentrate support on those selected to remain. In my judgment, the most important and obvious problem now facing the Institute as we look ahead is this need for a more adequate scale of staff salaries.

In Conclusion. As I view the Institute today, I wonder

(as some of my predecessors may have wondered in their day) if ever before has it played so valuable a rôle both in education and direct national service as it does today. At the same time I wonder whether ever before has there been so clearly in sight an opportunity to extend and improve this service, had we but the wisdom and resources necessary for the accomplishment.

I wish to close this annual report with a personal message of gratitude for the Corporation's continual and active encouragement and assistance, and of appreciation of the splendid loyalty of the Institute's staff and alumni.

Respectfully submitted,

KARL T. COMPTON,
President.

REPORTS OF ADMINISTRATIVE OFFICERS

Dean of Students

A further increase in the number of applicants for admission to the first-year class, and the effects of the Selective Training and Service Act of 1940 upon registration; a decline in the percentage of undergraduates receiving financial aid, and a decrease in the total amounts they were awarded as scholarships or loans; the appointment of a new Visiting Committee of the Corporation on "Student Activity," and the use made of the new Alumni Swimming Pool — these are the principal items to be recorded for the period under review. They relate, respectively, to the three general sections of this report which are: stabilization of enrollment and selective admission, student aid, and student welfare.

The gross number of applicants seeking admission to the Class of 1944 was 1,705 compared with 1,621 for the Class of 1943. For 1940–41 the year opened with a registration of 605 first-year students, which was also the number registered at the beginning of 1939–40. Percentage geographical distribution of first-year students since 1936–37, the year in which the selective admission plan began, has been:

	Percentage of First-Year Class				
	1940–41	*1939–40*	*1938–39*	*1937–38*	*1936–37*
From outside New England.	61.5	62.0	58.1	60.0	51.8
From outside Massachusetts	67.6	69.3	67.1	66.0	59.2

The provisions of the Selective Training and Service Act of 1940 had no appreciable effect upon the 1940–41 registration inasmuch as all students of draft age, other than those who were members of the Senior Division of the R.O.T.C., were automatically classified as "I-D" and "deferred" until the end of the academic year. Since the Act provided for no similar deferment after 1940–41, Classification II-A, "occupational deferment," which previously had applied only to a " 'necessary man' in industry . . . ," in the early spring was extended to include students in fields "which are contributing to the national health, safety and interest."

Consequently, President Compton addressed a letter on April 30 to all members of the student body, and to all individuals who had up to then been admitted for 1941–42, stating that the Institute would "assist students in requesting deferment if these students are preparing for work in essential occupations, if they are in high standing at the Institute, and if they show promise of making a significant contribution to the national welfare in civilian capacities."

Distribution of student aid to undergraduates during 1940–41 compared with 1939–40 was:

	1940–41		*1939–40*	
	Number	*Award*	*Number*	*Award*
Freshman Scholarships.....	206	$45,500	229	$50,042
Other Undergraduate Scholarships.....	300	40,465	328	43,788
Total Scholarships.....	506	$85,965	557	$93,830
Undergraduate Loans.....	267	$110,328	275	$123,618
Total Aid to Undergraduates	609*	$196,293	724*	$217,448
Percentage of Undergraduate Registration Receiving Aid		25.6		30.4

* Allowing for individuals receiving both scholarship and loan.

Of the 206 1940–41 Freshman Scholarships noted above, 35, totalling $10,350, were Charles Hayden Memorial Scholarships for "Boston and New York boys," which awards were established in 1939 by the Hayden Foundation. This Class of 1944, like their 26 predecessors of the Class of 1943 group, made an academic first-year average of *top quartile* rank; and it is gratifying to be able to report that the Hayden Foundation has made a further gift of $30,000 to care for worthy "New York and Boston boys" entering as first-year students in the Class of 1945.

The above tabulation, however, does not include grants totalling $7,200 to 24 undergraduates of the three upper classes "born in Massachusetts" made possible by the continued generosity of the trustees of the James Melvin Trust, which aided 23 men to the extent of $6,900 during 1939–40. Nor does it include William Barton Rogers Awards of $300 made, as in

1939–40, to six members of the Class of 1941 who had in the opinion of the Faculty Committee on Undergraduate Scholarships demonstrated "outstanding qualities," judged on the dual basis of their academic records and extra-curricular accomplishments.

Including both graduate and undergraduate students, the Loan Fund Board received 486 applications during 1940–41 and acted favorably upon 338, or 69.6 per cent, $141,796 being loaned. For 1939–40 the corresponding figures were 483, 373, 77.2 per cent, and $162,843.

Repayments to the fund during 1940–41 were: $115,504 on principal account and $17,868 for interest, or a total of $133,372 which came within $8,424 of providing the $141,796 loaned.

The cumulative record of the fund from its establishment in 1930 up to June 30, 1941, with comparative figures as at June 29, 1940, shows:

	June 30, 1941	*June 29, 1940*
Number of individuals receiving loans...	2,287	2,143
Total amount loaned.....	$1,627,176	$1,485,411
Average amount loaned per capita.....	$710	$671
Number of individuals whose indebtedness has been completely discharged ..	860	738
Repayments received on principal account	$712,859	$597,354
Total matured principal.....	$783,476	$670,938
Percentage of maturities paid.....	91	89
Total matured principal unpaid.....	$70,617	$73,584
Total interest received.....	$127,913	$110,044

It is notable that the $127,913 received for interest up to June 30, 1941, was nearly twice the amount of matured principal then unpaid, $70,617.

The Student Employment Bureau of the T.C.A. placed a total of 486 individuals compared with 550 in 1939–40, and those placed this year earned $59,592 compared with $66,675 last year. Of the 486 placed this year, 186 were under the N.Y.A. program of the Federal Government, 259 were in private employment, and 41 were in both classifications. Earnings were $14,002 under the N.Y.A. and $45,590 from other sources.

The average scholastic record of 474 men in 19 activity groups was 3.50 in June 1941, compared with 3.59 for 670 men in 20 groups in June 1939. Fraternity averages declined slightly for 718 men who averaged 3.26 in June 1941 compared with 693 men who averaged 3.30 a year ago.

Dormitory facilities continued to operate at full occupancy during the greater portion of 1940–41 as was true during the previous two years, and the continued existence of autumn "waiting lists" for the Graduate House and undergraduate halls continues to suggest that the provision of some additional housing space would not be unwelcome. This is a need which is receiving extended consideration by the newly appointed Corporation Visiting Committee on Student Activity. The Alumni Swimming Pool, dedicated in June, 1940, fulfilled a long recognized need as is proved by the fact that between 150 to 200 members of the student body and staff use it daily.

H. E. LOBDELL.

DEAN OF THE GRADUATE SCHOOL

In the summer of 1940, the passage of the Selective Service Act created much uncertainty in the plans of students particularly of the age group which is represented in the graduate schools of our colleges. It was not until September, 1940, that the Selective Service gave assurance that college students called for military training could secure deferment of that call at least until the end of the college year.

The importance of allowing students who were training in certain specified fields of science or engineering to complete the requirements for the degrees for which they were enrolled was communicated to all local boards of the Selective Service organization in April 1941, and the way was opened for college officers to request such deferment for students in these specified categories.

All of the courses of instruction in the Graduate School at the Institute fall within these specifications and most of its graduate students are eligible for Military Training.

The effects of the above events upon registration in the Graduate School have been first, to reassure would-be enrolees in our Graduate School, one week before the Fall registration

day, of deferment of military training for the academic year; second, to permit us to secure for all graduate students in good standing additional deferment until the expected date of award of the advanced degrees for which they were enrolled in April 1941 (including applicants for admission to the Graduate School who have been accepted for later enrolment in the School).

The activities of the National Defense Research Committee have employed most of the available men trained in science or engineering, and directors of certain projects have requested the services of several of our graduate students for defense work. This threatened withdrawal of some of our better students was met by a vote of the Committee on the Graduate School by which confidential defense research can be made the basis of a thesis for an advanced degree, sufficient members of our Faculty being engaged in such work to provide adequate Faculty direction and examination of such work. Theses of this nature may be sequestered in an appropriate manner and will be available only to properly accredited government agents.

The total enrolment in the Graduate School for the year was 764 (as compared with 720 in the previous year). Of these, a larger number than usual were enrolled not for any advanced degree but in many instances for special advanced training in connection with the national emergency.

The following table shows no significant change in the trend of registration.

Registration in Graduate School During Past Five Years

Enrolled for Degree of	*1936–37*	*1937–38*	*1938–39*	*1939–40*	*1940–41*
Doctor of Philosophy....	109	133	138	136	128
Doctor of Science.....	115	128	118	137	149
Doctor of Public Health..	4	4	4	6	4
Master in Architecture...	13	11	9	12	9
Master in City Planning .	9	8	8	8	9
Master in Public Health .	..	..	..	..	3
Master of Science.....	345	320	348	379	352
Special (Graduate) Students	24	42	67	42	110
Total.....	619	646	692	720	764

In response to a request from the United States Navy Department, arrangements have been approved, utilizing summer sessions, whereby the classes of graduate students in Naval Construction and Engineering have had their dates of graduation advanced. This places a load of continuous teaching on the members of the Department of Naval Architecture and Marine Engineering.

A further step to meet an emergency situation has been the passage of a Regulation of the Graduate School which waives the seven months' rule of candidacy for the doctorate. Recommendations may now be presented immediately upon the completion of all requirements by graduate students who are enrolled subject to call for military training or who are members of the armed forces of the United States.

Along with special arrangements to cope with emergency conditions there has been a sound background of attention to academic instruction and research.

Approval was granted early in 1941 for the award of the degree Doctor of Philosophy in Industrial Economics, with major emphasis upon such topics as economic theory, socio-psychological theory, industrial relations, industrial economics, industrial technology, statistical method and theory, economic history, the state in relation to industry. Following the initial publicity over 300 applications were received, giving excellent opportunity for selection of the first group of twelve which has been accepted for this work.

Certain ambiguities of definitions in respect to the nature of the Minor, of Language requirements for a Master's degree, and the residence requirements for all advanced degrees have been clarified in Rules and Regulations of the Graduate School or in Information for Graduate Students, two pamphlets which supersede the former Regulations of the Committee on the Graduate School.

A standard arrangement has been worked out with the Summer Session Committee for a thesis-tuition fee of not over $50 including summer registration for thesis work with certain exemptions or reductions in the amount, and, for the summer of 1941, certain special scholarship funds appropriated for this purpose. Permission to carry on thesis work in the summer

will be granted only to students who have made sufficient progress in their theses by the beginning of the summer session to be able to continue profitably without supervision, or provided that voluntary arrangements are made by appropriate departments to provide supervision.

As usual, there is a wide representation of foreign and domestic colleges preparing our graduate students. There were 473 students from 173 colleges in 45 states, the District of Columbia and Hawaii; and from 51 colleges in 24 foreign countries, 84 students were enrolled. The Pan-American countries represented were Argentina, Brazil, Canada, Chile, Colombia, Cuba, Mexico, Peru, and Venezuela.

The budget for scholarships and fellowships from invested funds has been slightly curtailed, reflecting current income on investments, but this reduction has been more than compensated by additional gifts to the Institute from industrial sources for the support of fellowships in various fields.

This support of graduate research by business men is welcomed particularly as evidence of increased appreciation of the value to the community of research and development in science and engineering.

Applications for scholarship aid numbered 786; grants covering tuition, at least in part, and fellowship stipends in excess of tuition totaled 315, and the funds awarded slightly exceeded $112,000. This sum includes $36,250 from general funds for tuition for staff members working toward advanced degrees.

Advanced degrees conferred during the academic year 1940–41 were Ph.D., 33; Sc.D., 38; S.M., 268; M.Arch., 9; M.C.P., 3; and M.P.H., 2; making the total 353.

JOHN W. M. BUNKER.

THE REGISTRAR

The number of Graduate students again reached a new high of 759 which represented 24.2 per cent of the total registration. Many of the men who received the Bachelor's degree last June immediately entered the Armed Services; this fact, together with the demand for technically trained men during

the present emergency and with possibly some effect of the Selective Service Act, will probably cause the enrollment in the Graduate School to decrease in 1941–42.

The following table gives the number and percentage of each class who were twenty-one years of age and over and were registered under the Selective Service Act on October 16, 1940:

Year	*Number 21 and Over*	*Number of Men in Class*	*Per Cent in Draft*
1	23	595	4
2	57	573	10
3	163	594	28
4 (and 5)	398	581	67
Graduate	710	737	96
	1,351	3,080	44

The age distribution of the Undergraduates and the policy of the Local Draft Boards in granting deferment to men in technical training will probably mean that the undergraduate registration will remain nearly the same as last year.

The statistics for the year 1940–41 follow.

J. C. MacKinnon.

FOR THE YEAR 1941–1942

All statistics on registration are as of November 1, 1940
All statistics on degrees are through June, 1941

TABLE 1

REGISTRATION SINCE THE FOUNDATION OF THE INSTITUTE

Year	Number of Students	Year	Number of Students	Year	Number of Students
1865–66	72	1891–92	1,011	1917–18	1,698
1866–67	137	1892–93	1,060	1918–19	1,819
1867–68	167	1893–94	1,157	1919–20	3,078
1868–69	172	1894–95	1,183	1920–21	3,436
1869–70	206	1895–96	1,187	1921–22	3,505
1870–71	224	1896–97	1,198	1922–23	3,180
1871–72	261	1897–98	1,198	1923–24	2,949
1872–73	348	1898–99	1,171	1924–25	2,938
1873–74	276	1899–00	1,178	1925–26	2,813
1874–75	248	1900–01	1,277	1926–27	2,671
1875–76	255	1901–02	1,415	1927–28	2,712
1876–77	215	1902–03	1,608	1928–29	2,868
1877–78	194	1903–04	1,528	1929–30	3,066
1878–79	188	1904–05	1,561	1930–31	3,209
1879–80	203	1905–06	1,466	1931–32	3,188
1880–81	253	1906–07	1,397	1932–33	2,831
1881–82	302	1907–08	1,415	1933–34	2,606
1882–83	368	1908–09	1,461	1934–35	2,507
1883–84	443	1909–10	1,479	1935–36	2,540
1884–85	579	1910–11	1,506	1936–37	2,793
1885–86	609	1911–12	1,559	1937–38	2,966
1886–87	637	1912–13	1,611	1938–39	3,093
1887–88	720	1913–14	1,685	1939–40	3,100
1888–89	827	1914–15	1,816	1940–41	3,138
1889–90	909	1915–16	1,900		
1890–91	937	1916–17	1,957		

TABLE 2

THE CORPS OF INSTRUCTORS

	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40
Faculty Members of the Staff	215	220	240	253	242	235	245	245	244	267	273	282	285
Professors	82	81	86	98	93	88	83	87	78	87	90	98	99
Associate Professors	61	59	63	68	60	57	69	81	87	89	98	89	92
Assistant Professors	64	71	80	79	81	80	82	68	70	76	72	83	83
Ex-Officio	—	2	4	3	3	5	6	6	6	5	6	7	7
Instructors	8	7	7	5	5	5	5	3	3	3	3	3	3
Research Associates	—	—	—	—	—	—	—	—	—	7	4	2	1
Other Members of the Staff	272	295	323	335	283	263	272	284	291	331	368	401	396
Instructors	119	116	123	133	105	90	86	90	97	101	97	99	91
Teaching Fellows	—	—	—	—	21	22	20	24	51	52	52	52	55
Assistants	53	68	70	96	45	43	70	76	64	69	79	78	85
Technical Assistants	—	—	—	—	28	31	28	—	—	—	—	—	—
Lecturers	29	32	32	34	28	25	25	24	19	29	28	31	31
Research Associates	22	21	31	31	32	25	22	27	31	22	25	36	35
Research Assistants	49	58	65	36	20	21	18	30	24	42	72	90	91
Research Fellows (D. I. C.)	—	—	2	5	3	3	2	1	—	—	—	—	—
Research Fellows	—	—	—	—	—	3	1	12	5	16	15	15	8
Special Investigator	—	—	—	—	1	—	—	—	—	—	—	—	—
Total	487	515	563	588	525	498	517	529	535	598	641	683	681
Other Members of the Faculty	11	14	15	15	17	25	26	27	31	28	28	28	32
Professors: Emeriti	4	4	6	7	13	21	23	24	29	27	27	27	31
Retired	3	4	3	3	—	—	—	—	—	—	—	—	—
Non-Resident	4	6	6	5	4	4	3	3	2	1	1	1	1

TABLE 3. CLASSIFICATION OF STUDENTS BY COURSES AND YEARS

COURSE NAME AND NUMBER	1938–39 YEAR						1939–40 YEAR						1940–41 YEAR					
	1	2	3	4	G	Total	1	2	3	4	G	Total	1	2	3	4	G	Total
Aeronautical Engineering XVI	95	30	30	34	25	214	96	28	31	34	29	218	—	39	34	33	40	146
Meteorology (in Aero. Eng. Department)	—	—	—	—	16	16	—	—	—	—	27	27	—	—	—	—	91	91
Architectural Engineering IV-A	—	—	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—
Architecture IV, IV-B, IV-C	9	21	19	16	18	83	18	12	24	17	22	93	21	18	16	19	20	94
Architecture (IV, IV-B, IV-C) Fifth Year	—	—	—	17	—	17	—	—	—	15	—	15	—	—	—	18	—	18
Biology and Public Health VII	6	9	15	15	30	75	6	6	3	11	35	61	—	6	6	5	35	52
Biophysics and Biological Engineering VII-A	4	2	1	1	3	11	5	6	1	1	1	14	—	3	2	2	—	7
Building Engineering and Construction XVII	8	7	6	8	—	29	3	6	8	9	—	26	—	6	4	7	—	17
Business and Engineering Administration XV	52	70	58	57	28	265	44	62	56	68	21	251	—	71	57	63	32	223
Chemical Engineering X	153	89	73	69	84	468	124	102	66	75	83	450	—	84	66	60	70	280
Chemical Engineering Practice X-A, X-B	—	—	—	—	56	56	—	—	—	—	47	47	—	—	—	7	51	58
Chemistry V	34	27	25	30	87	203	26	31	31	26	80	194	—	21	32	30	79	162
Civil Engineering I	21	21	20	22	30	114	22	19	21	18	24	104	—	13	16	24	27	80
Army Engineer (in Civil Eng. Department)	—	—	—	—	17	17	—	—	—	—	13	13	—	—	—	—	—	—
Economics and Engineering or Science	—	—	—	—	4	4	—	—	—	—	1	1	—	—	—	—	3	3
Electrical Engineering VI, VI-B, VI-C	64	48	53	60	73	298	68	49	59	59	63	298	—	46	49	67	60	222
Electrical Engineering (Coöperative) VI-A	35	34	22	35	24	150	26	36	15	22	35	134	—	46	20	17	20	103
Electrochemical Engineering XIV	—	—	2	7	—	9	—	—	—	2	—	2	—	—	—	—	—	—
Food Technology and Indust. Biology VII-B	—	—	—	—	—	—	1	4	7	4	—	16	—	9	9	5	—	23
General Engineering IX-B	7	12	34	20	—	73	9	8	12	39	—	68	—	9	9	24	—	42
General Science IX-A	3	2	12	16	—	33	4	2	5	19	—	30	—	5	11	6	—	22
Geology XII	6	8	6	6	19	45	3	5	8	7	13	36	—	6	5	7	16	34
Marine Transportation XIII-C	6	7	6	7	—	26	6	6	9	4	—	25	—	4	8	7	—	19
Marine Transportation (XIII-C) Fifth Year	—	—	—	—	—	—	—	—	—	8	—	8	—	—	—	6	—	6
Mathematics XVIII	6	2	4	3	13	28	5	6	5	7	17	40	—	7	6	7	10	30
Mechanical Engineering II	95	91	80	68	43	377	78	105	86	91	52	412	—	96	90	81	63	330
Army Ordnance (in Mech. Eng. Dept.)	—	—	—	—	10	10	—	—	—	—	22	22	—	—	—	—	4	4
Torpedo Engineering (in Mech. Eng. Dept.)	—	—	—	—	2	2	—	—	—	—	2	2	—	—	—	—	2	2
Mechanical Engineering (Coöperative) II-A	—	—	7	8	7	22	—	—	6	6	7	19	—	—	9	6	6	21
†Metallurgy III	12	27	23	23	19	104	18	25	25	29	24	121	—	27	26	29	38	120
Ceramics (in Metallurgy Department)	—	—	—	—	4	4	—	—	—	—	3	3	—	—	—	—	9	9
†Mining Engineering III	—	—	10	7	8	25	—	—	—	7	3	10	—	—	—	—	—	—
Naval Architecture and Marine Eng. XIII	21	9	21	11	1	63	29	21	18	19	5	92	—	34	31	15	5	85
Naval Engineering (in Naval Arch. Dept.)	—	—	—	—	—	—	—	—	—	—	14	14	—	—	—	—	11	11
Naval Construction and Engineering XIII-A	—	—	10	9	9	28	—	—	22	10	10	42	—	—	18	21	10	49
Physics VIII	19	35	26	21	59	160	13	24	27	27	61	152	—	16	26	26	55	123
Sanitary Engineering XI	—	—	4	—	3	7	1	1	—	1	7	10	—	—	2	—	2	4
Unclassified	—	8	45	2	—	55	—	4	25	1	—	30	—	12	50	2	—	64
‡First Year (Not including Course IV)	—	—	—	—	—	—	—	—	—	—	—	—	584	—	—	—	—	584
Total	656	559	612	574*	692	3,093	605	568	570	636*	721	3,100	605	578	602	594*	759	3,138

* These totals include fifth year in Architecture IV, City Planning IV-B, City Planning Practice IV-C, and Marine Transportation XIII-C.
† June 1940, Mining Engineering discontinued. Metallurgy, formerly Course XIX, changed to Course III.
‡ Beginning September 1940, First Year Students not required to designate choice of course except for Course IV.

TABLE 4-A

Classification of Students by Courses, Options, and Years

COURSE No.	Name	Option	Opt.	2 Opt.	2 Tot.	3 Opt.	3 Tot.	4 Opt.	4 Tot.	G Opt.	G Tot.	Total 2, 3, 4, G	Course Number
I	Civil Engineering			—	13	—	16	—	24	—	27	80	I
		1. General	1	—		—		29					
		2. Automotive	2	—		—		11					
II	Mechanical Engineering	3. Refrigeration and Air Conditioning	3	—		—		5		63			
		4. Materials and Design	4	—	96	—	90	36	81		69	336	II
		Army Ordnance		—		—		—		4			
		Torpedo Engineering		—		—		—		2			
II-A	Mechanical Engineering — Coöperative			—	—	—	9	—	6	—	6	21	II-A
III	Metallurgy	1. Metallurgy	1	—		—		29		38			
		2. Mineral Dressing	2	—	27	—	26	—	29	—	47	129	III
	Ceramics			—		—		—		9			
IV	Architecture			—	18	—	16	—	18	—	10	78	IV
	Fifth Year			—	—	—	—	—	16	—	—		
IV-B	City Planning			—	—	—	—	—	1	—	9	12	IV-B
	Fifth Year			—	—	—	—	—	2	—	—		
IV-C	City Planning Practice			—	—	—	—	—	—	—	1	1	IV-C
	Fifth Year			—	—	—	—	—	—	—	—		
V	Chemistry			—	21	—	32	—	30	—	79	162	V
VI	Electrical Engineering			—	46	—	18	—	27	—	60	151	VI
VI-A	Electrical Engineering — Coöperative			—	46	—	20	—	17	—	20	103	VI-A
VI-B	Electrical Engineering — Illuminating			—	—	—	1	—	3	—	—	4	VI-B
VI-C	Electrical Engineering — Communications			—	—	—	30	—	37	—	—	67	VI-C
VII	Biology and Public Health	1a. Biology and Public Health	1a	3		3		3		—			
		1b. Biology	1b	3	6	2	6	1	5	—	35	52	VII
		2. Public Health Engineering	2	—		1		1		—			
VII-A	Biophysics and Biological Engineering			—	3	—	2	—	2	—	—	7	VII-A
VII-B	Food Technology and Industrial Biology			—	9	—	9	—	5	—	—	23	VII-B
VIII	Physics	1. General	1	8		12		8		—			
		2. Applied	2	8	16	14	26	18	26	—	55	123	VIII
IX-A	General Science			—	5	—	11	—	6	—	—	22	IX-A
IX-B	General Engineering			—	9	—	9	—	24	—	—	42	IX-B
X	Chemical Engineering			—	84	—	66	—	60	—	70	280	X
X-A	Chemical Engineering Practice — Graduate			—	—	—	—	—	—	—	51	51	X-A
X-B	Chemical Engineering Practice — Undergraduate			—	—	—	—	—	7	—	—	7	X-B
XI	Sanitary Engineering			—	—	—	2	—	—	—	2	4	XI
XII	Geology	1. Geology	1	5		4		5		—			
		2. Mineral Resources	2	1	6	1	5	2	7	—	16	34	XII

(*Continued on page 42*)

TABLE 4-A — (*Continued*)

CLASSIFICATION OF STUDENTS BY COURSES, OPTIONS, AND YEARS

COURSE No.	NAME	OPTION	Opt.	YEAR 2 Opt.	2 Tot.	3 Opt.	3 Tot.	4 Opt.	4 Tot.	G Opt.	G Tot.	TOTAL 2, 3, 4, G	COURSE NUMBER
XIII	Naval Architecture and Marine Engineering			34	34	31	31	15	15	5	16	96	XIII
	Naval Engineering			—	—	—	18	—	21	11	10	49	XIII-A
XIII-A	Naval Construction and Engineering			—	4	—	8	—	7	—	—	25	XIII-C
XIII-C	Marine Transportation			—	—	—	—	—	6	—	—		
	Fifth Year												
XV	Business and Engineering Administration	1. Physical Sciences	1	53	71	41	57	52	63	—	32	223	XV
		2. Chemical Sciences	2	18		16		11		—			
XVI	Aeronautical Engineering			39	39	34	34	33	33	40	131	237	XVI
	Meteorology			—		—		—		91			
XVII	Building Engineering and Construction			—	6	—	4	—	7	—	—	17	XVII
XVIII	Mathematics	1. Pure	1	2	7	2	6	3	7	—	10	30	XVIII
		2. Applied	2	2		—		—		—			
		3. Industrial Statistics	3	3		4		4		—			
	Economics and Engineering or Science	— Engineering		—	—	—	—	—	—	3	3	3	Ec. & Eng. or Sci.
		— Science		—		—		—		—			
	Unclassified			—	12	—	50	—	2	—	—	64	Unc.
	First Year	605										605	First Yr.
	Total	605†		578		602		594*		759		3,138	Total

* This total includes fifth year in Architecture, City Planning, and Marine Transportation.

† Includes 21 in Architecture.

TABLE 4-B

CLASSIFICATION OF SPECIAL STUDENTS BY COURSES AND YEARS
(Included in Table 4-A)

COURSE	YEAR					TOTAL	COURSE
	1	2	3	4	G		
I Civil Engineering	—	—	—	2	3	5	I
II Mechanical Engineering	—	1	1	2	3	7	II
III Metallurgy	—	—	2	—	1	4	III
Ceramics (in Metallurgy Department)	—	—	—	—	1		
IV Architecture	4	2	5	1	1	14	IV
Fifth Year	—	—	—	1	—		
IV-B City Planning	—	—	—	—	1	1	IV-B
V Chemistry	—	—	—	—	2	2	V
VI Electrical Engineering	—	—	—	1	3	4	VI
VI-C Electrical Engineering (Communications)	—	—	—	1	—	1	VI-C
VII Biology and Public Health	—	—	2	3	2	7	VII
VII-B Food Technology and Industrial Biology	—	—	1	—	—	1	VII-B
VIII Physics	—	—	1	—	1	2	VIII
X Chemical Engineering	—	—	—	1	3	4	X
XII Geology	—	—	—	—	1	1	XII
XIII Naval Architecture and Marine Engineering	—	—	5	1	2	8	XIII
XV Business and Engineering Administration	—	—	—	3	6	9	XV
XVI Aeronautical Engineering	—	—	—	—	1	67	XVI
Meteorology	—	—	—	—	66		
XVIII Mathematics	—	—	2	—	—	2	XVIII
Unclassified	—	—	2	—	—	2	Unc.
Total	4	3	21	16*	97	141	

* This total includes Fifth Year in Architecture.

TABLE 4-C

CLASSIFICATION OF FORMER STUDENTS WHO RETURNED THIS YEAR*
(Included in Table 4-A)

COURSE	YEAR					TOTAL	COURSE
	1	2	3	4	G		
I Civil Engineering	—	—	—	1	2	3	I
II Mechanical Engineering	—	5	1	4	3	13	II
III Metallurgy	—	—	1	1	2	4	III
IV Architecture	2	—	1	—	1	4	IV
V Chemistry	—	—	1	—	3	4	V
VI Electrical Engineering	—	3	1	1	1	6	VI
VI-A Electrical Engineering (Coöperative)	—	3	—	2	1	6	VI-A
VI-B Electrical Engineering (Illuminating)	—	—	—	1	—	1	VI-B
VI-C Electrical Engineering (Communications)	—	—	2	1	—	3	VI-C
VII Biology and Public Health	—	—	—	—	3	3	VII
VIII Physics	—	1	—	2	2	5	VIII
IX-A General Science	—	1	2	—	—	3	IX-A
IX-B General Engineering	—	—	1	2	—	3	IX-B
X Chemical Engineering	—	2	1	—	4	7	X
XII Geology	—	—	—	—	1	1	XII
XIII Naval Architecture and Marine Engineering	—	2	1	1	—	4	XIII
XV Business and Engineering Administration	—	3	2	1	3	9	XV
XVI Aeronautical Engineering	—	—	—	1	2	7	XVI
Meteorology (in Aeronautical Eng. Dept.)	—	—	—	—	4		
XVII Building Engineering and Construction	—	1	—	—	—	1	XVII
XVIII Mathematics	—	—	—	1	—	1	XVIII
Unclassified	—	—	7	—	—	7	Unc.
First Year	18	—	—	—	—	18	First Year
Total	20	21	21	19	32	113	

* Excludes fourteen special students.

TABLE 5. CLASSIFICATION OF STUDENTS BY COURSES SINCE 1933

	1933–34	1934–35	1935–36	1936–37	1937–38	1938–39	1939–40	1940–41
Engineering Courses . . . . . *Total*	2,008	1,961	2,028	2,187	2,288	2,379	2,418	1,922
Aeronautical Engineering XVI	162	183	200	221	210	230	245	237
Architectural Engineering IV-A	31	23	17	12	5	2	—	—
Building Engineering and Construction XVII	43	31	32	23	27	29	26	17
Business and Engineering Administration XV	343	305	280	274	269	265	251	223
Chemical Engineering X, X-A, X-B	323	356	414	452	473	524	497	338
Civil Engineering I, I-A	142	129	142	122	123	114	104	80
Army Engineer (in Civil Engineering Dept.)	—	—	—	11	15	17	13	—
Electrical Engineering VI, VI-A, VI-B, VI-C	395	380	381	444	452	448	432	325
Electrochemical Engineering XIV	35	38	27	23	22	9	2	—
General Engineering IX-B	35	52	61	47	64	73	68	42
Mechanical Engineering II, II-A	270	255	274	313	370	401	433	353
Army Ordnance (in Mechanical Engineering Dept.)	9	9	10	10	12	10	22	4
*Metallurgy III	65	50	60	81	84	108	124	129
*Mining Engineering III	35	32	28	32	35	25	10	—
Naval Architecture and Marine Eng. XIII, XIII-C	90	90	80	93	100	89	139	121
Naval Construction and Engineering XIII-A	26	25	23	23	21	28	42	49
Sanitary Engineering XI	13	12	9	6	6	7	10	4
Science Courses . . . . . *Total*	439	405	382	467	501	555	543	453
Biology and Public Health VII, VII-A, VII-B	92	81	65	91	94	86	91	82
Chemistry V	145	137	140	176	186	203	194	162
General Science IX-A	12	10	12	20	25	33	30	22
Geology XII	21	16	15	26	32	45	36	34
Mathematics XVIII	28	35	26	20	27	28	40	30
Physics VIII	141	126	124	134	137	160	152	123
Architecture IV, IV-B, IV-C . . . . . *Total*	135	120	100	97	111	100	108	112
Economics and Engineering or Science . . . . . *Total*	—	—	2	7	3	4	1	3
Unclassified . . . . . *Total*	15	12	18	35	63	55	30	64
†*First Year (not including Course IV)* . . . . *Total*	—	—	—	—	—	—	—	584
Grand Total	2,606	2,507	2,540	2,793	2,966	3,093	3,100	3,138

* June 1940, Mining Engineering discontinued. Metallurgy, formerly Course XIX, changed to Course III.
† Beginning September 1940, First Year Students not required to designate choice of course except for Course IV.

TABLE 6

GEOGRAPHICAL CLASSIFICATION OF STUDENTS SINCE 1936

UNITED STATES	1936	1937	1938	1939	1940
North Atlantic . . . . . Total	1,979	2,026	2,057	2,050	2,060
Connecticut	109	113	125	124	104
Maine	33	26	20	22	22
Massachusetts	1,092	1,077	1,032	979	951
New Hampshire	21	23	22	19	21
New Jersey	154	169	169	173	180
New York	400	432	492	522	558
Pennsylvania	127	142	146	152	165
Rhode Island	30	35	40	50	47
Vermont	13	9	11	9	12
South Atlantic . . . . . Total	139	139	170	185	187
Delaware	12	14	14	15	14
District of Columbia	34	32	40	59	52
Florida	10	13	18	21	26
Georgia	10	6	10	11	11
Maryland	23	29	30	27	36
North Carolina	11	8	8	6	11
South Carolina	3	2	7	5	4
Virginia	26	24	25	23	21
West Virginia	10	11	18	18	12
South Central . . . . . Total	70	94	105	106	99
Alabama	6	12	16	15	9
Arkansas	3	3	6	6	4
Kentucky	13	12	15	14	18
Louisiana	13	14	11	12	12
Mississippi	5	5	3	4	7
Tennessee	7	10	9	13	14
Texas	23	38	45	42	35
North Central . . . . . Total	293	350	365	375	403
Illinois	91	106	111	115	121
Indiana	12	14	15	12	22
Iowa	6	8	7	9	14
Kansas	7	10	10	8	7
Michigan	26	34	39	44	45
Minnesota	19	18	11	14	18
Missouri	35	41	40	50	41
Nebraska	3	5	8	9	13
North Dakota	4	4	2	2	1
Ohio	73	95	105	96	99
South Dakota	1	1	—	2	3
Wisconsin	16	14	17	14	19
Western . . . . . Total	119	129	155	153	154
Arizona	2	3	2	6	6
California	44	46	49	42	44
Colorado	25	26	28	28	26
Idaho	2	2	3	1	—
Montana	8	6	12	11	6
Nevada	1	2	3	2	1
New Mexico	4	5	4	7	6
Oklahoma	6	6	13	9	19
Oregon	5	7	11	12	12
Utah	4	6	6	11	10
Washington	16	19	21	22	21
Wyoming	2	1	3	2	3
Territories and Dependencies . . . . Total	12	12	10	14	11
Canal Zone	2	1	1	1	1
Hawaii	4	6	4	4	5
Puerto Rico	6	5	5	9	5
Total for United States	2,612	2,750	2,862	2,883	2,914

(Continued on page 46)

TABLE 6 — (*Continued*)

Foreign Countries	1936	1937	1938	1939	1940
Total	181	216	231	217	224
Argentina	7	2	5	5	6
Australia	2	2	—	1	1
Austria	1	1	1	—	—
Barbados	—	—	—	—	2
Belgium	1	—	2	4	2
Bolivia	—	—	—	—	1
Brazil	2	1	1	11	11
British West Indies	—	1	3	3	1
Canada	30	37	52	47	37
Chile	—	—	—	1	3
China	50	57	37	29	26
Colombia	2	6	6	6	6
Cuba	11	14	10	11	13
Czechoslovakia	—	—	1	1	1
Denmark	—	1	1	2	1
Dominican Republic	—	1	1	1	1
Dutch West Indies	—	—	1	—	—
Egypt	—	—	—	—	1
England	11	8	11	4	2
France	4	5	5	6	2
Germany	3	2	4	4	2
Greece	—	—	—	—	2
Guatemala	1	1	—	1	2
Haiti	—	2	1	1	2
Honduras	2	1	2	2	2
Hungary	1	—	—	—	—
Iceland	—	—	—	—	1
India	11	8	10	4	14
Iraq	—	1	—	—	—
Ireland	1	—	1	—	—
Italy	—	2	4	4	3
Japan	4	2	1	1	2
Mexico	5	7	7	8	8
Netherland Indies	1	1	—	—	—
Netherlands	2	4	5	7	1
Newfoundland	—	1	1	—	—
New Zealand	1	2	—	1	1
Norway	2	2	3	7	7
Palestine	—	—	—	—	1
Panama	1	—	1	—	—
Paraguay	—	—	1	—	—
Peru	1	1	2	1	5
Philippines	8	13	14	10	18
Poland	—	—	2	1	—
Portugal	—	—	—	—	1
Rhodesia	—	—	—	—	1
Roumania	—	—	—	1	2
Salvador	—	—	2	—	1
Scotland	1	—	1	1	—
South Africa	—	—	1	—	—
Spain	—	1	1	1	1
Straits Settlements	—	—	—	1	1
Sweden	—	1	2	1	1
Switzerland	3	3	4	5	4
Syria	1	2	1	1	1
Thailand	4	9	8	8	6
Turkey	4	6	8	9	12
Union of South Africa	3	5	3	1	1
Union of Socialistic Soviet Republics	—	—	3	2	—
Venezuela	—	3	1	2	4
Grand Total, United States and Foreign	2,793	2,966	3,093	3,100	3,138

TABLE 7. New Students Entering from Other Colleges as Candidates for Degrees

Class Joined at the Institute	Years Spent at College				Total
	One	Two	Three	Four or more	
First Year	32	9	2	5	48
Second Year	14	34	5	8	61
Third Year	1	2	14	44	61
Fourth Year	—	—	1	3	4
Graduate Year	—	—	5	225	230
Total	47	45	27	285	404

TABLE 8

Women Students Classified by Courses and Years

COURSE	YEAR					Total
	1	2	3	4	G	
I Civil Engineering	—	—	—	1	—	1
III Metallurgy	—	—	1	—	—	1
IV Architecture	3	4	3	3	2	15
Fifth Year	—	—	—	1	—	1
IV-B City Planning (Fifth Year)	—	—	—	1	—	1
V Chemistry	—	—	—	1	2	3
VII Biology and Public Health	—	1	2	4	9	16
VIII Physics	—	—	—	1	4	5
XII Geology	—	—	—	—	1	1
XV Business and Engineering Administration	—	—	—	1	—	1
XVI Aeronautical Engineering	—	—	—	—	1	3
Meteorology (in Aeronautical Eng. Dept.)	—	—	—	—	2	
XVIII Mathematics	—	—	2	—	1	3
First Year (not including Course IV)	7	—	—	—	—	7
Total	10	5	8	13*	22	58

* This total includes Fifth Year in Architecture.

TABLE 9

Old and New Students

Year	1935–36	1936–37	1937–38	1938–39	1939–40	1940–41
Students registered at end of last academic year (including specials)	1,558	1,634	1,843	1,955	1,985	1,973
Students who have previously attended the Institute, but were not registered at end of last academic year (including specials)	91	110	124	96	100	127
New students who entered by examination	194	190	162	213	198	229
New students who entered without examination	287	371	377	399	338	303
New students who entered from other colleges as candidates for degrees	361	432	395	379	419	404
New students (specials, not candidates for degrees)	49	56	65	51	60	102
Total	2,540	2,793	2,966	3,093	3,100	3,138

TABLE 10

List of American Colleges and Universities, with Number of Graduates Attending the Institute

College		College		College	
A. & M. College of Texas	1	Mass. Inst. of Tech.	237	U. S. Naval Academy	61
Alabama Polytechnic Inst.	1	Mass. State College	5	University of Akron	1
Alfred University	2	Miami University	2	University of Alabama	2
Amherst College	5	Mich. State Coll. A.& A.S.	1	University of Arizona	2
Antioch College	1	Middlebury College	4	University of Arkansas	1
Bates College	2	Mills College	1	University of California	12
Bethany College	2	Mississippi State College	3	University of Chicago	4
Boston College	11	Montana School of Mines	1	University of Cincinnati	2
Boston University	2	Montana State College	2	University of City of Toledo	1
Bowdoin College	2	Montana State University	1	University of Colorado	3
Brigham Young University	1	Morris Harvey College	1	University of Dayton	1
Brooklyn College	1	Mt. Holyoke College	1	University of Denver	6
Brown University	5	Newark College of Eng.	3	University of Idaho	1
Bucknell University	1	N. J. State Teachers Coll.	1	University of Illinois	6
California Inst. of Tech.	4	New York University	1	University of Kansas	2
Carleton College	2	N. C. State Coll. of Agric. and Engineering	3	University of Kentucky	4
Carnegie Inst. of Tech.	7	Northeastern University	4	University of Louisville	1
Carthage College	1	Norwich University	1	University of Maine	2
Case School of App. Science	4	Oberlin College	5	University of Michigan	8
Catholic Univ. of America	1	Ohio State University	6	University of Minnesota	8
Clark University	3	Ohio University	1	University of Missouri	2
Coe College	1	Ohio Wesleyan University	2	University of Nebraska	4
Colgate University	1	Oregon State College	4	Univ. of New Hampshire	3
College of Charleston	1	Parsons College	1	University of New Mexico	1
College of City of N. Y.	8	Pennsylvania State College	6	Univ. of North Carolina	1
Coll. of Holy Cross (Mass.)	3	Poly. Institute of Brooklyn	2	University of Notre Dame	6
College of William & Mary	2	Pomona College	2	University of Oklahoma	3
Colorado College	3	Pratt Institute	1	University of Pennsylvania	5
Columbia University (N.Y.)	5	Princeton University	12	University of Pittsburgh	2
Connecticut University	1	Providence College	2	University of Rochester	3
Cooper Union	2	Purdue University	9	University of Scranton	1
Cornell University	6	Radcliffe College	2	University of Tennessee	1
Dartmouth College	22	Rensselaer Poly. Inst.	5	University of Texas	6
Davidson College	1	Rhode Island State College	6	University of Utah	5
Denison University	1	Rice Institute	2	University of Virginia	1
Dickinson College	3	Ripon College	1	University of Washington	14
Drake University	1	Roanoke College	1	University of Wisconsin	3
Drexel Institute	2	Rockhurst College	1	Ursinus College	2
Duke University	1	Rose Polytechnic Inst.	1	Utah State Agric. College	1
Emmanuel College	1	Rutgers University	2	Vanderbilt University	2
Emory University	1	St. Bonaventure College	1	Vassar College	1
Franklin & Marshall Coll.	1	St. Lawrence University	2	Villanova College	1
Georgetown University	2	St. Vincent College	1	Virginia Military Inst.	3
George Washington Univ.	1	Simmons College	1	Virginia Polytechnic Inst.	1
Georgia School of Tech.	2	Smith College	3	Washington & Jefferson Coll.	1
Grinnell College	1	S. D. State School of Mines	2	Washington and Lee Univ.	1
Hampden-Sydney College	3	Stanford University	4	Washington Univ. (Mo.)	4
Harvard University	38	State Coll. of Washington	1	Wayne University	1
Hastings College	1	State University of Iowa	3	Wellesley College	3
Haverford College	3	Swarthmore College	4	Wesleyan University	7
Henderson State Teach. Coll.	1	Syracuse University	2	Western Reserve University	2
Illinois College	1	Tarkio College	1	West Virginia University	1
Illinois Inst. of Technology	2	Teachers College of City of Boston	2	W. Virginia Wesleyan Coll.	1
Illinois Wesleyan Univ.	1	Temple University	1	Williams College	8
Incarnate Word College	1	Texas Technical College	2	Wilson College	1
Indiana University	3	The Principia	2	Woodstock College	1
Iowa State Coll.of A.&M.A.	7	Thiel College	1	Worcester Polytechnic Inst.	2
Johns Hopkins University	1	Trinity Coll. (Washington, D. C.)	1	Yale University	13
Johnson C. Smith Univ.	1	Tufts College	6	Total	865
Juniata College	1	Tulane University of La.	5	Number of American Colleges Represented	187
Kansas State Coll.of A.&A.S.	2	Union College (N. Y.)	4	Number of Foreign Colleges Represented (Not Listed)	55
Lafayette College	1	U. S. Coast Guard Acad.	6	Total	242
Lawrence College	2	U. S. Military Academy	7		
Lehigh University	8				
Loras College	1				
Lowell Textile Institute	1				

TABLE 11

Regular Students from Colleges Classified by Courses

COURSE	No Previous Degree			Graduates of Other Colleges					Graduates of M. I. T. Taking Graduate Work		
	Entered			Entered							
				September 1940		Previous Years					
	Sept. 1940	Previous Years	Total	Undergrad.	Grad.	Undergrad.	Grad.	Total	S.B. Degree June 1940	Other Graduates	Total
Aeronautical Engineering XVI	—	11	11	—	31	3	18	52	10	5	15
Architecture IV, IV-B, IV-C	9	11	20	3	10	1	4	18	2	2	4
Biology and Public Health VII, VII-A, VII-B	—	—	—	—	10	—	18	28	1	4	5
Building Engineering and Construction XVII	—	1	1	—	—	—	—	—	—	—	—
Business and Engineering Administration XV	8	19	27	3	20	3	5	31	—	1	1
Chemical Engineering X, X-A	8	19	27	3	36	2	60	101	18	4	22
Chemistry V	3	6	9	—	17	—	41	58	6	13	19
Civil Engineering I	3	13	16	—	13	—	8	21	1	2	3
Economics and Engineering or Science	—	—	—	—	—	—	—	—	3	—	3
Electrical Engineering VI, VI-A, VI-B, VI-C	8	35	43	5	24	7	24	60	22	7	29
General Engineering IX-B	2	7	9	1	—	2	—	3	—	—	—
General Science IX-A	—	2	2	—	—	—	—	—	—	—	—
Geology XII	3	6	9	—	6	—	4	10	4	1	5
Mathematics XVIII	—	1	1	—	1	—	2	3	4	3	7
Mechanical Engineering II, II-A	7	38	45	11	15	2	15	43	19	19	38
Army Ordnance (in Mech. Eng. Department)	—	—	—	—	4	—	—	4	—	—	—
Metallurgy III	2	3	5	—	15	—	16	31	7	7	14
Naval Architecture XIII, XIII-C	11	8	19	2	2	1	—	5	1	—	1
Naval Engineering (in Naval Arch. Department)	—	—	—	—	11	—	—	11	—	—	—
Naval Construction and Engineering XIII-A	—	—	—	18	—	21	10	49	—	—	—
Physics VIII	4	9	13	—	13	—	26	39	4	11	15
Sanitary Engineering XI	—	—	—	—	2	—	—	2	—	—	—
Unclassified	13	7	20	4	—	—	—	4	—	—	—
First Year	39	—	39	4	—	—	—	4	—	—	—
Total	120	196	316	54	230	42	251	577	102	79	181

TABLE 12. Number of Degrees Awarded in December, 1940 and June, 1941

Name of Course	S.B.		B.Arch. and B.Arch.C.P.		S.M.		M.Arch. and M.C.P.		Ph.D.		Sc.D.		Total	
	Dec. 1940	June 1941	Dec. 1940	June 1941	Dec. 1940	June 1941	Dec. 1940	June 1941	Dec. 1940	June 1941	Dec. 1940	June 1941	Dec. 1940	June 1941
Aeronautical Engineering	1	32	—	—	2	13	—	—	—	—	—	1	3	46
Architecture	—	—	2	14	—	—	8	1	—	—	—	—	10	15
Biology	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Biology and Public Health	—	—	—	—	—	*2	—	—	1	1	—	—	1	3
Biophysics and Biological Engineering	1	—	—	—	—	—	—	—	—	—	—	—	1	—
Building Engineering and Construction	1	7	—	—	—	—	—	—	—	—	—	—	1	7
Business and Engineering Administration	—	56	—	—	2	11	—	—	—	—	—	—	2	67
Ceramics	—	—	—	—	—	—	—	—	—	—	1	1	1	1
Chemical Engineering	7	50	—	—	3	8	—	—	—	—	7	9	17	67
Chemical Engineering Practice	—	7	—	—	9	28	—	—	—	—	—	—	9	35
Chemistry	4	26	—	—	1	—	—	—	6	13	—	2	11	41
City Planning	—	—	—	2	—	—	3	—	—	—	—	—	3	2
Civil Engineering	5	19	—	—	12	10	—	—	—	—	1	—	18	29
Economics and Engineering	—	—	—	—	—	2	—	—	—	—	—	—	—	2
Electrical Engineering (Inc. VI-A)	27	70	—	—	35	26	—	—	—	—	1	3	63	99
Food Technology and Industrial Biology	1	5	—	—	—	—	—	—	—	—	—	—	1	5
General Engineering	5	21	—	—	—	—	—	—	—	—	—	—	5	21
General Science	3	5	—	—	—	—	—	—	—	—	—	—	3	5
Geology	—	7	—	—	—	3	—	—	3	1	—	—	3	11
Marine Engineering	—	—	—	—	—	12	—	—	—	—	—	—	—	12
Marine Transportation	—	6	—	—	—	—	—	—	—	—	—	—	—	6
Mathematics	2	6	—	—	2	2	—	—	—	3	—	—	4	11
Mechanical Engineering (Inc. II-A)	2	85	—	—	4	20	—	—	—	—	—	2	6	107
Metallurgy	—	27	—	—	3	6	—	—	—	—	—	4	3	37
Meteorology	—	—	—	—	—	9	—	—	—	—	—	1	—	10
Mining Engineering	1	—	—	—	2	—	—	—	—	—	—	—	3	—
Naval Architecture	—	—	—	—	—	2	—	—	—	—	—	—	—	2
Naval Architecture and Marine Engineer.	2	12	—	—	—	—	—	—	—	—	—	—	2	12
Naval Construction	—	—	—	—	—	10	—	—	—	—	—	—	—	10
Physics	1	20	—	—	3	3	—	—	1	4	3	2	8	29
Public Health Engineering	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sanitary Engineering	—	—	—	—	—	1	—	—	—	—	—	—	—	1
Textile Technology	—	—	—	—	—	2	—	—	—	—	—	—	—	2
Without Course Classification	—	—	—	—	7	15	—	—	—	—	—	—	7	15
Total	63	462	2	16	85	185	11	1	11	22	13	25	185	711

* Master in Public Health.

TABLE 13

Degrees of Bachelor of Science According to Class in Which They Were Awarded

Class	Aeronautical Eng.	Architectural Eng.†	Architecture	Biology or Natural Hist. (Inc. VII-A)	Bldg. Eng. & Constr.	Business and Eng. Admin.	Chemical Eng.	Chemical Eng. Practice X-B	Chemistry	Civil Engineering	Electrical Eng. (Inc. VI-A)	Electrochemical Engineering*	General Eng.	General Science or General Course	Geology	Mathematics	Mechanical Eng. (Inc. II-A)	Metallurgy**	Military Eng.	Mining Eng. and Metallurgy	Naval Arch.	Physics	Sanitary Eng.	Total	Total by Decades
1868	—	—	—	—	—	—	—	—	—	6	—	—	—	1	—	—	1	—	—	6	—	—	—	14	
1869	—	—	—	—	—	—	—	—	1	2	—	—	—	—	—	—	2	—	—	—	—	—	—	5	
1870	—	—	—	—	—	—	—	—	1	4	—	—	—	1	—	—	2	—	—	2	—	—	—	10	29
1871	—	—	—	—	—	—	—	—	2	8	—	—	—	—	—	—	2	—	—	5	—	—	—	17	
1872	—	—	—	—	—	—	—	—	3	3	—	—	—	—	—	—	1	—	—	5	—	—	—	12	
1873	—	—	1	—	—	—	—	—	7	12	—	—	—	1	—	—	2	—	—	3	—	—	—	26	
1874	—	—	1	—	—	—	—	—	—	10	—	—	—	2	—	—	4	—	—	1	—	—	—	18	
1875	—	—	1	—	—	—	—	—	1	10	—	—	—	2	—	—	7	—	—	6	—	1	—	28	
1876	—	—	1	2	—	—	—	—	5	12	—	—	—	4	—	—	8	—	—	8	—	3	—	43	
1877	—	—	4	—	—	—	—	—	2	12	—	—	—	—	—	—	6	—	—	8	—	—	—	32	
1878	—	—	3	—	—	—	—	—	3	8	—	—	—	1	—	—	2	—	—	2	—	—	—	19	
1879	—	—	1	1	—	—	—	—	3	6	—	—	—	—	—	—	8	—	—	3	1	—	—	23	
1880	—	—	—	—	—	—	—	—	1	3	—	—	—	1	—	—	—	—	—	3	—	—	—	8	226
1881	—	—	3	1	—	—	—	—	8	3	—	—	—	2	—	—	5	—	—	6	—	—	—	28	
1882	—	—	3	1	—	—	—	—	6	2	—	—	—	1	—	—	5	—	—	5	—	1	—	24	
1883	—	—	1	—	—	—	—	—	3	3	—	—	—	—	—	—	7	—	—	5	—	—	—	19	
1884	—	—	—	—	—	—	—	—	12	5	—	—	—	—	—	—	6	—	—	13	—	—	—	36	
1885	—	—	2	—	—	—	—	—	4	4	2	—	—	1	—	—	7	—	—	8	—	—	—	28	
1886	—	—	1	1	—	—	—	—	7	9	10	—	—	1	—	—	23	—	—	7	—	—	—	59	
1887	—	—	1	1	—	—	—	—	9	10	8	—	—	3	—	—	17	—	—	8	—	1	—	58	
1888	—	—	5	3	—	—	—	—	10	11	17	—	—	1	—	—	25	—	—	4	—	1	—	77	
1889	—	—	3	1	—	—	—	—	8	14	17	—	—	2	—	—	24	—	—	5	—	1	—	75	
1890	—	—	6	3	—	—	—	—	13	25	18	—	—	6	—	—	28	—	—	3	—	2	—	103	507
1891	—	—	6	3	—	—	7	—	11	18	23	—	—	1	1	—	26	—	—	4	—	3	—	103	
1892	—	—	13	6	—	—	4	—	7	22	36	—	—	7	1	—	26	—	—	4	—	1	6	133	
1893	—	—	2	2	—	—	8	—	8	25	41	—	—	6	2	—	30	—	—	5	—	—	—	129	
1894	—	—	14	1	—	—	12	—	11	21	33	—	—	5	—	—	31	—	—	4	—	3	3	138	
1895	—	—	15	—	—	—	11	—	14	25	33	—	—	4	—	—	30	—	—	3	5	2	4	146	
1896	—	—	24	3	—	—	7	—	17	26	48	—	—	7	3	—	34	—	—	10	5	3	4	191	
1897	—	—	16	2	—	—	12	—	20	25	33	—	—	7	1	—	40	—	—	7	9	3	4	179	
1898	—	—	29	3	—	—	9	—	25	32	33	—	—	6	—	—	41	—	—	7	7	4	3	199	
1899	—	—	22	2	—	—	10	—	22	30	32	—	—	1	—	—	37	—	—	9	8	2	1	176	
1900	—	—	21	3	—	—	11	—	19	32	23	—	—	5	—	—	34	—	—	21	9	3	4	185	1,579
1901	—	—	21	1	—	—	14	—	17	37	25	—	—	6	1	—	39	—	—	18	16	1	4	200	
1902	—	—	18	5	—	—	9	—	14	24	35	—	—	3	—	—	46	—	—	14	14	3	7	192	
1903	—	—	15	1	—	—	10	—	13	26	39	1	—	1	1	—	37	—	—	27	12	3	4	190	
1904	—	—	24	3	—	—	7	—	15	34	34	8	—	5	1	—	45	—	—	32	17	5	2	232	
1905	—	—	12	3	—	—	13	—	23	46	31	3	—	3	1	—	54	—	—	26	24	—	5	244	
1906	—	—	22	2	—	—	10	—	21	47	37	3	—	—	—	—	69	—	—	38	19	4	6	278	
1907	—	—	21	—	—	—	14	—	10	37	32	5	—	—	—	—	52	—	—	22	10	—	3	208	
1908	—	—	19	4	—	—	15	—	16	48	38	2	—	—	—	—	62	—	—	19	5	—	2	230	
1909	—	—	18	5	—	—	13	—	12	51	42	3	—	—	—	—	41	—	—	30	5	3	9	232	
1910	—	—	18	3	—	—	18	—	10	57	36	3	—	2	—	—	57	—	—	24	11	—	12	251	2,257

(*Continued on page 52*)

TABLE 13 — (*Continued*)

Degrees of Bachelor of Science According to Class in Which They Were Awarded

Class	Aeronautical Eng.	Architectural Eng.‡	Architecture	Biology or Natural Hist. (Inc. VII-A)	Bldg. Eng. & Constr	Business and Eng. Admin.	Chemical Eng.	Chemical Eng. Practice X-B	Chemistry	Civil Engineering	Electrical Eng. (Inc. VI-A)	Electrochemical Engineering*	General Eng.	General Science or General Course	Geology	Mathematics	Mechanical Eng. (Inc. II-A)	Metallurgy**	Military Eng.	Mining Eng. and Metallurgy	Naval Arch.	Physics	Sanitary Eng.	Total	Total by Decades
1911	—	—	10	1	—	—	19	—	12	46	49	5	—	2	—	—	49	—	—	17	6	1	15	232	
1912	—	—	21	4	—	—	31	—	7	55	52	3	—	1	—	—	47	—	—	21	3	2	14	261	
1913	—	—	26	2	—	—	30	—	12	58	43	8	—	—	—	—	50	—	—	20	4	1	15	269	
1914	—	—	19	6	—	—	37	—	9	60	51	8	—	4	—	—	65	—	—	17	8	1	19	304	
1915	—	—	30	3	—	—	33	—	23	49	42	10	—	3	—	—	69	—	—	5	7	3	12	289	
1916	—	—	37	5	—	—	32	—	11	45	56	14	—	2	—	—	84	—	—	5	9†	3	18	321	
1917	—	—	27	10	—	37	43	—	13	49	45	10	—	5	2	—	63	—	—	14	9†	1	17	345	
1918	—	—	28	7	—	29	40	—	10	45	50	11	2	4	1	—	75	—	—	10	4	3	5	324	
1919	—	—	16	9	—	28	44	—	8	45	50	6	3	1	—	—	66	—	—	7	7	4	6	299	
1920	—	—	19	2	—	48	63	—	6	52	30	9	1	4	—	—	55	—	—	13	12	2	2	319	2,963
1921	—	—	11	3	—	70	92	—	9	98	75	15	15	—	—	—	128	—	—	24	18	1	3	565	
1922	—	—	32	8	—	126	98	15	11	65	109	25	25	1	—	—	56	—	—	27	16	8	7	637	
1923	—	13	18	6	—	115	73	19	16	64	78	16	23	2	8	3	106	—	—	23	13	9	3	608	
1924	—	6	15	6	—	82	57	8	13	69	125	17	36	4	2	1	82	—	—	19	11	3	1	557	
1925	—	6	18	2	—	94	53	8	18	57	110	9	37	2	3	2	98	—	—	23	10	5	—	555	
1926	—	9	24	5	—	95	45	13	19	76	108	14	33	2	4	1	76	—	—	20	14	1	2	561	
1927	2	15	19	6	—	89	39	6	13	73	121	8	22	2	3	3	72	—	1	9	4	4	3	514	
1928	8	19	16	5	—	73	38	7	13	59	114	11	12	2	1	3	67	—	—	12	3	3	5	471	
1929	29	25	26	7	9	69	37	11	18	46	84	10	14	1	2	5	64	—	—	11	5	4	6	483	
1930	29	15	44	9	23	59	39	12	11	46	76	8	9	1	2	1	48	—	—	6	6	11	4	459	5,410
1931	39	10	18	16	15	68	32	10	12	49	83	6	22	5	3	4	70	—	—	12	13	7	2	496	
1932	27	16	5	15	18	70	45	7	15	38	74	4	29	3	2	3	68	—	4	21	16	21	4	505	
1933	27	9	—	13	9	56	38	3	18	47	86	8	16	3	2	7	86	—	—	14	13	14	2	471	
1934	26	10	—	16	13	78	48	6	15	35	82	7	8	9	1	8	50	—	—	26	25	28	5	496	
1935	27	8	—	18	8	74	43	5	15	18	57	8	19	4	1	3	45	—	—	14	14	19	1	401	
1936	27	3	—	13	12	63	31	20	16	23	68	5	25	6	2	8	47	—	—	10	18	11	2	410	
1937	30	3	—	9	4	61	34	9	13	15	67	5	20	4	—	4	46	—	—	19	19	17	1	380	
1938	25	3	—	11	4	56	51	6	14	22	62	4	28	6	1	2	50	10	—	5	23	14	2	399	
1939	30	2	—	6	7	56	53	12	25	23	67	7	19	13	4	2	72	20	—	9	8	17	1	453	
1940	29	—	—	12	9	59	59	12	23	14	73	2	36	20	6	7	68	22	—	7	24	22	—	504	4,515
§1941	32	—	—	6	7	56	50	7	26	19	70	—	21	5	7	6	85	27	—	—	18	20	—	462	
Total	387	172	865	307	138	1,711	1,641	196	858	2,305	3,013	301	475	220	82	73	3,130	79	5	880	536	314	260	17,948	

* Prior to 1909 this Course was designated as Option 3 (Electrochemistry) of Course VIII.
† Two received the degree in Naval Architecture, Course XIII-B, in 1916 and three in 1917.
‡ Prior to 1923 degrees were awarded in Architecture.
** Prior to 1938 included in Mining Engineering and Metallurgy.
§ Includes only June degrees awarded in Class 1941.

TABLE 14

Degrees of Master of Science Awarded

	Aeronautical Engineering	Architectural Engineering	Architecture	Biol. & P. H. (Inc. VII-A)	Business and Eng. Admin.	Ceramics	Chemical Engineering	Chem. Eng. Practice X-A	Chemistry	Civil Engineering	Economics and Engineering	Electrical Eng. (Inc. VI-A)	Electrochemical Eng.	Fuel and Gas Eng.	General Science	Geology	Mathematics	Mech. Eng. (Inc. II-A)	Metallurgy	Meteorology	Mining Engineering	Naval Architecture	Naval Construction	Naval Con., Foreign Stud.	Petroleum Engineering	Physics	Railroad Operation	Sanitary Engineering	Without Course Classification	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				2											1								1				5
1899			1	1					1																					3
1900																														
1901			2															2												4
1902			3						3									2												8
1903			5															1										1		7
1904			4						1			2						1					3			1				12
1905			9																				8					1		18
1906			3						1													2	3							9
1907			6				1																8							15
1908			1						1			3											7							12
1909			6				1		1	2		1				1		1			2		3			1				19
1910			6	1					1	2		1						1					7							19
1911			5	2					2	2		4						2					3							20
1912			4	2					3	3		2									2		4							22
1913			4	1			7			1		1				1		2			1		2							20
1914			3	2			3		5	3		2				1		1					2					3		25
1915	1		4				2		2	1		10	1					4			1	1	2							29
1916	5		7	1			1		3	5		6	1					4					2	5				1		41
1917	4		3				1		1	3		5						1			1		9			1		2		31
1918	5		1	1			1		1	1		2						2			1								1	16
1919	2								3	4		4	1					1												16
1920				1			3		2	4		7	1			3	1	5			1		19			1			4	52
1921	3	1					29		6	2		4				2		10			3		20						17	94
1922	5	1					6	32	4	5		37	1			2	2	4					10			1			18	131
1923	10						3	34	1	5		45				2		15	1				21			3			26	170
1924	4						6	41	1	5		34	1			1		8	1		1		12			5			28	148
1925	5	1			1		3	35	3	5		35	1					10	2		1					2		1	21	126
1926	6	1					5	20	2	2		60	1			3		6	1				12						25	144
1927	9			1			2	26	4	6		54	2	2		6	1	13			2		6			1			32	167
1928	9						5	14	2	8		63	3	7			2	13					9			1			43	179
1929	5	1			2		3	21	4	6		79	2	6		4	2	16			1		6			2		1	45	205
1930	3	4			1		7	22	5	9		51	5	2		1	2	5	3		1	1	5			1		1	53	182
1931	4	3		2	5		15	34	5	12		57	2	4		2	5	10	4	4	2		8			2	3		20	203
1932	5				5		25	33	8	17		56	2	5		2	3	16	1	4	1		7			6	6		40	251
1933	10	2		1	5		14	26	7	12		46	2				1	18	2		1	1	13			4	3	2	20	190
1934	7			5	5		16	19	11	9		46				3	3	20	5	1	2		11			3	2	1	21	190
1935	3	2		1	2		16	14	4	13		55	1				3	16	6		1		10			7		2	21	177
1936	5	3			4	2	7	30	3	19		22				2	2	14		4	1	1	7		1	5			23	155
1937	12			1	5	1	12	29	8	17	7	35					1	15	4	4	1		8		1	2		1	23	187
1938	13				8		11	28	1	29	2	58	1				1	24	1	4	1		7		1	3			30	223
1939	8			3	8		20	34	1	31	3	45				2	1	21	6	6	4		8			5		2	28	236
1940	9			1	9		16	37	3	20		54				4	5	22	7	8	2	18	10		2	3		2	37	269
*1941	13			†2	11		8	28		10	2	26				3	2	22	6	9		14	10			3		1	15	185
Total	165	19	84	34	75	3	252	557	118	274	14	1,012	28	26	1	45	38	329	50	44	33	42	282	5	5	66	14	24	591	4,23

* Includes only June degrees.
† Master in Public Health.

TABLE 15

Degrees Awarded in Architecture and City Planning

Year	Bachelor in Architecture	Bachelor of Architecture in City Planning	Master in Architecture	Master in City Planning
1921	—	—	3	—
1922	—	—	2	—
1923	—	—	7	—
1924	—	—	8	—
1925	—	—	5	—
1926	—	—	9	—
1927	—	—	7	—
1928	—	—	6	—
1929	—	—	9	—
1930	—	—	7	—
1931	—	—	9	—
1932	11	—	5	—
1933	24	—	7	—
1934	27	—	—	—
1935	17	4	11	—
1936	14	4	4	2
1937	9	2	11	3
1938	19	1	3	3
1939	14	1	10	3
1940	11	2	21	7
*1941	14	2	1	—
Total	160	16	145	18

* Includes only June degrees.

TABLE 16

Degrees of Doctor of Philosophy Awarded

Year	Biology	Chemistry	Geology	Mathematics	Physics	Total
1907	—	3	—	—	—	3
1908	—	3	—	—	—	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
1925	—	11	—	—	—	11
1926	—	2	2	—	—	4
1927	2	6	1	1	1	11
1928	1	5	1	1	—	8
1929	4	8	2	1	—	15
1930	—	5	2	3	—	10
1931	—	9	—	1	—	10
1932	1	12	—	1	2	16
1933	2	10	3	3	—	18
1934	2	10	2	2	1	17
1935	4	15	2	3	7	31
1936	—	15	—	3	12	30
1937	2	11	4	1	10	28
1938	2	12	2	4	7	27
1939	1	33	4	3	4	45
1940	3	19	5	4	5	36
*1941	1	13	1	3	4	22
Total	29	244	41	34	60	408

* Includes only June degrees.

TABLE 17. DEGREES OF DOCTOR OF SCIENCE AWARDED

Year	Aero. Eng.	Ceramics	Chem. Eng.	Chemistry	Civil Eng.	Elec. Eng.	Electrochem. Eng.	Geology	Mathematics	Mech. Eng.	Metallurgy	Meteorology	Min. Eng.	Naval Arch.	Petroleum Eng.	Physics	San. Eng.	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
1925	1	—	3	—	—	—	—	—	—	—	3	—	—	—	—	—	—	7
1926	—	—	1	1	1	1	1	—	—	—	4	—	—	—	—	—	—	9
1927	—	—	—	—	—	1	—	—	1	1	2	—	—	—	—	1	—	6
1928	1	—	5	—	1	2	—	—	—	—	1	—	—	—	—	—	—	10
1929	—	—	3	—	—	—	—	—	—	—	1	—	—	1	—	1	—	6
1930	—	—	9	—	—	6	—	—	1	3	1	—	—	—	—	—	—	20
1931	—	—	3	2	—	3	—	—	—	—	1	—	—	—	—	—	—	9
1932	—	—	5	—	1	2	—	1	—	2	1	—	—	—	—	2	—	14
1933	—	—	10	1	2	3	—	—	1	—	6	—	1	—	—	—	—	24
1934	—	—	3	—	—	2	1	1	—	3	2	1	—	—	—	—	—	13
1935	—	1	2	1	—	4	—	—	2	—	1	1	—	—	—	1	1	14
1936	2	1	12	—	—	1	—	—	—	2	3	—	1	—	—	2	—	24
1937	1	1	9	1	1	6	—	—	—	2	—	—	—	—	1	1	—	23
1938	—	1	12	—	2	7	—	1	—	2	5	3	—	—	—	5	—	38
1939	2	1	10	—	3	1	—	—	—	—	4	1	1	—	—	3	—	26
1940	—	2	12	—	3	1	—	1	—	2	2	—	1	—	—	4	1	29
*1941	1	1	9	2	—	3	—	—	—	2	4	1	—	—	—	2	—	25
Total	12	8	110	9	14	48	2	7	5	19	43	7	5	1	1	25	2	318

* Includes only June degrees.

TABLE 18

DEGREES OF DOCTOR OF PUBLIC HEALTH AWARDED

Year	Number
1924	1
1927	1
1928	1
1930	1
1939	1
Total	5

TABLE 19

DEGREES OF DOCTOR OF ENGINEERING AWARDED (*Discontinued after 1918*)

Year	Electrical Engineering	Electrochemical Engineering	Total
1910	1	—	1
1914	1	—	1
1916	1	—	1
1917	—	1	1
Total	3	1	4

TABLE 20

SUMMARY OF DEGREES AWARDED (1868–1940)

Bachelor of Science	17,948
Bachelor in Architecture	160
Bachelor of Architecture in City Planning	16
Master of Science	4,228
Master in Architecture	145
Master in City Planning	18
Master in Public Health	2
Doctor of Philosophy	408
Doctor of Science	318
Doctor of Public Health	5
Doctor of Engineering (Discontinued after 1918)	4
Grand Total	23,252

Director of Admissions

During the year 1,844 applications were received for admission to the First Year Class, as compared with 1,705 in 1940. Notices of admission were sent to 810 of these applicants of whom 647 were actually registered on the third day of the term, as compared with 605 on the corresponding date in 1940.

This class is the sixth to enter since the policy of selective admission was initiated. While the general procedure of selection has been fairly well standardized, the careful review of each case on an individual basis continues to require a great deal of time and attention. Mr. Paul Chalmers of the Department of English and History has assisted effectively in this work during the past year, and has also devoted his full time to the work of the office during July and August at which season the volume of correspondence and interviews is large.

Following several years in which special attention was devoted to establishing effective contacts with alumni groups and Honorary Secretaries, the past two years have been more especially devoted to emphasizing closer acquaintance with the secondary schools from which our students are drawn. Personal visits have been made during the year to 82 such schools, both public and private, including visits made for the presentation of the Technology Awards. Relations with schools, as in previous years, have been conducted not so much with a view to gathering recruits from the current class as to further our long-range policy of maintaining an atmosphere of cordial goodwill and promoting a more adequate understanding of the Institute's work and objectives on the part of the schools. In furtherance of this general policy, the Department of Science Instruction of the National Education Association was entertained at the Institute on July 2, 1941, and the Country Day School Headmasters' Association of the United States has been invited to hold its annual meetings here in June, 1942.

A total of 29 students (compared with 13 in 1940) were admitted in 1941 with advanced standing from the eleven colleges comprised in the Coöperative Arrangement with the Institute. Of these 11 (compared with four in 1940) entered under the exact terms of the three-year, two-year plan.

B. A. Thresher.

CHAIRMAN OF COMMITTEE ON SUMMER SESSION

The registration of students in the Summer Session was slightly lower than that of 1940, with an enrollment of 1,532.

In addition to the regular Summer Session subjects and the summer surveying camp several special programs were offered for graduate students and special investigators in various fields, and conferences were scheduled in Photoelasticity, Spectroscopy and Powder Metallurgy.

The Eastern Photoelasticity Conference, under the auspices of the Mechanical Engineering Department, was held on June 12, 13 and 14 with an attendance of 66. The majority of those attending were engineers from industry, the remainder being professors from engineering schools. Twenty-two papers were presented on various problems in this field, and representatives came from as far distant as California. Altogether 14 states, Canada and the Philippines were represented. It is the hope of the Summer Session Committee that this Conference will continue to be a part of future summer programs.

The ninth Spectroscopy Conference was held on the three days, July 21, 22, and 23. Two hundred and forty-four advance reservations were made and the total attendance was 270. The annual dinner of the Conference was attended by 170 persons. Thirty papers were presented, and the discussions were animated and comprehensive. A large number of those in attendance expressed the hope again, as last summer, that the Conference be continued under the present auspices unless circumstances make it absolutely impossible. Spectrographers came from such distant points as Honolulu, California and Canada. Attendance was about evenly divided between representatives from academic institutions and from industrial laboratories. The proceedings of the Conference are being published in the Journal of the Optical Society of America.

The second Conference on Powder Metallurgy was held on September 25 and 26, with an attendance of about 200.

In an earlier report on Summer Programs a Conference on Vibration was suggested, but it seemed desirable to the Departments concerned to postpone it. Plans are being formulated for a Conference in the summer of 1942.

The attendance in the Courses in Spectroscopy was some-

what less than last year. Fourteen students were registered in Practical Spectroscopy, ten in Applied Spectroscopy and two for the two weeks Course in Quantitative Spectroscopic Analysis.

The Department of Biology and Public Health offered several programs in the various branches of Biology. The work in Public Health School Health and Health Education was the second session of the four-summer program leading to the certificate in Public Health. This program is planned for professional public health and school health workers of distinct ability in the field of school health. There was a registration of 11 students. Of this group seven were physicians, one of them a state director of health education, and four teachers in institutions of higher learning.

The four week Course in Food Technology was attended by 14 students. Five were professors from other colleges, two held responsible positions in the food divisions of the government of the District of Columbia, one being its acting chief; another was head of the Food Control Laboratory of the State of Kansas. The remainder of the group were from dairy plants, candy manufacturing plants or were graduate students. General bacteriology, sanitary bacteriology and sanitary chemistry were again offered to small groups of students who took the subjects in anticipation of future requirements. Twelve people, biochemists, serologists, and bacteriologists, registered for the course in Public Health Bacteriological Methods.

For the first time a Course in Civil and Military Sanitation was offered under the Public Health Engineering Program with an enrollment of eight. Of this group two were from the Washington, D. C., Department of Health, two from the Massachusetts Department of Public Health, one was a practicing physician in Boston, one a food technologist, one a school principal. The remainder were graduate students.

Nineteen students registered in Principles of Textile Analysis. Because of the importance attached to the laboratory exercises, the registration was limited to twenty students in order to insure the maximum personal attention by staff members and efficient utilization of the laboratory equipment. The group was approximately equally divided among the three

categories: industry, teachers, and graduate students seeking advanced standing.

The Mechanical Engineering Department offered for the second time a course in Photoelasticity with an enrollment of twelve students. Ten were from industry, one a professor of engineering and one a graduate student of the Institute.

Ten men enrolled in Soil Mechanics offered for the third time by the Civil Engineering Department. The occupational distribution shows that four were from the Army Engineer Corps, one from the State Highway Department, one was a professor from another school and four were graduate students.

For the fifth successive year the School of Architecture offered a three-week program in City and Regional Planning, Technique of Planning, Planning Legislation, and Planning Administration. These Courses were designed primarily to meet the needs of those actively engaged in some phase of planning work or in related professional fields. It brought together 13 participants from six states and the planning agencies represented were the New York Planning Association, the Tennessee State Planning Commission, and the Division of City Planning and Zoning, Rochester, New York.

A program in Industrial Statistics given jointly by the Departments of Mathematics and Economics and Social Science had an enrollment of 15.

The registration at the Summer Surveying Camp was less than last year with an enrollment of 30. Of this number, 23 were regular Institute students; two came from Reed College, three from Newark Engineering College, one from Amherst and one from the University of Virginia.

In addition to the regular and special Summer Session Program, nine courses with an enrollment of 352 were offered under the Defense Training Program.

R. D. DOUGLASS.

THE LIBRARIAN

In common with the experience of many college and university libraries our total one- and two-week circulation showed a decrease over the preceding year, amounting to about

nine per cent, notwithstanding increases occurred in the Aeronautics branch and Walker Memorial Library. Among probable reasons for the drop are certain changes in teaching methods involving more use of books within the libraries instead of at home, the non-arrival of many foreign periodicals and books, and the psychological effect of the war, especially the expectation of being drafted, on students. This last reason has also been cited as the principal cause in other educational institutions.

A comparison with last year's figures may be useful for the sake of the record:

	1939–40		*1940–41*	
	One- and two weeks	*Overnight*	*One- and two weeks*	*Overnight*
Central Library	46,986	16,381	37,690	13,561
Branch Libraries				
Science and Engineering Group	34,105	17,775	32,656	18,114
Walker Memorial Library	20,026	None	21,228	4,610
Total	101,117	34,156	91,574	36,285

The total home use was therefore 127,859 volumes as against 135,273 last year.

Books borrowed for one- or two-weeks' use from the Central Library and the science and engineering branches were taken by the following groups of readers: Instructing Staff 26 per cent, graduate students 21 per cent, undergraduates 40 per cent, alumni 4.6 per cent, Institute employees 2.6 per cent, the public 1 per cent, and other libraries 1.3 per cent. Seven hundred and fifty alumni were registered as users of the Library (Central Library 527; branches 223).

The greatest home use of Central Library books was in the following subjects: Electrical Engineering 3,997 volumes, Physics 2,536, Chemical Engineering 2,390, Biology and Public Health 2,189, Chemistry 2,094, M.I.T. theses 805, current periodicals 6,922.

During the year 3,021 volumes were added to the Central Library and 4,953 to the branches, a total of 7,974; this brought

the estimated total contents of the Library to 356,077 volumes.

Out of the Library Growth Fund a sub-committee of the Library Committee has granted 16 appropriations, totalling $2,368.50; these provided modest additions to our collections in such fields as biological engineering, ceramics, standards, textiles, mechanical engineering, maps, naval architecture, and automotive engineering. The last-named collection was for the Sloan Automotive Laboratories, to be administered as a deposit from the Aeronautics Library. On June 30, 1941 the unappropriated balance of this fund stood at $6,556.73.

There has been no decrease in the demand for reference service. The Reference Department at Central reports 3,364 telephone calls (the highest in one day, 34) and 2,343 letters or cards answered. On interlibrary loan 1,199 volumes were lent to industrial firms and 495 to other libraries; a total of 1,694 volumes. Volumes borrowed from other libraries, 397 — an increase of 50 per cent over last year. Photostats ordered for our own readers 25; for outside firms or individuals 97; a total of 122. Microfilms obtained, 54.

In the Institute's defense program the Library has assisted by the provision of extra books for defense courses, by special service to the men engaged on defense research, and by service to firms engaged on defense work and government navy yards, arsenals and bureaus.

A second exhibition of microfilm cameras and projectors was held in the Central Library reading-room November 19 to 22, 1940. Mr. Mills, Vail Assistant, arranged the exhibition, to which various manufacturers gladly sent apparatus. The display, which was larger than that of the previous year, and received much favorable comment from visitors, was seen by approximately 1,000 persons.

Five exhibits were shown in connection with the Friends of the Library tea on March 2: Milestones in Science, an Engineer's Library a Century Ago (from the Loammi Baldwin collection), and Electricity and Magnetism: early books from the Vail Library; also exhibits by the Eastman and Lindgren libraries mentioned later. Other Vail exhibits were: William Gilbert and Some of his Contemporaries, An Electrical Engineering Textbook in the Making, and Electricity in Medicine,

Yesterday and To-day (for Alumni Day, 1941). Kenneth Roberts's *Arundel* material was again shown for the benefit of the Freshman English course.

In the Cataloguing Department, to whose normal routine was added the responsibility for the transfer of 1,500 volumes from the Central Library to Walker, the amount of staff time lent to other departments of the Library increased 33 per cent, reaching the equivalent of over 44 weeks' time of a full-time assistant. Because of the lack of sufficient N.Y.A. help, two experienced cataloguers had to spend nearly six weeks filing cards. There is increasing difficulty in obtaining enough student assistants, both regular and N.Y.A., because students more and more prefer to obtain employment in their own laboratories.

The Executive Board of the Library Committee, consisting this year of Professor Allis, Chairman, and Professors Huntress, Lessells, Roberts, Jennison, and Barrow, and the Librarian ex officio, held nine meetings. The Board recommended the transfer of 2,000 more books from Central to Walker for the use of the Department of English and History. Also, after careful consideration, the Board recommended participation in the recently incorporated New England Deposit Library, a coöperative plan of Greater Boston libraries for the storage of their least-used books. Following the proposal of President Eliot of Harvard a generation ago, and under the leadership of Keyes D. Metcalf, Director of Libraries at Harvard, a storage library building in which space will be available to any library at moderate rental is now in process of erection. The Institute was represented by the Librarian both as an incorporator and as a director on its first governing board.

The Staff Association held seven meetings. Professor Allis and Professor Fassett were the principal speakers. A careful survey was made by the staff of needs to be met in a new library building whenever one shall become possible, and a detailed outline of requirements was prepared. Encouragement was received from the sympathetic attitude of the Friends of the Library under the chairmanship of Raymond Stevens, '17. At the suggestion of the Friends, Professor Lawrence B. Anderson of the School of Architecture assigned the problem of a

new library building to W. E. Haible, a graduate student, for his Master's thesis.

An account of the library building project, originally suggested by Dr. Shapley, chairman of the Visiting Committee, is given in *Footnotes*, no. 3, Summer 1941, the bulletin of the Friends of the Library. At the suggestion of President Compton it was thoroughly discussed on May 15 at a luncheon attended by officers of the Institute and by representatives of the Friends and the Visiting Committee, and possible sites for a new building were indicated.

Another contribution by the Friends towards increasing public interest in the Library was a very successful tea given in the new Rogers building on the afternoon of Sunday, March 2, which also is described in the issue of *Footnotes* referred to.

The new office for the Vail Library staff has proved of even greater value than expected. The Student Advisory Committee proved itself valuable; three meetings were held and the committee will meet monthly during 1941–42. A file of vocational data on companies in the electrical field has been assembled and its use is required of VI-A sophomores before selecting "works" options. A selective collection of trade catalogs now being built up covers 85 electrical companies.

During the summer of 1940 the Aeronautics Library was enlarged, at Department expense, by the addition of one bay. This improvement gave added space for book shelves, another readers' table and other equipment, and doubtless contributed to the increase in the use of this branch.

The Arthur Rotch Architectural Library developed its work for the City Planning option and acquired another assistant to have charge of it.

An important contribution to the resources of the Dewey Library was the preparation by Miss Klingenhagen, largely on her own time, of a 167-page *Subject and Author List of Theses in Course XV and Economics*, covering 1917–1940. Mr. McNay prepared bibliographies and monthly lists of new books on subjects connected with national defense which were sent to members of the Instructing Staff, and gave three talks on the use of the library.

The Eastman Library registered 1,513 users, including

members of every department of the Institute (especially Chemical Engineering and Electrical Engineering), 126 alumni, and 45 persons from 19 other colleges. A valuable gift to this branch was the Starch Bibliography of over 4,000 cards, prepared and donated by the Corn Industries Research Foundation, and to be kept up by the donor. A Student's Microfilm Reader was received from the *Mathematical Reviews* project, and a number of tables needed in various computing projects were obtained on film from journals or manuscripts. At the time of the Friends of the Library tea in March an exhibit of material on spectroscopy, based largely on the Kayser Collection, was prepared and displayed in the library.

At the Lindgren Library there was a large increase in the circulation of overnight books, due to added courses given by the departments served and larger enrollment. An increasing number of men from other departments are making use of this branch, especially from Courses II and XV, and defense research workers from various departments. In March an exhibit, "The Potter's Art," was prepared for the Friends of the Library tea, and ceramic pieces lent by Professor F. H. Norton were shown with the corresponding books. The shelves of this branch are now so crowded that it is already necessary to begin weeding out and to return less-used material to the Central Library.

Walker Memorial Library was removed, during the summer of 1940, to the west side of the building, thus obtaining space for 9,000 additional books by the use of the former faculty dining-room. This room has been equipped with attractive shelving and furniture and stocked with the books in English literature and history belonging to the branch, augmented by over 1,500 volumes transferred from the open shelf collection in the Central Library. More are to be transferred in the coming year. The building up of a well-rounded collection in English and history has been undertaken by members of the English and History Department, especially Professor Roberts, with the active coöperation of the Walker Librarian, Mrs. Flint. Because the department plans to make extensive use of this room in connection with its teaching, it was necessary to add a permanent assistant to the Walker staff for this work.

The changed location of Walker Library also made possible better arrangements for its primary service as a recreational library. All phonograph records are now kept near the librarian's desk, and all Glee Club music has been properly catalogued and filed in the library for orderly loan to the club as needed.

This year saw the publication of the Library handbook, *How to Use the Institute Library*, after several years' preparation and revision by members of the staff under the supervision of Miss Hazen. This booklet, intended to aid students towards intelligent use of the libraries, was first used in connection with the talks to Freshmen delivered by members of the Library staff at the beginning of the fall term. It seems to have been found helpful by students and has been commended by other librarians. The eleventh annual reading-list, also prepared by Miss Hazen, was entitled "Science and Engineering in Medicine." It appeared in the *Technology Review* for July, but preprints were distributed to alumni on Alumni Day.

At the time of the American Library Association meeting in Boston in June, the Librarian and several members of the staff served on the local committee of arrangements. At the invitation of the Library staff, a meeting of Engineering Librarians was held at the Institute on June 24, the first meeting anywhere of such a group, so far as known. Eighty-four persons were present, representing 56 libraries. The principal discussion centered about proposals to form a section of engineering librarians within either the Association of College and Reference Libraries or the S.P.E.E., or both. The Librarian was made chairman of a committee to survey the situation and report a plan at a later date.

Staff members serving officially in professional organizations were: Miss Stiles as president of the Boston chapter of Special Libraries Association and Miss Randi Christophersen on its membership committee; Mrs. Lane on the American Standards Association committee on library standards; and the Librarian on the Committee on National Defense Services of the Association of College and Reference Libraries.

Among books and papers presented to the Library one was of special interest: "Dr. Clement Walker Andrews, 1858–1930," a biographical sketch of the Institute's first active

Librarian by his successor at John Crerar Library, Dr. J. Christian Bay. Professors Huntress, Jack, Prescott, Dunn, and Sears presented copies of their newly published books, as did many alumni; unfortunately space limitations prevent making acknowledgment to all.

The outstanding gift of the year in point of size consisted of 925 volumes and many pamphlets from the library of the late Professor James F. Norris, presented by Mrs. Norris. From the library of Stephen P. Brown, '00, came 145 volumes of general literature and periodicals presented by Mr. Orman Brown. The Raytheon Manufacturing Company turned over to us 21 cartons of electrical engineering periodicals. To the libraries of the Harvard Business School, of Littauer Center at Harvard, and of Boston University we are indebted for welcome gifts.

The past decade has witnessed a remarkable development of the branch libraries in organization and service. For an institution like Technology our type of decentralization of collections under centralized administration seems at present to give the best results. Nevertheless this development should not be allowed to obscure the importance to the Institute of a strong Central Library collection and service, supplementing and reinforcing the work of the branches — a reservoir of material overlapping the interests of many departments and meeting the immediate general reference needs of a large and active portion of our clientele. With such material the Central Library should always be equipped, prepared to give prompt service to any reader, without the necessity of sending him on a weary journey to another library except for the highly specialized material which it is the province of the branch libraries to supply. A different view of the place of the Central Library is held by some, but the opinion here expressed is based not only upon widespread university and college library practice but upon the experience of the Librarian and staff in meeting the daily needs of all classes of readers over a long period of time.

W. N. SEAVER.

Director of Division of Industrial Coöperation

The Division of Industrial Coöperation has been nearly exclusively occupied with defense since the fall of 1940. This phase of the work is covered in President Compton's report.

At the present time 45 projects are immediately tied in with defense and 10 are long-range projects contributing to scientific knowledge but probably of no immediate defense significance. During the year six non-defense and 20 defense contracts were completed. Several of the non-defense projects are particularly interesting because the expectancy is that they will be carried on for a considerable period of time.

The Placement Bureau

Alumni Placement. Demands for trained men have outrun the supply. This demand is largely from Industry, Army, Navy, and Civil Service, and the field of activity is focussed on defense. During the year over 1,000 individual requests for men were received and these differed from requests in former years because the number of men per request was enormously elevated. Instances are: one demand for 200 trained men; also numerous standing open orders to direct qualified individuals to a company's attention.

Nearly all of the men on the active list are employed and only available for better openings. The condition imposed that these openings be in situations unlikely to be affected by cessation of preparedness activity restricts our usefulness.

Placements were the greatest in the history of the department. Two-thirds of the alumni placed were graduates of the last ten years. The remaining one-third were from classes ranging from 1915 to 1930.

Undergraduate Placement. The 1940–41 recruiting season was the most successful ever enjoyed by a graduating class. Had the men been available a class twice the size could have been placed without affecting the percentages. Demands for engineers and scientists have been enormously increased by the defense production emergency, and it is highly probable that the public service rendered by them in the cause of freedom will be publicly recognized, thereby increasing the prestige of engineering and scientific education.

During the recruiting period policies governing the dividing up of trained men between defense and peace-time industry on the one hand and the Army and the Navy on the other were in the process of evolution.

The Institute wishes to maintain an open market for employment and to handle the interview season in such manner as to create a minimum of interference with scholastic activities. With this in mind and after much consideration, the policy of restricting interviews for bachelor's degree candidates until after the Christmas vacation was adopted. This worked well and will be continued.

No attempt has been made to secure a geographical distribution of the graduating class because of the abnormal situation created by defense and large numbers of men going into the Army and Navy.

A placement survey taken June 7, 1941 of men receiving June degrees gave the following results:

	Individuals	*Placed*	*Per Cent Placed* 1941	1940	1939	*To Date*
Bachelors	443	414	93.9	70.7	56.8	97.4
Masters	191	185	96.8	88.8	81.5	(overall)
Doctors	48	46	95.8	70.8	85.7	
	682	645	94.5	76.0	65.2	

Employment of men by fields follows:

		No. of Men
1.	Petroleum and Chemical Industry	96
2.	United States Navy	80
3.	United States Army	66
4.	Teaching and Research	52
5.	Further Study	49
6.	Aeronautical	47
7.	Machinery, Tools, and Instruments	37
8.	Federal, State, and Subdivisions	30
9.	Electrical Equipment	25
10.	Utilities	24
11.	Shipbuilding	21
	Steel All	21
12.	Non Ferrous Metallurgy	9

		No. of Men
13.	Plastics	8
	Business Services	8
14.	Guns, Ammunitions, Explosives	7
15.	Glass	6
16.	Fourteen Other Fields	36
17.	Foreign Students	34
18.	Unemployed	26
	Total	682

The most significant change in employment is that 168 men in the 1941 Class went with the Army, Navy, or Federal Government, compared to 69 men in 1940. One hundred and ninety-one employers hired 563 men. Last year 218 employers hired 527 men.

	No. of Men	
United States Navy	80	
United States Army	66	
M. I. T. (Research and Teaching)	45	
1 company	26	
1 company	17	
1 company	15	
1 company	11	
1 company	9	
1 company	8	
United States Government	7	
1 company	7	
1 company	6	
4 companies	5	men each
8 companies	4	men each
12 companies	3	men each
33 companies	2	men each
122 companies	1	man each
Total	563	

Several departments have had a long-term policy of helping undergraduates get summer work in industry. This effort in previous years was handicapped by the refusal of some unions to permit any employment unless it conformed to seniority rules. Increase in business activity and a broadening in the point of view of industrial relationships made this past summer

an ideal time for undergraduates to get industrial experience. A vigorous drive was made during the Spring Term to place undergraduates and results were highly successful.

NATHANIEL MCL. SAGE.

DIRECTOR OF ALBERT FARWELL BEMIS FOUNDATION

In August 1940 the Director was called to Washington to act two-thirds of full time as Executive Officer of the Committee on Passive Protection Against Bombing and as Chairman of Section B of Division A of the National Defense Research Committee. These duties have continued ever since. Though this was made possible through the generosity of the Institute and of the Foundation, it has nonetheless resulted in reimbursement to the Foundation for a portion of salary and thus permitted the employment of several more research assistants than usual. With the augmented staff it has been possible to bring to a termination the following studies:

1. A study, principally by Mr. Krause, of the window as an agent for admitting useful heat energy to the dwelling. This is in process of redaction and will presumably be published in the fall.

2. A study, principally by Mr. Greenberg, of the window as an agent for illumination. This study is now being written up and will presumably be published before the end of the calendar year.

3. A preliminary study of the problem of mobile hospitals, made by Mr. Wasson-Tucker for the Disaster Division of the American Red Cross and turned over to that organization for further action.

4. Studies by Mr. Wasson-Tucker on Finnish reconstruction, as started by Alvar Aalto, which were carried as far as practicably possible and are now in abeyance in view of the changed international situation.

5. Preliminary studies of some current Chinese shelter problems, carried on by Mr. Ieoh Ming Pei with advice from official Chinese sources.

6. Studies of a proposed restatement of the findings of certain field studies made by the Committee on Hygiene of

Housing of the American Public Health Association with a view to publication with the assistance of the Foundation. It has subsequently seemed best that this publication be undertaken by other sponsorship.

* * * * *

The Foundation has made a grant of $1,000 from its capital funds to support the work of the Modular Service Association during the coming year.

The Director has as usual served as executive for the Graduate Housing Seminar; he has in addition conducted a special housing colloquium for three specially qualified graduate students and a number of sessions on Housing in Professor Schell's Contemporary Problems Seminar.

The staff of the Foundation has from time to time contributed technical assistance to the work of the Committee on Passive Protection Against Bombing, principally by making drawings and charts for sundry reports.

In addition to usual contacts, the Director has this year served as member of the Business Advisory Committee of the Cambridge Housing Authority and as member of the Committee on Conservation of Cultural Resources of the National Resources Planning Board; has given addresses at Black Mountain College and at Princeton University; and has served as co-editor with Professor Fassett of a collaborative survey of the building history of the past fifty years prepared by a panel of Institute staff members and published in the Architectural Record for January and February, 1941.

As of the date of this report, every non-foreign male member of our staff has taken up work directly in defense industry, in defense research, or in the armed forces of the United States, none through the agency of the draft. The two foreign members will also be otherwise engaged next year. The Director's time, it appears, will be required in greater amount in Washington.

This suggests a principal question of policy which has been discussed with the Administration and with the members of our Advisory Committee. The conclusion reached is neither to stop the activities of the Foundation altogether nor to attempt to

operate at full capacity with the sort of staff which might be assembled from young men unfit to serve in the Army and Navy, in defense research, or with defense industry. Under existing conditions, a skeleton staff will be maintained so that if there should arise a defense problem which might come within our scope we shall be able to deal with it, so that some continuum of work can be arranged, and so that it will be possible to develop rapidly again once the times are more propitious for the study of problems to which we are dedicated. As a result of this policy some income will be added to principal to make these studies more effective when the time comes. The Director will continue to come to Cambridge to take part in the teaching programs of the School of Architecture.

JOHN E. BURCHARD.

SECRETARY OF THE SOCIETY OF ARTS

During eighteen of the twenty-four years which have passed since President Maclaurin instituted the Popular Science Lectures as the chief activity of the Society of Arts, Dean Harry M. Goodwin served as the enthusiastic secretary of the Society. Since his retirement in 1940, his policy of choosing subjects related to researches in progress at the Institute has been maintained. In this way high school students and their teachers, as well as many other residents of Cambridge and metropolitan Boston in general, continue to have an opportunity of learning, at first hand, about new developments in science and engineering. As in past years, many people remained in the hall after each lecture to view more closely the exhibits and to ask questions of the speaker.

The program of the lectures, delivered in 1940 to 1941, follows:

Friday, December 13; Saturday, December 14; Sunday, December 15
The Sun as a Competitor of Fuels by Hoyt C. Hottel, S.M., Associate Professor of Fuel Engineering.

In his lecture, Professor Hottel gave a clear presentation of the various ingenious means of utilizing the heat from the sun. Special attention was given to an exposition of the M.I.T. Solar

Energy Research Program, financed from the income of the fund, given by Dr. Godfrey L. Cabot of the Corporation and directed by Professor Hottel.

Friday, January 10; Saturday, January 11; Sunday, January 12
Color Photography by Arthur C. Hardy, Sc.D., Professor of Optics and Photography.

Beginning with a demonstration of the decomposition of white light as devised by Newton in 1666, the lecturer traced the development of color photography from Maxwell's original method, first stated in 1855, through the use of color-separation negatives, various additive screen-plate processes, and the subtractive methods as worked out in the technicolor, wash-off relief, and kodachrome processes. He ended his talk with the presentation of color photography in three dimensions as accomplished by means of polarized light and by showing a three-color vectograph. The lecture gained in conviction by printing, on the back of the program, Clerk Maxwell's statement of three-color reproduction as it appeared in the "Transactions of the Royal Society of Edinburgh in 1855."

Friday, February 14; Saturday, February 15; Sunday, February 16
Water and Water-Power Development by George E. Russell, S.B., Professor of Hydraulics.

The Society of Arts was very fortunate in winning the consent of Professor Russell to present, for public view, the apparatus which he has designed so beautifully to demonstrate a jet from a sharp-edged orifice, forced vortex, pipe flow, free vortex overflow dams and hydraulic jump. The lecture was closed by showing many fine slides of turbines, of Boulder Dam and of the possibilities in tidal power.

Friday, March 14; *The Art of Bitten Line Etching.*
Saturday, March 15; *The Art of Drypoint.*
Sunday, March 16; *The Art of Soft-Ground Etching* by Samuel Chamberlain, Lecturer on Expressions of Graphic Art.

Departing from the usual custom, Mr. Chamberlain gave three different lectures, demonstrating each by carrying out all of the steps necessary to produce an etching of the type chosen for the day. Everyone present at these lectures will remember

how Mr. Chamberlain made the point that prints are works of art intended to exist in multiple quantities, how he took the audience into his confidence at every step in the processes, and how his talk was illustrated further, by an exhibition of many beautiful etchings.

AVERY A. ASHDOWN.

CHAIRMAN OF COMMITTEE ON THE MUSEUM

The outstanding collection of whaling prints assembled by Allan Forbes, Esq., of Boston was presented to the Francis Russell Hart Nautical Museum last winter by Allan Forbes, Jr., with a few additional pictures contributed by Mr. Forbes, Sr., and by the State Street Trust Company. The gift, added to the large collection of the late Captain Arthur H. Clark and to our other smaller collections, makes the Institute an important repository of marine prints. Interest in the once vital New England whaling industry has been cultivated by the loan exhibit of Mr. Kendall's collection at the Nautical Museum; and, by happy circumstance, the late Mr. Hart, the chief organizer of the museum, was a friend of Mr. Forbes, Sr., and himself a collector of whaling prints and a contributor to the literature on whaling.

The Forbes collection is particularly valuable in aiding our program of making the Institute corridors attractive, and already various unified groups of the pictures have been hung.

The Dard Hunter Paper Museum has increased its scope by exhibits pertaining to the various techniques of book-illustration; the exhibit of etching in this group includes the tools and the earliest work of the late George C. Wales of Boston. Mr. Hunter acquired recently for the museum the complete collection of manuscript documents and letters (1800–1804) pertaining to the work of Matthias Koops in making paper out of wood, an invention on which the modern paper industry rests. Also this year Mr. Dard Hunter, Jr., completed his three-year task of making a font of type using the methods of the fifteenth century.

The Committee is grateful to all members of the Staff who have coöperated in arranging new corridor exhibits during the year. Space does not permit our enumerating all, but men-

tion should be made of the exhibits showing the Institute's own work, such as Professor Morton's exhibit of the fractionation of a single drop, and Professor F. H. Norton's exhibit of the application of his new terra cotta to art. Exhibits from outside the Institute included a large historical show from the Eastman Kodak Company, a display used by the Aluminum Company of America at the World's Fair, and an exhibit from the American Institute of Graphic Arts.

The First National Bank of Boston has coöperated in furnishing interesting temporary exhibits for the new cases provided for the Departments of Economics and Social Science and of Business and Engineering Administration.

We have received many gifts: a fine old model of a marine engine from Mrs. William H. Tripp and Mrs. Leonard Kleeb, Jr., an odontograph from Mr. Fred H. Behn, a Maxim silencer, property of the late Professor Dana P. Bartlett, from Mr. H. B. Richmond and miscellaneous articles from Mrs. James F. Norris. The Textile Laboratory has received from Mr. George Hewitt Myers of the Textile Museum in Washington some ancient textiles which it is hoped will be the nucleus of a complete comparative collection of such material. The Hobby Shop has been presented with book-binding equipment by Mr. Dard Hunter and with a good supply of type by Mr. A. N. Murray.

The Committee has extended its activities to arranging exhibits for special occasions, such as the Boston Book Fair last fall, and functions here at the Institute.

The Committee published a pamphlet on the Forbes collection prepared by the Chairman. Mr. Dard Hunter, Jr. prepared and printed a brochure on his fifteenth century type.

A. C. WATSON.

MEDICAL DIRECTOR

During the year the name of this Department has been formally changed from the Department of Hygiene to the Medical Department and as such includes the various health services and activities of the Institute. A number of outstanding developments, with a statistical increase in our work exceeding previous years, represents an appreciable accomplishment and expansion during this past year.

There were a total of 21,470 outpatient visits (to the Clinic: Surgical 10,600, Medical 6,643, R.O.T.C. checkups 189, students excused 2,785. To the Infirmary: 1,255). In addition 3,019 physical examinations were completed including students, staff, employees, R.O.T.C. and other special groups — an increase of 208.

Students found to have defects numbered 780 — an increase of 106. The value of vigorous hygienic and corrective followup work was evidenced by the high percentage of R.O.T.C. students who have been accepted for advanced courses or commissions. Thirty-one different types of defects were revealed.

X-ray examinations numbered 1,282, there being 996 chest plates on new students, and 286 miscellaneous. There were three active cases of tuberculosis discovered and treated, with arrest of the infections obtained.

The average height of the student body was 68 inches and the weight 151 pounds.

In the Infirmary 557 bed patients were cared for, 133 more than last year, for a total of 2,159 days, an increase of 337. In this connection, the most widespread influenza epidemic in our recent history occurred during December and January. By using all possible space in the Infirmary Building including the newly renovated emergency ward, and the solarium, we increased the bed capacity from 14 to 29, and were then forced to set up further space by the loan of the Architecture Lounge Study through the kindness of Dean MacCornack, which gave us a maximum of 46 beds, thus accommodating the overflow. The need for space, in addition to the eight-bed Emergency Ward, that could be made available at such times was demonstrated.

Three hundred twenty-six patients were referred to members of the consulting staff, principally for eye, nose and throat conditions and forty-six were referred to outside hospitals, chiefly for major surgery. There were also fourteen cases of contagious disease, no marked severity or complications being noted.

The number of visits for all purposes totaled 26,342.

Through the generosity of the Charles Hayden Foundation the necessary funds for a complete Dental Clinic have been provided. We express deep appreciation for the realization of this much needed and long desired addition to the Department and to the Health Services of the Institute. The most modern equipment has been installed and the personnel selected with Dr. J. J. Gibbons, 375 Commonwealth Avenue, Boston, in charge, Dr. Robert M. Bailey as Dental Assistant and Miss Edna Bradbury as Dental Hygienist. The Clinic will be in full operation at the beginning of this school year and will provide a complete dental examination of all new students, with dental x-rays when necessary, and also carry out dental hygiene, diagnosis and advice with emergency and certain other special treatment, without charge, and prophylactic work for a nominal fee.

An improved emergency service has been inaugurated this year. In addition to the usual full twenty-four hour coverage by staff physicians and nurses, ambulances and pulmotor are now available for any emergency call twenty-four hours a day. Special cards with specific information for procedure in emergencies have been widely distributed throughout the Institute. Classes for artificial respiration and emergency treatment have been given to certain groups of students in Electrical Engineering.

The clinical hours have been increased this year with clinic service now operating from 8.30 a.m. to 5 p.m., the physicians having been on duty continuously in rotation. This has been a great improvement and eliminated undesirable delay in treatment and handling of patients.

The long-felt need for a Psychiatric Service adequately to care for the psychiatric and mental hygiene needs of the student body was met this summer with the appointment of Dr. John M. Murray as Staff Psychiatrist. With the beginning of the 1941 fall term he opened a clinic for two periods of two hours each a week.

I believe the steady, aggressive expansion of the Medical Department is keeping the Institute well abreast of the growth in university health services in the country as a whole. It is to be emphasized that with this expansion of services rendered

and added, no increase in space has been made. A seriously crowded condition now exists in the Infirmary Building and additional room for our own use is urgently recommended.

Dr. John W. Chamberlain, Assistant Medical Director, was called to service with the United States Navy in December, 1940, and Dr. Harland F. Lancaster was appointed to serve as Acting Assistant Medical Director.

GEORGE W. MORSE, M.D.

DIRECTOR OF NEWS SERVICE

Preparations for national defense reported in the press during the past year have directed public attention as never before to the innumerable applications of science and the importance of research. Obviously much that was written presented the broader aspects of the relationship between technical advancement and national defense, and there was less discussion of individual achievements in technology than heretofore. This was due not only to the great increase in space devoted by the daily press and the journals to international news, but to limitations on discussion of certain types of defense research.

Although the News Service of the Institute issued 1,715 news announcements during the past year, an increase over the previous year, there was a decrease in reports on technical developments because of concentration of attention on defense projects. Much of the news was of an educational nature, including the achievements of students, announcements of changes in the curriculum, and the important contributions of the Institute in the service of the public, both by its departments and individual members of the staff engaged on projects for the state and national governments. In addition, there were a large number of magazine and special news articles in which members of the staff coöperated in supplying valuable material. South American publications continued to show increasing interest in Institute news, and despite limitations on the size of British journals, a considerable amount of Technology news appeared in the larger English newspapers.

During the year there appeared in approximately 2,000 newspapers and journals more than 6,000 articles on the activi-

ties of the Institute, its faculty and students. The News Service continued to give special attention to news of student activities and scholastic achievement for home town papers.

The technical films distributed under supervision of the News Service were shown to approximately 10,000 students and engineers in colleges, high schools and engineering organizations.

In the Institute Gazette section of *The Technology Review* nearly 50,000 words of Institute news was presented to Technology Alumni.

JOHN J. ROWLANDS.

SPECIAL TRAINING PROGRAMS FOR NATIONAL DEFENSE

The First Supplemental Functions Appropriation, October 1941, provided $9,000,000 for the cost of short Engineering Courses of College grade designed to provide trained men to meet the shortage of engineers with specialized training in fields essential to the national defense. The responsibility for the administration of the act rests with the United States Commissioner of Education. By "the cost" is meant the amount that the Institution spends in providing the course over and above the expenditure involved in maintaining the rest of the Institution's program. This cost includes such items as salaries, necessary travel, instructional material and supplies which are expected to be used in the Course, including reference books, maintenance and repair of equipment necessitated by the defense training course and a maximum of twenty per centum of the allotment to an institution for the purchase or rental of equipment or the leasing of space for carrying out its approved plan.

The United States is divided into 22 districts and each district is represented by an adviser. Dean Moreland is the adviser for the Northern New England area. At M.I.T., Dr. Compton appointed a Committee to represent the Institute for the purpose of formulating programs which would be of the most service to the Government and Industry. The membership of the Committee is as follows: R. M. Kimball, Assistant Director of Admissions, J. C. MacKinnon, Registrar, F. L. Foster, Assistant to the Director, Division of Industrial

Coöperation, Professor A. L. Townsend, Secretary and Professor R. D. Douglass, Chairman.

This Committee is responsible for the proposal of suitable courses designed to meet the needs for training, the selection of teaching and supervisory personnel, recruiting and selection of trainees, expenditure of funds, keeping of records and accounts and all other matters pertaining to the conduct of the training courses in the Institute. An office, known as the Engineering Defense Bureau, was opened at the Institute and properly staffed and equipped. The publicity for all of the Engineering schools in the Boston area is handled in this office.

The requirements for admission to these courses were high, in general requiring an engineering degree. However, two programs were designed for Arts and Science College graduates and one for High School graduates.

The applicants may be classified as follows: (1) Men desiring a refresher course in their own field; (2) Men desiring work in a closely allied field; (3) Men desiring work in a new field; (4) Men having no previous engineering training.

The first Course began on February 3, and up to the end of summer 27 Courses have been offered: Full time Courses 13, Part time Courses 2, Evening Courses 12.

The titles of the Courses offered together with the number enrolled are as follows:

Aeronautical Engineering (full time)	28
Aeronautical Engineering (full time) summer	40
Aeronautical Engineering (part time)	36
Aircraft Engines (full time)	15
Aircraft Engines (full time) summer	38
Engineering Fundamentals (full time)	21
Marine Engineering (full time)	23
Naval Architecture (full time)	35
Naval Architecture (full time) summer	51
Materials of Engineering (full time) summer	32
Introduction to Engineering Drawing (full time) summer	60
Ultrahigh Frequency (full time) summer	59
Meteorology (full time) summer	12
Textiles (part time) two courses	40
Chemistry of Powder and Explosives (evenings and Saturdays) two courses	81
Ordnance Inspection (evenings) five courses	155

Application of Metallography (evening)	25
Applied Mathematics (evening)	40
Exterior Ballistics (evening)	39
Instrumentation and Vibration Measurement (evening)	15
Vibrations and their application	42
Naval Architecture (Quincy, evening)	42
	929

The total number of men who will have been trained at M.I.T. up to September 29 is 929. Of this number 314 are Army or Navy Officers and 213 are under Civil Service.

Three Courses in Aeronautical Engineering, two in Aircraft Engines and one in Naval Architecture were for Naval Officers who were detailed here for special instruction. One Course in Naval Architecture and one in Marine Engineering was requested by the Civil Service Commission. Ultrahigh Frequency was requested by the Army and Navy, and the Courses in Ordnance Inspection was in coöperation with the Watertown Arsenal. A night Course in Naval Architecture was offered at Quincy for the convenience of properly qualified men at the Bethlehem Steel Company. The six weeks course in Meteorology was requested by the Commanding Officer at Camp Edwards.

With few exceptions all of the instruction in this program was carried by members of our own staff in addition to their regular working load. Ninety-four instructors participated in this program of which 81 were from our staff. The total cost of this program at the Institute is approximately $95,000.

A new appropriation of $17,500,000 has been made to provide short courses of college grade because of the shortage of Engineers, Chemists, Physicists, and Production Supervisors in fields essential to the national defense. This new program is known as the Engineering, Science, and Management Defense Training Program. All courses which started later than June 23 come under this heading.

We have a request from the Navy to offer a third Course in Aircraft Engines to train 45 Naval Officers, also a request from the Civil Service Commission to train 70 men in Naval Architecture. We shall continue to enroll men detailed by the Army and Navy for work in Ultrahigh Frequency. In addi-

tion to the above, we are now considering applications for sixteen other courses to begin early in October.

This program is projected into next summer when the Navy plans to detail other groups here for special work in Aircraft Engines and Naval Architecture.

R. D. DOUGLASS.

SCHOOL OF ENGINEERING

AERONAUTICAL ENGINEERING

Expansion. The alterations to the Guggenheim Laboratory and the addition to the Sloan Automotive Laboratory have permitted a substantial expansion of the work of this Department, while at the same time setting off the entire fourth floor for Meteorology which has been made a separate Department.

Four new laboratories were established as follows: General Vibration (Professor Draper); Aircraft Structures (Professor Newell); General Instrumentation (Professor Draper); Wing Flutter Research (Professor Rauscher).

The undergraduate enrollment was increased in October 1940 by selecting 40 instead of 30 for the sophomore class. In June 1941, in view of the need for aeronautical engineers, the selection from the class of 1944 was raised to 50. This number is about the limit for the facilities and staff available, and some difficulties in arrangements for required summer school and senior laboratory work are expected.

In addition to their regular duties, members of the Department staff gave four special intensive courses in aeronautical engineering to engineering graduates enrolled in the Naval Reserve. Also, a series of "Civilian Pilot Training Programs" was carried out for the government, involving 180 trainees.

Aerodynamics. Research on the mechanics of the frictional boundary layer has continued with support from the National Advisory Committee for Aeronautics and, for the coming year, several additional research projects have been contracted for.

The alterations to the Guggenheim Building involved scrapping the seven-and-one-half-foot wind tunnel, a useful apparatus for student instruction and thesis work, but now

obsolete. It has been replaced by a new tunnel of modern design which has been employed on research projects for the Government. The five-foot tunnel, however, was held available for student's use.

The Wright Brothers Wind Tunnel was engaged on a program of aerodynamic analysis and testing for the airplane industry. A special staff of fourteen has been employed to work in two eight-hour shifts. A third shift occasionally becomes necessary.

A form of electric strain gage has been applied to measure hinge moments on control surfaces while the regular aerodynamic balance measured simultaneously all forces and moments on the model as a whole. This appears to constitute an important advance in wind tunnel technique and has reduced to a matter of hours work that formerly required several days to complete.

Instrumentation. The staff handling instrumentation has been increased by one assistant professor and two assistants, but in spite of this the teaching load has increased. Compared with the previous year, enrollment in the introductory course in instrumentation and in the vibration course has doubled, while enrollment has increased four-fold in meteorological instruments. Two special courses in instrumentation were given for officers of the Army and Navy.

Structures. The aircraft-structures laboratory has made stress surveys on a D-spar wing with particular reference to shear lag in stressed skin construction. The data from these experiments have been analyzed by Dr. Reissner of the Mathematics Department in accordance with a theory which may have important applications. The work will be continued with support from the N.A.C.A. Further structural investigations have been made of plastics as possible substitutes for metal in airplane construction.

Instruction. No changes of significance were made in the curriculum during the past year. The first five Honors Group students were graduated this year. In spite of the demand for our regular graduates, we shall have next year two fifth-year and three fourth-year students taking the Honors Course.

J. C. HUNSAKER.

Meteorology

Significant progress can be recorded during the year in all phases of meteorological activity. The national defense program and the expansion of the United States Weather Bureau have called for considerable expansion both with regard to training and research.

The enrollment, which in the year 1939–40 was 30 students, increased to 98 students in the year 1940–41. To accelerate the training of meteorologists for defense, the regular meteorology courses commenced on July 1, 1941, and will terminate on February 7, 1942. The enrollment increased further to 117 students. In addition, a special six weeks course has been given on the application of meteorology to field artillery problems.

During the year, the staff has made an extensive review of the Meteorology curriculum. Based on the findings, a considerable revision of course content has been made, and new subjects have been introduced to meet the present needs. Thus, the new subjects, long range weather forecasting, descriptive meteorology, aeronautical meteorology, and climatology, have been organized, and the subjects, synoptic meteorology, dynamic meteorology and meteorological instruments, have been adjusted with a view to obtaining a well coördinated program.

The expansion of the training program made it necessary to provide for texts for the various subjects. Textbooks covering synoptic meteorology and dynamic meteorology have been published by staff members, and mimeographed texts have been issued for dynamic meteorology, physical meteorology and meteorological instruments. It is hoped to have texts for all subjects completed within the near future.

In addition to the regular subjects, the following lectures were given to advanced students and staff members by the following: Dr. O. R. Wulf of the United States Weather Bureau on The Absorption of Light, Atmospheric Ozone, Cosmic Rays and Conditions in the Ionosphere; Dr. H. U. Sverdrup, Director of the Scripps Institution of Oceanography, on The Interrelation between the Ocean and the Atmosphere; and Dr. B. Haurwitz on The Motion of Atmospheric Disturbances.

The staff has been equally active in the field of research. The project in long range forecasting was expanded in coöper-

ation with the United States Weather Bureau, the United States Navy and the United States Air Corps. The results obtained in previous years were applied to actual forecasting, and the Institute group issued five-day forecasts for the entire continental area of the United States for distribution through the United States Weather Bureau. The service part of the project was transferred to the United States Weather Bureau on May 1, 1941, while the research program will be continued here under the direction of Professor Willett.

The project in forest fire research, in coöperation with the United States Weather Bureau and the United States Forest Service, continued during the year, and was brought to a conclusion in June 1941. The research on condensation and precipitation processes, sponsored by Mr. A. C. Bemis, has been continued under the supervision of Professor Houghton. Many data collected on field trips have been evaluated and promising results obtained.

Notable staff recognitions include the following: Professor Rossby, who has been on leave of absence since 1939, resigned in June 1941 to join the faculty of the University of Chicago. Professor Houghton, who is serving on various sub-committees of the N.D.R.C., was presented the Robert M. Losey Award at the Honors Night of the Institute of the Aeronautical Sciences for outstanding contributions to aeronautical meteorology. Mr. Bemis has served as Chairman of Section 4, Division D (dealing with heat radiations) of the N.D.R.C. Professor Willett and Mr. Namias have been on leave of absence since May 1, 1941, to assist in organizing a long-range forecasting division in the United States Weather Bureau. The writer gave the Wright Brothers Lecture before the Institute of the Aeronautical Sciences at Columbia University in December 1940, and is serving as Chairman of the Committee on Education appointed by the American Meteorological Society.

SVERRE PETTERSSEN.

BUILDING ENGINEERING AND CONSTRUCTION

No significant changes were made in the curriculum during the year. Coördinated study by the students of the Department of Architecture and those of this Department

were again carried out. The problem of housing the Department of Biology and Public Health was studied. Several of the buildings developed by the undergraduate students in Architecture were used as a basis for our Building Construction courses.

Experience training which was stressed by the Visiting Committee of the Department was again provided by placing the juniors in positions with construction companies. To provide a more practical vocational training in a small way, the plan to have each student construct a scale model of some construction detail was inaugurated in each of the building construction courses. This was done with the coöperation of the Hobby Shop and was very successful in aiding the student to develop further his powers of three-dimensional visualization. These will be further amplified by part-time experience assignments with construction companies during the regular senior year for those students who elect to continue this sort of training.

The National Lime Association continued its support of research in the Building Materials Laboratory. The program reported previously was augmented by a series of studies of the basic characteristics of commercial hydrated limes with the view to a more uniform and improved product. A simpler adaptation of the extrusion-energy machine, which has been named the "plastometer" was developed and is now in use in several laboratories and commercial lime plants. A joint effort by the staff to build and study the stresses and strains in "membranous," thin-shelled domes has been started. With the help of Professors Ruge and deForest, who allowed the use of their electrical gages, this work already shows considerable promise of a solution of the effects of concentrated loads.

The members of the staff have continued their activities on committees of the A.S.T.M., A.C.I. and A.S.A. Papers were presented to the National Lime Association Convention by Professors Voss and Staley; the former on "The Future of High Lime Mortars" and the latter on "Investigation of the Effects of the Use of Lime in Concrete." Professor Staley also gave a paper on "Properties of Limes and Lime Mortars" to the A.S.T.M. Convention. Mr. Dietz completed his thesis on

"Stress-Strain Relationships in Wooden Beams Subjected to Pure Bending" for his Doctorate and requests for publication have already been received. Professor Peabody has been quite active for the "Joint Committee on Concrete and Reinforced Concrete," which published its report during the year. The entire staff have been indirectly connected with some phase of defense activities in either a professional way or as a public service.

WALTER C. VOSS.

BUSINESS AND ENGINEERING ADMINISTRATION

During the year the developmental activities of the Department have been focused upon two objectives, namely, the furthering of recommendations made by its Visiting Committee, and the employment of departmental resources to assist in the national defense. An effort has been made to relate these two objectives so that each may gain by the other although the national emergency was of course given precedence in immediate plans.

Perhaps the most direct contribution to this end was a new presentation of the Senior course in Industrial Problems. Here the subject matter was devoted exclusively to industrial problems concerned with defense production. The topical sequence included discussion of defense organization and contracts, defense financing and expansion, defense procurement, defense production, priority control, defense subcontracting, and defense personnel as well as problems of sabotage and fire defense.

Throughout the presentation we were assisted by coöperating officials and experts from the New England Council, the Associated Industries of Massachusetts, the New England District of the Office of Production Management, the Army and the Navy.

Three surveys were carried on by the students. One had to do with the experiences of sixty greater Boston manufacturers in relation to contract difficulties; a second survey of 277 Cambridge manufacturers yielded information concerning their capacity and equipment; and a third survey of 125 Massachusetts manufacturers brought together data of subcon-

tracting methods and problems. As a result of this program it was possible to provide each student with a letter incorporating the details of the subject and the request that he show it to his immediate superior upon graduation in order that his background might be made available in the national service. In the presentation of this intensive program, services of several of the faculty members were called upon in both this department and that of Economics and Social Science.

During the year Professor Robnett and Mr. Goodwin collaborated in Engineering Defense Training courses conducted by the Institute.

As outlined in the last President's Report, the recommendations of the Visiting Committee were four in number, and each of these will be considered in turn.

Organization of Systematic Contacts between Teaching Staff and Industry. The initiative in this area was preëmpted by industry as a result of the heavy demands for executive personnel in the manning of defense production industries. The efforts of the department in the interest of the student body have therefore had to be in the direction of guarding against too great involvement in such contacts. During the year Professor Fernström was given leave of absence to become Vice-President and General Manager of the North Carolina Shipbuilding Corporation. Professor Cunningham was given a full-time assignment to supervise for the State of Massachusetts a survey of the basic space layout for the expansion of the Boston Airport, in which Professor Tallman and seven professors from other departments collaborated. Professor Robnett undertook a special investigation of certain problems relating to naval ship construction.

Faculty contacts with industrialists have been further cemented through active participation in professional societies. Professor Fiske has been elected to the Vice-Presidency of the National Association of Cost Accountants; Professor Robnett to the Vice-Presidency of the local chapter of the same organization; Professor Cunningham to the Presidency of the local chapter of the American Marketing Association, Vice-Presidency of the Technical Advertising Association, and membership of the Executive Committee of the Boston Sales Managers'

Club; Professor Tallman to the Secretaryship of the local chapter of the American Marketing Association; and Mr. Goodwin to the Directorate of the local chapter of the Society for the Advancement of Management. It is also probable that Professor Schaefer as Grand Master of Masons in Massachusetts finds these responsibilities no less stimulating than those which he also enjoys as President of the Faculty Club of the Institute. The many additional requests for the services of departmental staff members which have been received have not been listed, but it is the feeling of the department that, in general, such contacts are at the moment sufficiently numerous in the interests of good teaching.

The Establishment of a Practice School for Selected Students. Once more the rapid developments in international affairs have thrown their shadow across long-range plans. With the oncoming of the Selective Service Act, it was at once evident that interim industrial practice had become a necessity rather than a privilege. The value of such industrial background and acquaintance to the departmental graduate as a means of reinstating himself in industry following upon national service is obvious.

The Department therefore decided to bend all efforts to the establishment of such summer activities for its undergraduates. Fortunately, the resource of several years' experience in summer placement was at hand. Through the office of Professor Fernstrom, in collaboration with the Institute Placement Bureau, arrangements were made whereby all available second and third year men as well as a considerable number of first year men and out-of-course students were placed in interim industrial activities of an organized nature. Students so assigned make suitable reports, maintain diaries of activities and in other ways assure the department of the depth and scope of the experience and acquaintance so gained. As of this date, reports already reflect the effectiveness of this procedure in enhancing the students' grasp of current managerial problems and in providing increase in assurance of industrial opportunity after the present emergency has passed.

The Maintenance of Organized Relationships between the Department and Its Alumni. In the pursuance of this recom-

mendation, the Department has met with excellent coöperation from its graduates. From its somewhat more than 1,600 alumni, nearly 1,300 collaborated by supplying data for the third five-year census taken by the department. This material, which has been translated to tabulating cards, already is yielding valuable information upon which to base future policy.

In addition, the manuscript of a fourth volume written particularly for distribution to departmental alumni was subscribed for by approximately five hundred of the graduates. These activities have served to maintain the close relationships which the department has enjoyed with its past students. Contacts with graduates with respect to industrial opportunities have been unusually active. As an example, in one instance 178 qualification records were submitted to a single Government agency in response to an appeal for information concerning especially qualified departmental graduates to undertake important defense activities.

The Further Raising of Standards of Selectivity for Entering Students. In accordance with the principle that the standards of selectivity may be increased in direct proportion to the number of candidates applying for admission, a study has been made of the record of accomplishment of departmental graduates of the past twenty-odd years. These data are now in process of publication and will afford a basis of available facts which should stimulate interest on the part of future students.

In summary, it is clear that to a gratifying extent the present turn of events in American industry has served to expedite the proposals laid down by the Visiting Committee. We enter a period in which heavy emphasis is placed upon managerial skill and organizing ability, and the present emergency will doubtless go far to widen the opportunities extended to the department. It is hoped that these trends may increasingly be capitalized during the coming year.

During the first term of the school year a one-day conference on Current Management Problems of Product Development was conducted by Professors Cunningham and Tallman. Attendance was by invitation, and thirty-one manufacturing companies were represented. The results of the conference and the wide interest which it has aroused have encouraged the

department to undertake further activities of this nature in the future.

A fifth grant of funds from the Alfred P. Sloan Foundation of New York brings to Technology eleven executives of tested industrial experience and ability, as a result of a nation-wide competition. Despite the pressure placed upon collaborating industries by the defense program, the competition for these scholarships was very keen, the roster of applicants representing a large number of progressive companies throughout the country. With the continued generosity of the Foundation and the coöperation of the Department of Economics and Social Science, this program of advanced administrative theory and technique is creating a steadily increasing goodwill throughout the country for the Department and the Institute.

A word of sincere appreciation is to be extended to the many industries which have assisted the Department in the provision of summer employment. Equally are we indebted to the companies who have borne with us during the trying period of senior placement. This year has been a particularly difficult one because of uncertainties springing out of the Selective Service Act, local draft board decisions regarding deferment, R.O.T.C. commitments, and prevailing indecision. These problems coupled with the unprecedented demand for men made the situation doubly involved, and for the patient coöperation of our friends of many years among these industrial establishments we are doubly grateful.

ERWIN H. SCHELL.

CHEMICAL ENGINEERING

The Department's efforts have been markedly adjusted to national defense needs during the year. Professor Sherwood has devoted about two-thirds of his time and Professor Lewis about one-half of his on work for the National Defense Research Committee. Other staff members have contributed to this and to other defense agencies, such as the National Advisory Committee for Aeronautics and the Office of Production Management. An increasing amount of the thesis work of advanced character has been directed toward problems of a defense nature which must remain confidential for the present. That

this modification and enlargement of program has been effected without significant detriment to the professional training of students can be ascribed chiefly to an increase in the duties and responsibilities of the individual staff members. Publishable research is suffering, of course, but this seems to be unavoidable.

Plans for a new chemical engineering building were developed last year and worked out in detail during the winter. This Spring the Chemical Warfare Service entered into a service agreement with the Institute whereby a development laboratory would be established by Chemical Warfare at Technology, with the Institute supplying among other things space for the laboratory and consulting services of the Chemical Engineering staff. Because the plans for the new building were practically complete it was possible to start construction within three days after the contract was signed, and the building should be ready for occupancy by the Chemical Warfare Service before winter. Laboratory activities were started on June 1 in present quarters of the Department. It is anticipated that a considerable portion of the time of the staff will be devoted toward assisting the program of this laboratory. Occupancy of the new building by the Chemical Engineering Department will be postponed until after the building has been vacated by the Chemical Warfare Service, but the construction of adequate quarters which will eventually be available to the Department is extremely gratifying.

The experimental program in Industrial Relations for undergraduates in Chemical Engineering, which was initiated in the fall of 1939, is being continued with a second class on the basis of promising results to date. This represents somewhat of a new departure in Chemical Engineering education, and its operation is still regarded as experimental. The first class to receive the Industrial Relations training will graduate in 1942. The Honors Group system for a small number of seniors has been continued. It was intended that one staff member should spend his entire time on this program last year, but the emergency demands on the staff as a whole made this impracticable.

The School of Chemical Engineering Practice had a very successful year, with enrollment again at close to maximum

capacity. One coöperative problem which is exciting interest is the development of a system for acid recovery which would have considerable economic value and would reduce stream pollution. The problem has now grown to the pilot plant stage, largely on the basis of preliminary work by Practice School students.

Engineering instruction at the Institute is based primarily on the problem method, which is the engineering equivalent of the case system. For a third of a century the Department has led in the development of the quantitative problem. Experience has indicated that this has entailed an underemphasis of the qualitative side of chemical engineering instruction. During the year the Department has given serious attention to this phase of educational technique and a considerable number of qualitative cases, particularly in the field of applied chemistry, have been developed and used in the classroom. It will be necessary to continue the effort over a considerable period, but it seems possible not only to improve our own instruction but to set new standards of education effectiveness for the profession.

Plastics as materials of construction have now risen to such a state of importance that they must be studied with the intensity and thoroughness which has for years been applied to metals. A new graduate subject on "Plastics and Other High Polymeric Substances" was inaugurated in the Fall semester and was so well received that it was repeated by student request during the second term. This subject covers the fundamental theory of the behavior of the more important high polymers and their characteristics when incorporated into industrially important plastics.

The research on heat transfer to boiling liquids has been extended by studying the flow of partially-vaporized mixtures in horizontal steam-heated tubes which are connected by glass return ends. Stroboscopic photographs taken through the glass show the mechanism of the two-phase flow which exists at various stages of the vaporization process. It was found that the heat transfer capacity is markedly reduced because of vapor binding when there is either a high percentage of the material evaporated or an excessively high temperature difference. Some of the studies were made with pure liquids and

others with mixtures of hydrocarbon which differed widely in volatility. The results of this program are already finding application in the design of heaters and pipe stills.

Work which was initiated several years ago on the flow of powders in gas streams has become of enormous commercial significance in the catalytic cracking of petroleum, and several large plants are under construction which will use processes based upon the technique developed by this research. It is believed that this method of contacting solids with gases may have general importance in many other fields.

Two extended Doctor's theses on absorption were completed. A study of bubble plate absorbers led to broad generalizations on the relationship between distillation and absorption and to performance data which have been checked against commercial absorbers and which will be of real value for the design of this type of absorption equipment. The thesis on absorption in packed towers amplifies and extends the previous study of this subject with considerable data on ammonia absorption in water on the same packings which were previously employed for other systems. The earlier work on eddy diffusion culminated in a paper on this subject at the Bi-Centennial of the University of Pennsylvania last Fall.

For his work on absorption, Professor Sherwood received from the American Institute of Chemical Engineers the William H. Walker Medal for 1941. This award is made annually to the member who has made the most valuable contribution to chemical engineering literature for the last three years. The Department is gratified that one of its staff has received the award, which was established in honor of a former Head of the Course.

Work on high phosphorous glasses was continued, with a study of physical, chemical and electrical properties. Several of the glasses are commercially interesting because of unusually high dielectric constants.

The electrical properties of chlorinated vegetable oils, such as linseed, soybean, and cottonseed oil may be of considerable interest for use of these materials as transformer fillings and as impregnating materials for electrostatic condensers. Work has been started in coöperation with the Department of Electrical

Engineering on the properties and methods of commercial preparation for such materials.

One of the solar energy projects is a study of the performance characteristics of flat-plate collectors, such as are used in the South for hot water supply. Research at the Solar Radiation House has established a suitable basis for the quantitative design of such heaters.

A comprehensive study of the total radiation from water vapor over a range of half lengths from one-half inch to eighteen feet has been completed. The experimental data should be important in resolving the conflicts which have existed for some years on heat transmission by furnace gas radiation because of differences between data secured in Germany and earlier results from this Laboratory.

Attempts to study the problem of burning a jet of fuel gas in air by means of fluid models in which jets of fluid are forced into a surrounding fluid, either gaseous or liquid, are giving promising results. The similarity of the phenomena of fluid mixing with gas burning is quite striking, and fluid models may turn out to be helpful in the study of certain furnace combustion problems.

The research on combustion of heavy fuel oils is continuing. A promising method of attack on the problem of oil atomization has been found in the development of a technique for freezing a sample of the spray cloud and then studying particle sizes by conventional screening methods.

The development of a universal Mollier chart has been advanced by a graphical reduced equation of state for saturated liquids and a subsequent derivation which permits computing latent heats of vaporization for substances whose critical properties are known. Work is proceeding on a technique for predicting specific heats. The purpose of this program is to permit the prediction of thermodynamic properties of a substance with a minimum of experimental data. Such predictions are particularly useful in engineering design of commercial equipment which operates with mixed fluids about which there is little scientific information.

Work on the concentration of olefines by use of cuprous salt solutions has continued both on the study of equilibrium

relationships and in the continuous extraction unit. Results in the continuous unit have shown that it is possible to separate ethylene from mixtures of it with propylene and propane. The ethylene can be concentrated to high purity in a relatively short tower. Analysis of the data for these multi-component systems has indicated that the usual method of making multi-component absorption calculations can be greatly in error.

Chemical reactions at pressures of 1000 to 4000 atmospheres are being studied. Present work is being directed to the polymerization of ethylene in this pressure range. Such a polymerization gives wax-like products which melt at about 130°C. and which have molecular weights ranging from 10,000 to 30,000. Considerable difficulty has been encountered due to frequent explosions resulting from the decomposition of ethylene to carbon and hydrogen.

Preliminary studies on the separation of the lower hydrocarbons by distillation show that it is possible greatly to facilitate the operation in a number of cases by the addition of some extra component to the system. Thus the separation of propylene from propane is almost impossible by regular distillation, but if a third component such as acetone, alcohol or ester is added to the system under proper conditions the two components can be rectified with an ease about equal to the separation of propane from butane. Likewise it is very difficult to recover butadiene (for synthetic rubber) from mixtures with butylenes and butanes, but by a similar operation with a "third component" it can be fractionated out in high purity.

New light has been thrown on the structure of clays by studies of their iron content, showing that the iron exists in at least two and probably three forms which differ greatly in reactivity for gases at high temperatures. Further work on the colloidal properties of clay minerals has enabled us to explain their varied properties on the basis of structural differences.

The property of certain clays to exhibit strong stream double refraction if a very dilute suspension is set in motion and illuminated with polarized light has led to further developments in the study of liquid flow. The method is applicable to a great number of problems in the field of chemical engineering, in aerodynamics and particularly in hydro-dynamics. At

present the use of the method for educational purposes in the training of aviators is being energetically pursued while purely scientific research is being continued.

Determination of the physical properties of rubberlike materials, particularly hysteresis, as influenced by temperature and solvent action is helpful to unravel the problem of their chemical and physical structure. Investigations on the mechanism of vulcanization have been extended to cover the field of factice (rubber substitute) formation and the production of ebonite or hard rubber.

Growing interest in synthetic rubber has stimulated basic research in the field of polymerization and co-polymerization. So far data have been obtained regarding the production of isoprene and butadiene polymers and their co-polymers with styrene, which will serve as a basis for a more systematic study for the production of a synthetic rubber which exhibits processing properties comparable to those of natural rubber. As a further result of the information gathered in the field of the chemistry of elastomers, work has been started toward further improvement of the properties of rubber derived from the guayule shrub, a plant which can be grown within the borders of the United States.

Plastics are being studied from several angles such as the correlation between internal molecular structure and such physical properties as tensile strength, toughness, hardness and resistance to attack by various chemical reagents. It is important to determine the basic mechanism which will explain the effect of various practical factors involved in the manufacture of plastics by polymerization and condensation processes. Another line of investigation is the development of means for measuring the physical properties of these new materials. Research has also been started on the behavior of plasticizers, fillers, lubricants and pigments in plastic compositions.

The scope of the laboratory courses in colloid chemistry has been widened to include basic training in the processing of natural and synthetic rubber (including the production of the latter) and plastics. This has been made possible by the installation of an up-to-date rubber processing and testing

laboratory in connection with the project on reclaiming synthetic rubber referred to above.

Professor Hauser's book on "Experiments in Colloid Chemistry" in collaboration with Dr. Lynn, was published during the year. This book should find wide usage because of the growing interest in colloid science and its application throughout industry.

Graduate enrollment was slightly less than in the previous year and the demands by industry for graduates were greater than for some time past. It appears that the role which chemical industry must play in the defense program will definitely increase the demands for chemical engineering graduates at a time when the supply will be reduced due to the emergency.

WALTER G. WHITMAN.

CIVIL AND SANITARY ENGINEERING

The educational program and the research activities of this Department have been carried on during the past year without interruption, although the contribution of our staff to the National Defense Program has become an important factor during this period.

Professors Wilbur, Fife, Carlson, and Ruge have served as consultants to the National Defense Research Committee. Dr. Ruge has supervised defense work being carried out at the Institute under the Division of Industrial Coöperation, working with the Army, the Navy, and the Electrical Engineering Department of the Institute. Professor Taylor has supervised research in the Soil Mechanics Laboratory in coöperation with the United States Engineers. Professor Carlson has served as consultant to the United States Navy in connection with the concreting of dry docks. Professor Breed has served as National Committeeman of the Transportation Division of the National Committee on Civilian Protection in War Time of the American Society of Civil Engineers.

Several members of the Department have coöperated with the National Committee on engineering defense training. Professors Russell and Camp gave a series of lectures in Maine on the subject of emergency measures to safeguard water distri-

bution systems in case of a national emergency. Dr. Ruge organized an evening course in vibrations, which was given at the Institute.

Consultation with industry on projects important to national defense was participated in by several members of the department. Professor Breed served as consultant to the Pennsylvania Railroad. Professor Wilbur acted as chief engineer of the Smith-Putnam Wind Turbine Project, an experimental project which is being carried out to investigate the feasibility of developing electrical energy from wind on a larger scale than has heretofore been attempted. He has been assisted in this by Professor Norris. Professor Taylor was consultant to the Aluminum Company of America on dams in North Carolina.

Professor Russell has continued his service as a member of the Advisory Committee of the United States Coast Guard Academy. He has also served as a member of the special committee to help in organizing a campaign for industrial plant protection in New England.

Research in the department laboratories has continued without interruption during this period. In the Soil Mechanics Laboratory, three projects have been in progress: shear research in coöperation with the United States Engineer Department; research on clay consolidation has been continued; and investigations of pressure distribution below dams have been initiated. A brochure entitled "Abstracts of Selected Theses on Soil Mechanics" has been prepared and published.

The Sanitary Engineering Laboratory has conducted studies dealing with the effect of turbulence upon sedimentation of discrete particles in water; the result of this work will contribute to a better understanding of the phenomena in sediment transportation and scour. Experimental studies have also been carried on regarding the nature of the precipitates and the effect of coagulants in the lime-soda water softening process. Professor Camp and Dr. Stein have both contributed liberally of their time in the development and control of the process for the purification of the water for the Alumni Swimming Pool.

During the first term the Seismology Laboratory continued

its work on the earthquake analyzer with results which added greatly to its performance. During the second term, however, it became necessary to suspend earthquake research because of the pressure of other research work relating to national defense.

The usual large number of theses were conducted in the Structural Analysis Laboratory during the year, with a marked increase in the number of undergraduate theses. The most important research was that done in the further development of the moment deformeter, an instrument used for the determination of bending moments in models of structural frames. A bulletin entitled "Structural Analysis Laboratory Research 1939–40" was published and distributed. This bulletin constituted the third annual summary of research conducted in the Structural Analysis Laboratory.

In the River Hydraulic Laboratory research has proceeded along several lines. Among the subjects which have been investigated are: the pressure of flowing water on bridge piers; the profile of the downstream face of a spillway dam; and continued investigations of the flow of fluids in open channels.

Research in the Concrete Laboratory has brought further progress on the "alkali" problem and on the cracking of concrete. Professor Carlson has perfected a method of installing stress meters to measure stresses in concrete or soil.

The first New England Traffic Engineering Conference, sponsored by the Civil Engineering Department of the Institute, and the Massachusetts Department of Public Works, was held at the Institute in June.

Staff members have continued their active interest in engineering societies. Professors Wilbur and Taylor have served as chairmen of the Designers Section and Highway Section, respectively, of the Boston Society of Civil Engineers. Professor Carlson has acted as a director of the American Concrete Institute. A new textbook, entitled "Surveying," dealing with the basic principles of elementary surveying, has been written by Professor Breed.

A portrait of Professor George Fillmore Swain, former head of the Department of Civil and Sanitary Engineering, was presented to the Department by a group of his former students.

The unveiling of this portrait constituted part of the Alumni Day program.

The upswing in placement opportunities for graduates of this department, which was clearly defined in 1940, became most pronounced in 1941. It was realized early in the year that because of the Defense Program, the demand for men with technical training would be rather heavy. The actual demand far exceeded our expectations. It would have been possible to place an almost unlimited number of men with training in civil engineering.

The demand from private industry alone was sufficient to take all of our graduates and it is impossible to evaluate exactly the number of offers. Some concerns were willing to take all men available, because of their knowledge of structures and structural design. Other concerns were interested in employing one or two men only, but there were a great many of these offers.

With the Army, the Navy, the Civil Service, and private industry each trying to get the men to go into its particular field, a certain amount of confusion regarding placement existed in the minds of many of the men who were graduating. It should be recorded that the students endeavored to place their services with the agency which they felt would best serve their country in the National Defense Program.

There has also been a great demand from among our alumni for experienced structural designers and for construction engineers. Requests for men have come from railroads; this type of placement has been inactive in recent years.

The Department is well equipped with staff, educational, and research facilities to instruct efficiently a larger student body in civil and sanitary engineering than has come into these courses for the past several years. It is to be regretted that more complete use is not being made of these available facilities, considering the great demand there is for men with such training as the department offers. The basic training that is given to students in civil engineering prepares them for wide fields of service in times of national need. The many graduates who have been placed for airplane design may be cited as an

example of this. The training in structural analysis and design will be of great value to the country.

The building of great cities, and the avenues of transportation leading to and from them, is largely the job of the civil engineer. The protection of these cities in time of national emergency is likewise a problem which needs men with training and experience in civil engineering.

CHARLES B. BREED.

ELECTRICAL ENGINEERING

National Defense has been the dominant note in the Department's work for the past year as a whole, and as of the present is the criterion by which every activity is judged. Two aspects are distinguished, first direct contributions to technical armament by staff members, and second the training of technical men. The first is the more spectacular and immediately urgent, but the second is deemed to be of fully equal importance in any moderately long-range view. One sizeable administrative problem is the sustaining of a reasonably effective educational program in the face of urgent pleas for direct contributions of staff members. To do this it is deemed essential that a skeleton of mature staff be retained in teaching and that a fair proportion of the younger teachers be men of some experience. At the time of writing the fraction of experienced men remaining available for teaching is essentially at the minimum below which we cannot provide sound training for our students.

A summary of the direct defense work during the twelve months ending October 1, 1941, by members of the staff presents a striking picture. Of the 28 active men of faculty grade, 14 have contributed directly, of whom six have major responsibilities and six more are making major contributions, this group as a whole having contributed about eight man-years. Of the entire active staff of 83 including faculty members, 40 or nearly half have contributed about 22 man-years as a minimum estimate. This includes those reserve officers who have been called and other men who have gone to defense industries on important work.

With the work of this large block of man-power withdrawn from activities that can be discussed here and the necessary

curtailment of new projects it is apparent that the productivity of the staff cannot be judged even superficially by the statements given below; much more significant is the fact that so much of our productivity has been virtually drafted for creative defense work.

In the educational program the Course Revision project still occupies an important position. Volume I, "Electric Circuits" of the text series coming from this project is proving popular and very effective here. Publication of Volume II, on magnetic materials and the transformer, is expected during 1941–42 together with the so-called Companion Volume, a more advanced yet undergraduate-level commentary for the more scholarly inclined students on various subjects throughout the series. Volume III, "Electronics" though well along has been very reluctantly delayed somewhat by urgent defense pressure for personnel.

Considering other undergraduate matters, the Honors Group Plan continues strong and has received some critical study with the aid of students, Alumni and staff with view to further improvement, a sign of vitality. The undergraduate electrical honors society, Eta Kappa Nu, has proved most helpful in making available considered but frank undergraduate opinions on this and other educational problems, such as training in public speaking.

In the last Stratton Prize Contest for public speaking, one prize to an electrical student maintains an eleven-year department average of one-third of the prizes awarded. The thirteen initial electrical competitors in this entirely voluntary activity shows the seriousness with which our students regard speaking ability.

In the Coöperative Course full schedules of works assignments have been easily arranged. Nearly two decades' experience strongly substantiates the value of this course for those students who are personally and scholastically well-qualified. Placement of electrical graduates scarcely needs comment where several jobs were available to every man even moderately well-qualified.

Among the new subjects offered may be mentioned Professor Gray's Electronic Control and Measurement, an

immediately popular undergraduate treatment of noncommunications electronics, a very active field; and Klystron Oscillators, graduate, by visiting Professor W. W. Hansen from Leland Stanford University, outstanding authority in this field.

While much departmental research has been dropped, as explained above, progress has been made in some fields. Full automatic operation of a useful fraction of the new Differential Analyzer is expected before October 1, 1941 and of the entire machine within a few months. Thus this most ambitious undertaking is apparently nearing fruition, and considering the vast areas of new ground that have had to be broken, plus the not inconsequential delays due to defense this year, the development time, while longer than originally hoped, is not particularly long. The Rockefeller Foundation and the Carnegie Institution, under whose grants most of the work has been done, have generously permitted carryovers aiding the completion.

The Instrument Landing Program under the third contract with the CAA had to be brought to an early termination owing to emergency considerations. The information gained from the final experimental tests now brings this art to a point where it is believed that definitive steps may be taken to effect a useful solution of the problem. This is the present culmination of several years' work at the Institute under the general direction of Professor Bowles with the coöperation of the Authority and several other agencies mentioned in previous reports.

In the Insulation Research Laboratory under Professor von Hippel, further progress in understanding electrical conduction includes conclusions established experimentally concerning the temperature dependence of breakdown field strength of solids and its explanation in terms of atomic physics, and substantial progress in the separation of ionic and electronic effects in semi-conductors of especial interest in the coöperating Solar Energy Conversion Research, and also in industrial art.

Illumination Research under Professor Moon includes developments in the goniophotometry of surfaces necessary for considering "glossy" surfaces, extensive color and reflection factor studies of commercially used room surface materials, reflector design for interior lighting, progress in the application

of integral equations to illumination calculations, and the construction of a large spectroradiometer specially designed for adequate measurements of sources, transmission devices, and receivers used in illumination science.

The Mineral Oil Deterioration Research under Professor Balsbaugh sponsored by the Engineering Foundation and the American Institute of Electrical Engineers with financial support from numerous oil, power and manufacturing companies continues fruitful. It appears that the long-troublesome and expensive power-factor instability in oil-impregnated paper cable may be approaching solution. Highly refined electrical measuring methods offer much promise in the study of chemical mechanisms and reactions. This laboratory has been coöperating closely with Dr. Hauser's alsifilm work and other projects in the Department of Chemical Engineering.

One of several notable developments in Professor Edgerton's group is a practical high-speed photographic lighting equipment now available commercially.

Progress in the high-voltage X-ray field under Professor Trump with the collaboration of Professor Van de Graaff of the Department of Physics continues along lines and with the generous sponsorships given in last year's report. The 3-megavolt radiation now regularly available in the latest unit shows depth-dose properties superior to those of radium gamma rays. Considerably higher voltages are rather likely with further changes in this unit.The very compact 1.25 megavolt American Oncologic Hospital unit is nearly ready for installation after an extensive testing program. The original Huntington Memorial and Massachusetts General Hospitals' units have been in almost continuous use since their respective installations. Further research on insulation with high-pressure gases and the physical properties of high-voltage X-rays continues.

The Network Analyzer, as augmented a year ago, has been used a full 40 weeks of the year by utilities in planning system extensions and by graduate students, with numerous outside requests that could not be scheduled. A new central metering system is now nearly complete which makes ours, the original device of its kind, fully competitive in speed and performance with the most recent designs, while its unique

accuracy is a recognized advantage for many of the more usual studies. Another of the department's mathematical machines, the Cinema Integraph, has been extensively used in an exploratory study for the United States Navy and in graduate research.

In conclusion, it may be observed that the national emergency, while retarding active progress in certain educational matters, has in general intensified activity, the long-term salvage value of which in terms of advancement in the art and of professional growth in the staff is unquestionably high.

HAROLD L. HAZEN.

MECHANICAL ENGINEERING

The revised curriculum in applied mechanics, mentioned last year, was put into effect with this year's sophomore class. In the coming year the Juniors will follow the new plan and in the following year the Seniors.

The essential object of the revision is to strengthen the subject of dynamics and to vitalize the presentation by discussions of actual engineering problems, particularly those which impose limitations on progress. In its final form the undergraduate curriculum in applied mechanics will be divided evenly between statics and dynamics.

Experience gained so far indicates that our students are capable of more rapid progress than was demanded by the old curriculum, and a more fundamental approach than that of available textbooks. As the curriculum progresses, we are laying plans for texts to be written by staff members.

Three new electives in Mechanical Engineering have replaced three that were dropped with Professor Riley's retirement and two new subjects were added in textile technology.

The special National Defense courses have placed an unusual burden on staff members. This year the Department for the first time provided instruction in heat engineering to the student officers in Naval Engineering, as a consequence of the change in curriculum of Course XIII-A.

The eight students who accepted the first invitation to pursue the Honors Course received the degrees of Bachelor of Science and Master of Science on completion of a five-year program of study.

Twenty-five Army officers admitted to the Army Ordnance Course in June, 1940, were obliged to leave on account of the emergency. Four Philippine Army officers, whose admission had been approved by the War Department, continued through the year and received S.M. degrees. No officers will be detailed for the coming year.

Machine Tool Laboratory. The demand on this laboratory continues to be heavy principally on account of the inclusion of machine tool work in certain Engineering Defense Training Courses. Due to the national shortage of machine tools no replacements or additions were possible during the year. Maintenance was necessarily somewhat neglected also.

Automotive Engineering. The two-story addition to the Sloan Automotive Laboratory was occupied in November, 1940. The building has proved to be most satisfactory and has done much to improve the efficiency of this division. This addition to the building made it possible to rearrange the test floor, including necessary improvements in the test stands. The exhibition room, however, had to be turned over to the use of students in special defense courses. The additional work involved in special defense courses and Government research projects could hardly have been handled without the building addition.

Two research projects for the National Advisory Committee for Aeronautics were completed and five new projects undertaken. A special research project for the Wright Aeronautical Corporation is being continued. Two ventilated sound-proofed engine test cells have been built and an additional high speed test engine added.

Photoelasticity. A course in Applied Photoelasticity has been added to the summer schedule. The regular winter schedule included 143 undergraduate students from Course 2.37 (Testing Materials Lab.), 68 graduate students and 12 theses in photoelasticity.

Equipment has been built for making three dimensional studies by the scattered light method. A photograph from this laboratory was awarded a medal at the A.S.M.E. photographic contest.

The laboratory has been fortunate in having as its guest

during the past year Dr. A. J. Durelli of Buenos Aires, a pioneer in the solution of stress problems in photoelasticity by brittle lacquer methods.

Materials Laboratory. Research on combined stress was recognized by the award of the Levy Medal of the Franklin Institute to Professors J. M. Lessells and C. W. MacGregor.

A new apparatus to measure residual stresses and one to load sheet materials in combined stress have been built during the past year and installed in the new research laboratory. Further improvements have been made in several existing devices for strain measurement. The past year has shown a marked increase in student and staff use of this laboratory and enrollment in the graduate plasticity course was more than doubled.

Twelve different research projects were carried through by the regular staff and students during the year. A partial list includes: True Stress-Strain Curves at High Temperature; The Two-Load Method Applied to Tensile Impact Tests; Residual Stresses in Plastically Bent Beams; Rubber under Combined Stress; True Stress-Strain Relations for Flat Bars; Combined Stress Test Both Static and Dynamic; The Mechanism of Plastic Flow in the Rolling of Billets.

The Special Committee on Rolling of Steel of the American Society of Mechanical Engineers sponsored the program on the rolling of billets and provided funds.

For a paper entitled "The Tension Test," Professor MacGregor was awarded the Charles B. Dudley Medal by the American Society for Testing Materials.

Following our custom, several successful conferences were held during the past year. In April a two-day Conference of the New England Foundrymen's Association, and in the same month a two-day Conference of the American Welding Society were held. Professor Kyle played a prominent part in the organization of both. In June a conference on Photoelasticity was held of which the organizing was due to Professor Murray. There is no doubt that such conferences, which are well attended by representatives from industry, are greatly appreciated by the groups concerned and are helpful in presenting Materials to our students.

Dynamic Strength. Work has been continued by Professor de Forest on a project for measuring the strength of low carbon steel under high rates of load. A new type of impact testing machine was developed and preliminary results have been obtained. A study has been made of transient pressures in water. Special pressure gages and oscillographs for the project were developed.

In conjunction with Professor A. C. Ruge of the Department of Civil Engineering much progress has been made in the development and application of wire strain gages to problems of static and dynamic stress measurements. Wire gages have been used in connection with approximately ten theses.

Very active work has continued on the brittle lacquer method of strain analysis. The method has been applied to tests on airplane propeller hubs. Five theses have used such lacquer.

Professor de Forest was honored by an invitation to deliver the 1941 Howe Memorial Lecture at the Annual Meeting of the American Institute of Mining and Metallurgical Engineers.

Tests on the surface endurance limit of metals have been continued by Professor Buckingham. A new design of endurance testing machine has been completed, from which several machines were built by the United Shoe Machinery Corporation, including one which has been presented to the Department.

Tests on the combined influence of rolling and sliding have shown that the direction of the sliding has a pronounced influence. When the direction of sliding is in the opposite direction to that of rolling, the sub-surface shear stresses which cause pitting are increased. When the sliding is in the same direction as the rolling, these stresses are reduced. This helps to explain why pitting on gear teeth is generally confined to the dedendum of the gear teeth.

Tests on the influence of surface finish on the surface endurance limit have been continued in coöperation with the Chrysler Corporation. With support from the Chrysler Corporation, Dr. Burwell's work on friction and wear has continued. The mechanism of the phenomena associated with

"running-in" bearings of various pairs of metals has been investigated, as well as the effect of certain addition agents to lubricating oils.

Steam and Hydraulic Laboratory. The flume has been used for four theses by students in the Department of Naval Architecture and Marine Engineering. The laboratory facilities were also used by students of that Department to investigate deflections of a steel ship hatch coaming, stresses in a ship's propeller blade under load, and hysteresis under torsional loading. This work is mentioned to indicate the close relation between mechanical and marine engineering.

Research done under Professor Keenan's direction on friction in smooth tubes at supersonic velocities shows coefficients of friction much lower than previous work had led us to expect. This conclusion may be important and should be followed up.

Mr. Neumann completed a comprehensive study of measured and analytical data for an air ejector, and Mr. Danforth determined characteristics of flow of metastable water.

Textile Division. The program of fundamental research undertaken with the support of the Textile Foundation has been extended during the past year into compressional creep and creep recovery, with the addition of greatly improved apparatus; and into the field of tensile testing of individual filaments under such conditions that the load may be applied under cyclic conditions, or at a constant rate, while the sample is immersed in any desired fluid, with or without subjection to the effects of either ultraviolet or infra-red radiation. This work, together with the studies dealing with the determinations of specific indices of birefringence of textile fibers, are being correlated, with the coöperation of the Physics Department, with X-ray diffraction analyses of individual fibers under controlled conditions. This has necessitated the design and construction of a new X-ray diffraction camera.

Staff. Mention has been made of the increased load on the staff because of special subjects given in connection with the Engineering Defense Training Program. At the same time, several staff members who were reserve officers have been called

to active duty and others are serving part time with various activities connected with National Defense.

J. C. HUNSAKER.

METALLURGY

The outstanding changes in the Department have been the redistribution of space to make room for defense activities. The Fire Assay laboratory was moved from the third floor and is now in operation in the basement in space formerly occupied by the Fire Metallurgy laboratory and some of the Ceramic laboratories. This location was made available by moving the Electrometallurgical laboratory to the east to join the Fire Metallurgy laboratory and using the area thus vacated for a new Ceramics laboratory. While these changes resulted in an appreciable sacrifice of floor area, the new arrangements have increased the effectiveness of the laboratories so greatly that both teaching and research work have benefited.

Professor Gaudin's laboratories of Mineral Dressing have been nearly completed and were used for the first time for instruction and research. The small-scale equipment has been found very satisfactory and it is believed that when the laboratory is finished it will be one of the best in the country.

Professor Locke after many years of service to the Institute became Professor Emeritus but will continue most of his teaching activities as Honorary Lecturer on the Department staff. In connection with his professional work and also because of his activities in the Alumni Association, Professor Locke made a number of trips to various mines and attended meetings of the Institute of Mining Engineers in Salt Lake City and of the American Mining Congress in Colorado Springs.

Professor Bitter was away during the academic year in connection with his very important work for the Navy and will probably be away during the coming year as well. Professor Kaufmann is carrying on Dr. Bitter's work and will be in direct charge of the Magnet laboratory during the coming year. In addition to his own research work, Professor Kaufmann is associated with Professor Chipman on an extensive National Defense problem.

Professor Waterhouse went to Washington in June as Senior Metallurgical Consultant to the O.P.M. and has been given leave of absence for the first semester in order to continue his defense activities.

Every member of the staff has been engaged directly or indirectly in defense work of some sort and a fine spirit of coöperation has been shown by every man in his willingness to take over, often on short notice, the duties of those men who were called away.

In addition to their regular teaching and research the staff has been active in many other ways. Professor Williams was appointed to two defense committees and these duties will continue. He has also shared in several defense courses especially in connection with the training of Ordnance Inspectors at Watertown Arsenal. Professor Gaudin has been serving on the Papers and Publications Committee of the American Institute of Mining and Metallurgical Engineers and has shared in the activities of the New England Council. He was awarded the Honorary degree of Doctor of Science by the Montana School of Mines in June. Professor Chipman is directing an extensive defense problem and has spoken before the Electric Metal Makers Guild, the National Open Hearth Conference, the Eastern New York Section of the American Chemical Society, and the Cleveland Section of the American Society for Metals. He continued to serve on the Executive Committee of the Iron and Steel Division of the American Institute of Mining and Metallurgical Engineers and as Chairman of the Committee on the Physical Chemistry of Steelmaking. Professor Homerberg has been very active in defense work because of his connection with the Nitralloy Corporation and the greatly increased use of Nitralloy for a wide variety of military and naval purposes. He was awarded an honorary Sc.D. from the Philadelphia College of Pharmacy and Science. Professor J. T. Norton has shared in the instruction of Ordnance Inspectors and has also done a large amount of radiographic work in connection with defense projects. Professor F. H. Norton is also working on a defense problem involving ceramic materials. Although nine students are working toward advanced degrees

in the Division of Ceramics, the demand for graduates greatly exceeds the supply. An interesting development in the Ceramics laboratory has been its coöperation with several prominent sculptors who have been using the non-shrinking terra cotta developed by Professor Norton for statuary castings. In the group were Katharine Lane, George Demetrious, Walker Hancock and Paul Manship. Professor Norton was guest speaker at a meeting of the New York State Ceramic Association and was elected to the Institute of Ceramic Engineers. Professor Wulff has been actively engaged in various investigations in the field of Powder Metallurgy. Last year's conference on Powder Metallurgy under his direction was so successful that the papers were published in book form. Another Symposium will be held this year. One of Professor Wulff's most interesting teaching activities was the development of a highly successful introductory course in metallurgy for second year students. All members of the staff took part in this work but the organization and operation of the subject were in Professor Wulff's charge. He has also contributed effectively to a number of problems of military importance. Professor Cohen has continued his program of research on high speed steel with the assistance of a number of graduate students. This has led to the publication of four papers during the year and several more will be issued in the near future. As a result of this program which has now been in progress for four years, Professor Cohen has been asked to contribute a series of articles on the Tempering of High Speed Steel to "Iron Age." This indicates the recognition by industry of his work in this important field. In addition to his research and teaching activities, Professor Cohen gave one of the University Extension courses on Metallography and Heat Treatment to a group of 79 students and shared with Professor Homerberg in a National Defense Training Course He also gave a lecture on "The Heat Treatment of Metals" before the Boston Section of the American Society for Metals and another on "High Speed Steel" before the regional meeting of the A.S.M. at Providence. He was appointed Chairman of the Membership Committee of the Institute of Metals Division of the A.I.M.E. Professor Floe has continued his researches on the reactions between gases and metals. He has

given two courses in the National Defense program and in addition has served in a consulting capacity for several companies making defense materials.

ROBERT S. WILLIAMS.

NAVAL ARCHITECTURE AND MARINE ENGINEERING

There has been an exceptional demand for graduates of Course XIII during the past year because of the great expansion of the shipbuilding program in this country. At the present time the Department is carrying about as many students as its staff and facilities permit, but it is believed that many more graduates might be placed in lucrative positions if they could be made available.

The Department has conducted three engineering defense training courses during the past year, one in naval architecture and one in marine engineering, both for a group of Civil Service appointees, and one in naval construction for a group of Naval Reserve ensigns.

The new three-year combined course in Naval Construction and Engineering has been in effect for the past year, and judging from the interest shown by the students, is giving satisfaction. The old course in Naval Construction was discontinued for United States naval officers at the end of September 1941, instead of waiting until June 1942, as previously planned. This arrangement was made possible by changes in the regular schedule during the academic year, and also by requiring the students to take warship design during the summer session. The officers who were taking this course were thus enabled to proceed to their stations about eight months ahead of the usual time. A group of officers of the Brazilian Navy are still taking the old course, however, and it will be continued for them until June 1942.

The one-year course in Naval Engineering is still in effect and under the present plans will be continued until 1945. During the winter the Department was fortunate in obtaining the services of Mr. Thomas B. Stillman of the Babcock & Wilcox Company as a special lecturer, and a series of lectures on naval boilers was given to the students in Naval Engineering.

In view of the increased interest in naval architecture and

its allied subjects, a special course in Navigation was given during the winter by Lieut. W. D. Brinckloe, Jr., U.S.N., one of the student officers in Naval Construction. This course was of such value and interest that arrangements have been made to continue it next year.

During the year seven students in the Course in Marine Transportation have spent their required year at sea on ships of six American steamship companies. In June, 1941, a fourth group of five men were sent out for a year of sea duty. Because of the present world situation all of these students are now placed on ships operating in the waters of the Western Hemisphere.

Work in the Propeller Tunnel has been limited during this year to two projects, one through the Division of Industrial Coöperation for the Navy Department, and the other an investigation of the pulsating forces on ships' bossing due to the action of propeller blades. The latter is a continuation of a project which is being carried on with the coöperation of the Society of Naval Architects and Marine Engineers.

The Francis R. Hart Nautical Museum has been the recipient of many interesting gifts and loans during the year.

H. H. W. KEITH.

SCHOOL OF SCIENCE

BIOLOGY AND PUBLIC HEALTH

The changes in space allotment and the resultant benefit to working programs effected a year ago have been followed by distinct activity and progress in the department. Although still cramped in laboratories for fundamental courses, each major division of the department has been better able to carry on the work towards its desired objective. The results have been highly gratifying both in instructional effectiveness and in the greatly increased quantity of productive research. Foreseeing the present trends in professional interest in public health, in nutrition, in biological engineering and in food technology, as well as the natural adjustments called for by reason of internal and automatic changes in personnel, the department has given careful study to further revisions of

programs and to future policy and organization. A five-year program in Public Health leading to S.B. and S.M. degrees with a concentration of purely professional work and research in the fifth year is receiving careful consideration.

The Rockefeller grant for Biological Engineering has made possible a great strengthening in this branch of work by the additions to staff mentioned elsewhere, and by notably increasing equipment for teaching and research. The enthusiasm with which Professors Schmitt, Bear and Waugh are approaching their work is most gratifying. A further grant for the study of the electron microscope as a tool for scientific research, especially in the biological field, and the appointment of Mr. Hall as Research Associate in this work opens new opportunities for research in numerous lines of departmental interest.

The research laboratory in nutritional biochemistry has become a centre of great activity under Professor Harris. Five research fellowship grants have been made for work to be conducted therein, the donors being the Dow Chemical Company, Lever Brothers, the Lederle Laboratories, the Lipton Tea Company, and the Research Foundation.

In Public Health the C. H. Hood Foundation has continued its grant for research in Health Education under Professor Turner's direction, and in coöperation with one of the national health committees, with highly acceptable results. In Public Health practice most advantageous coöperative arrangements have been entered into with the Boston Health Department. Under this arrangement three of our professors have been asked to serve as director-consultants in their special fields of professional interest; *viz.*, Professor Turner in the Division of Health Education and Health Units, Professor Horwood in the Division of Sanitation, and Professor Williams in the Division of Laboratories. This arrangement is not only helpful to the City but is highly satisfactory to the department as it provides opportunity for our advanced students to study at first hand the methods and in some measure to participate in operation of a large health department and thus to combine scholastic instruction with practical professional observation.

In Food Technology the greatly improved laboratory facilities as the result of the gift of Mr. Bartlett Arkell a year

ago have proved most valuable. The research Fellowship of the American Institute of Baking has been continued, and a new fellowship has been established by the Kroger Foundation of Cincinnati. Other coöperative projects have been developed. Equipment has been much increased and research facilities enlarged. A drum dehydrator large enough for commercial operations has been secured through the special aid of Professor Harris and is now in use in investigations which may have far-reaching effect in the development of emergency food materials for the Army, the Red Cross and other organizations concerned with supplying the stricken countries of Europe with needed food materials.

These additions and arrangements are distinct educational resources, for they add materially to the equipment used in class instruction and provide the basis for the investigation of important research problems.

The new degree of Master in Public Health was awarded in June to several candidates. In addition to the usually given summer subjects several special subjects were given during the season just ended. Professor Turner and Professor Harris conducted an advanced course in personal hygiene and applied nutrition; Professor Proctor repeated with great success his course in food technology attended by students with technical experience sent from a wide geographic range of food industries; Professor Horwood gave a course in civil and military sanitation; and Professors Horwood and Jennison jointly a course in sanitary chemistry and sanitary biology.

During the year an interesting series of colloquia in advanced physiology was presented by Professor E. Newton Harvey of Princeton in connection with the work in Biological Engineering, and Professor Loofbourow gave a most stimulating course in experimental biophysics, which dealt with the application of modern techniques such as spectroscopy, x-ray diffraction analysis, isotopic tracer methods, electron microscopy, etc., to the study of biological and biophysical problems. Practical experience in the use of such techniques has been made possible through our own departmental laboratory equipment and through the hearty coöperation of investigators in other departments of the Institute and elsewhere. Professor Loofbourow

will follow this subject with one on functional biophysics in the first term of the present year.

A biological engineering project dealing with the evaluation of fluorophotometers in the assay of the vitamin thiamin has also been carried out jointly by Professors Loofbourow and Harris. This is of great significance in view of the Federal requirements for fortification of flour and bread by this vitamin.

Mention should also be made of a special seminar in functional biology conducted by Professor Sizer for graduate students in Physiology, Biochemistry and Biological Engineering.

Members of the departmental staff have maintained a continuous study of the chemistry and bacteriology of the Alumni Swimming Pool during the year and results have been highly satisfactory.

While teaching has made large demands on the staff, as it should, there has been a parallel intense activity in research in varied lines. The list of investigations completed or under way covers a wide range. It includes effectiveness and measurement of public health procedures; advances in sanitation, and public health engineering; transmission of bacteria through air in relation to respiratory infections; biophysics in relation to production of wound hormones; the spectroscopy of biochemical substances; destruction of living cells by bombardment with protons; relation of physical and chemical conditions of soil to termite development and infestation; study of bone and blood phosphatase in scurvy; effects of temperature and oxidation-reduction potentials on the kinetics of enzyme reactions; study of oxidation-reduction potentials in the skin; numerous aspects of vitamin and nutritional research; continued studies in biological engineering, and a series of researches in food technology dealing with treatment of food materials preliminary to the application of conservation methods such as freezing and drying; the use of infra-red radiation in dehydration, and studies on packaging materials.

Professor Horton has been granted leave of absence for research in connection with the Navy, and Professor Dunn to carry out special work in foods in the Subsistence Branch of the Office of the Quartermaster General of the Army. At the

request of the Subsistence Branch Professor Prescott has been appointed a part-time consultant in this field, especially in relation to problems of dehydration of food supplies, and the purchase of these products for army use.

Various members of the Department have also rendered continuous national service in connection with educational and professional societies and on important committees.

The great interest in biological problems in defense and especially in industry, as in public health engineering and industrial hygiene, in food technology, and in many aspects of biological engineering seems to assure the continued importance of our work in all the various divisions of the Department, and should stimulate a healthy increase in student numbers, as the demands for men exceed the supply.

In conclusion, the gratitude of the Department is expressed to all who have aided in its development through gifts or graduate scholarship grants.

S. C. PRESCOTT.

CHEMISTRY

The need for periodic renewal of numerous pieces of equipment used in undergraduate laboratory teaching is especially important in the field of chemistry. A survey was completed during the year directed to the substitution of new for obsolete equipment and the Administration allotted funds to complete the project.

In the Analytical Division there was a complete replacement of old and obsolete balances, and the special equipment was augmented by the purchase of a modern hydrogen ion apparatus, polarograph and spectrophotelometer. The number of students receiving instruction in the physical chemistry laboratory is now much larger and several potentiometers have been purchased for the benefit of this group. The organic group has also been assisted by the addition of microbalances. The undergraduate thesis laboratory has likewise been improved, and a portion of the funds used to defray the expense of acquiring a high pressure autoclave and a roof house for high pressure organic syntheses.

In the report of the preceding year a proposed five-year

program for selected students in chemistry was cited. The research and development commitments connected with the national defense program unfortunately make it inconvenient to introduce the plan immediately. Moreover a conflict with existing rules pertaining to thesis raises an obstacle which it is hoped may be overcome when this subject comes up for consideration at a later time. The advantages of the proposed course for students entering the field of chemistry are considerable, particularly in those cases where the student contemplates qualifying for the Ph.D. degree.

It is gratifying to refer once more to the success of the undergraduate thesis laboratory. It does not seem to be generally realized on the part of those not active in the field of chemistry that the earlier a student can be introduced to research, the greater his opportunities for early success in his chosen field. The laboratory is proving the most intellectually stimulating venture yet devised, and students coming from this experience into the Graduate School are capable of carrying forward a level of scientific activity far higher than students from other colleges.

The organic chemistry group has placed in operation under Professor Morton's guidance a new course of instruction evolved from conferences referred to in last year's report. All members of the staff in organic chemistry participate in the course, and graduate students are insured a thorough study and review of the principles of organic chemistry including such diverse fields as dyes, carbohydrates, proteins, heterocyclics, tannins, terpenes, and natural products. A number of short courses have now been eliminated by consolidation, and the student's time conserved as well as that of the staff.

Professor Morton was appointed Director of the Research Laboratory of Organic Chemistry, while Professor Huntress has assumed the duties of Chairman of the Department Committee on Graduate Students.

Further improvement in the research effort in the organic field has resulted from a modified plan of Research Conferences suggested by Professor Morton. The purpose of the conferences is to cultivate the student's skill in the presentation of his results and their interpretation. Each student prepares a

written report on his subject to be presented, and the English Department supplies criticism of style and form. The net result of the new procedure is to keep the laboratory experimental work, its interpretation and implications parallel. In this way a better thesis is secured and the student's growth promoted at the proper period of his career.

Professor Mulliken and Professor Noyes were pioneers in the systematic study of the means of identifying organic compounds. Professor Huntress has carried forward a comprehensive work begun by Professor Mulliken before his death, amplifying and extending the work. The results of this effort are incorporated in a book on "Identification of Pure Organic Compounds."

Research in inorganic chemistry has been very active during the year under Professor Schumb's guidance. The research in connection with the less common elements, scandium and hafnium, has gone forward actively and also the radiometric studies undertaken some years ago. It is especially interesting to report that Professor Young is developing a promising idea directed to the more complete separation of the rarer elements, while at the same time the study of the chemistry of silicon is progressing favorably.

The need of especially qualified personnel for national defense research has contributed difficulties in maintaining our undergraduate instruction program at its customary level of effectiveness. A number of the younger men have been granted leave of absence to enable them to take part in projects of interest to the Army and Navy. Professor Tenney L. Davis was actively engaged during the first part of the year in national defense activities. A severe illness interrupted the work which is now being carried on with the assistance of associates in the field. It is pleasing to report that Professor Davis's recovery is now assured and he has returned to his duties in the department.

Other members of the staff have been relieved of a portion or all of their teaching duties to provide full time for national defense research. Professors Beattie, Collins, and Harris, and others of the staff are engaged partially or full time on national defense projects. Naturally this has caused an interruption of

other research, particularly in the field of low temperatures. Magnetic research has been completely interrupted largely through the absence of Professor Bitter.

Professor Louis J. Gillespie died on January 24 after a short illness. Decidedly a very unusual man, he was exceedingly modest and unassuming, and only those who came into intimate contact with him appreciated fully his extraordinary penetrating intelligence. His numerous and important scientific contributions are of a quality and depth that have exerted an immediate influence, while leaving much to be generally appreciated only with the passing of time.

He was also a self-taught but excellent musician and his compositions and symphonies have attracted very favorable attention on the part of professional musicians. He understood and played every musical instrument but he was particularly devoted to the cello, viola, violin and trombone. It is indeed difficult to find words to express the full measure of his loss to science and to his colleagues.

FREDERICK G. KEYES.

GENERAL SCIENCE AND GENERAL ENGINEERING

Among the special schedules selected by Course IX students during the past year the most popular have been combinations of mechanical engineering and business or chemistry and business. Second in popularity are special schedules relating to various aspects of optics and photography.

For several years students registered in ceramics have completed the undergraduate requirements in Course IX in preparation for graduate work in Course III (Metallurgy). Beginning next year students registered in meteorology in similar manner will complete the undergraduate requirements in Course IX in preparation for graduate work in the new Course XIV (Meteorology).

Courses in design include electrical communications equipment, electronic devices, internal combustion engines, and manufactured products. The usual number of students are specializing in textiles, food technology, and premedical instruction. Sporadic interests include vibration engineering, power

plant engineering, petroleum refining, electronics, and photochemistry.

RALPH G. HUDSON.

GEOLOGY

The Department of Geology has shown satisfactory growth during the year. No noteworthy changes in curriculum or general departmental activities have been made. The research work of the staff and students has been successful and productive.

Several new books are shortly to appear, including the important publication on "Index Fossils" by Professor Shimer and Professor Shrock; a volume on Structural Petrology by Professor Fairbairn; and "X-ray Crystallography" by Professor Buerger, who is also publishing "Numerical Structure Factor Tables." Professor Morris has prepared parts of two new volumes on the Geology of Mongolia; and Professor Newhouse has completed a report on his first year's work under a grant from the Carnegie Institution of Washington on spectrographic work in rocks and minerals.

Professor Slichter and Dr. Pekeris have been busily engaged in important research for the government, and will be on leave of absence during the coming year. Professor Parks is doing work in mineral economics with the OPM in Washington.

W. J. MEAD.

MATHEMATICS

During the year work was completed on a revision of the undergraduate course in mathematics, the new program becoming effective in 1941–42. This course is designed to cover more completely the requirements of the professional courses and also to serve as a better basis for further work in pure or applied mathematics.

For a number of years department members have been developing methods for handling problems involving applications of mechanics, theory of elasticity, and fluid dynamics. Staff and equipment are now available for training students along these lines and for handling research problems encountered in work for national defense and industry. Several such

investigations have been completed during the last year and others are now in progress.

The possibility of applying methods of mathematical statistics in specific industries was investigated and found feasible and desirable both from the standpoint of the Institute and that of industry. The Department therefore established a statistics laboratory and adopted a program of research to be handled jointly with the Department of Economics. Several companies are at present coöperating, thus financing the work and supplying needed data. By actually solving specific problems for these companies an investigation is being made of what statistical methods are best adapted for use in the fields of industrial inspection and development, and what effect factory and experimental conditions have on conclusions drawn from theory. This program is to be continued through the coming year and broadened to include additional coöperating companies. To acquaint representatives from industry with the possibilities in this field, the third consecutive summer course on statistical methods was given by the two coöperating departments.

Professor Martin spent the year at Princeton working with Professor Bochner on functions of several complex variables.

H. B. PHILLIPS.

PHYSICS

The year in the Physics Department, as in the rest of the Institute, has been one of gradual adjustment to the needs of the emergency and of national defense. The present war, more than any previous one, is proving to be a physicist's war, and the call on physicists has become more and more severe as time goes on. Professor Harrison, as chairman of the Instruments Section of the National Defense Research Committee, has had a great and constant load of responsibility throughout the year. In spite of the large amount of traveling and administrative work involved, he has managed to continue his services as Editor of the Journal of the Optical Society of America, as well as much of his normal teaching and research load at the Institute.

Professor Morse has been put in charge of several defense

projects of an acoustical nature. These involve a considerable personnel, as well as a good deal of administrative work, and Morse has had to give up his teaching during most of the year. Professor Stockbarger has been in charge of a defense project at the Institute, of rapidly developing size and importance. Professor Hardy and Dr. Duntley have been engaged in consultation and in research of an optical nature in connection with the defense effort.

With the opening of the Radiation Laboratory of the National Defense Research Committee at the Institute, a number of members of the Department's staff have become associated with that laboratory in an advisory or a full-time capacity. Professors Slater, Morse, Vallarta, Stratton, Frank, Nottingham, Allis, and Van Atta have been associated with the laboratory to varying extents. Dr. Clogston and Mr. Meade, and more recently Professor Van Atta and Dr. Buck, have been associated with it for full time, and for the year 1941–42 Professor Stratton also will devote full time to it.

Mr. Northrup has been absent in Washington during the whole year, in association with the Naval Ordnance Laboratory. Professor Lamar and Professor Albertson have been absent on similar research for the summer of 1941, and expect to be in Washington during the coming year. Professor Boyce has been granted leave of absence for special administrative work in connection with the National Defense Research Committee under Dr. Compton. Mr. Hornbeck has been acting as technical aide to Professor Harrison in his defense work, and Dr. Squire has also been assisting him.

Defense projects are getting under way in the cyclotron laboratory, where most of the staff of the laboratory, under the direction of Professor Evans, will collaborate in work relating to the medical aspects of applied radioactivity, and in the high voltage laboratory, where Professor Van de Graaff and his collaborators are starting work on industrial radiography as applied to defense.

In spite of this large concentration on problems of National Defense, the department has been able to maintain its normal program in a surprisingly satisfactory way. The teaching has so far been only slightly affected by the diversion of staff mem-

bers to defense. Normal research programs naturally have been curtailed, but a number of the important research projects have continued.

The cyclotron, constructed under a grant from the Markle Foundation, has been put into full scale operation during the year, under Professors Evans and Livingston, and is operating continuously, proving to be one of the two or three most productive cyclotrons in the country. The problem of the application of radioactive iodine to the thyroid, the problem for which it was primarily constructed, has proceeded satisfactorily, as have numerous other problems. Twenty-four joint projects have been undertaken under a system of coöperative investigation in which the cyclotron is used to produce radioactive isotopes, and physicists and chemists from the Institute collaborate with workers in other fields to solve problems which cannot be attacked except by the new method of radioactive indicators. These projects include medical, chemical, and metallurgical problems.

Other developments of the nuclear physics laboratory have attracted wide attention. The geological work, under Dr. Goodman, is proving of great practical importance to petroleum engineers, as well as to geologists. Important work in pure nuclear physics is under way as a result of Dr. Deutsch's development of a new type of beta ray spectrometer, which is proving applicable to a study of the gamma ray spectra of radioactive nuclei. This work is being continued by Dr. Roberts and Mr. Downing, in collaboration with Dr. Deutsch.

The Van de Graaff high voltage generator has been operating as a source of high voltage X-rays during the year. Professor Van Atta and Professor F. E. Myers, of New York University, who has been on the staff for the year on leave of absence from his own university, have secured valuable results on the scattering of X-rays up to two million volts. Professor Van de Graaff and Dr. Buechner have performed an important calorimetric experiment concerning the scattering of beta rays. Professor Lamar has continued the development of high power ion sources, and has also continued his study of the theory of electric arcs.

The spectroscopy program has continued in a normal way.

The project supported by the Works Progress Administration has gradually decreased in intensity, after securing very valuable results in the measurement and tabulation of spectrum lines. Professor Boyce's program of research in the vacuum ultraviolet region, under a grant from the Carnegie Institution, and with support from the Works Progress Administration, has achieved important results. Vacuum ultraviolet wavelengths of a large number of elements have been measured and tabulated, and the results are proving to be of use to spectroscopists working in this field in a number of institutions. The Ninth Spectroscopy Conference, in the summer of 1941, was highly successful.

Professor Harvey has continued the construction of the electron microscope, and has carried this large undertaking nearly to completion. It is already in operation for visual observation, and it is hoped that the photographic attachment will soon be finished. This instrument when completed will embody several features not available in the other electron microscopes so far constructed in this country.

The X-ray program has continued its work in the study of crystals and amorphous materials. Professor Warren has been elected vice-president of the newly formed American Society of X-ray and Electron Diffraction. Professor Nottingham's program of fundamental electronic research has also continued with valuable results. Professor Mueller has made interesting studies of the optical properties of colloidal suspensions of certain clays, properties of which may have practical applications. The program in applied optics, under Professor Hardy and Dr. Duntley, continues its activity. Professor Sears has made interesting contributions to teaching techniques in the form of high speed photographs of various accelerated objects. The theoretical group has continued a certain amount of research in fundamental theoretical physics, though devoting most of its time to defense. Several other fields of physics as well have been the subject of research by departmental members.

As the new year starts, the staff is seriously depleted, though enough younger staff members are available to carry the teaching load. It seems clear that the coming year will see a much more serious curtailment of fundamental research

than has the last year, as more and more effort is put into research and development concerned with National Defense.

JOHN C. SLATER.

SCHOOL OF ARCHITECTURE

ARCHITECTURE

The work of the schools of architecture in America is being brought into closer relationship with the activities of The American Institute of Architects through the appointment of a joint committee to consider the problem of architectural education and its closer relationship with the practice of the profession. Isolating the schools of architecture from the realities of life does not create students of vision broad enough to assume active leadership under present-day conditions. For many years the teaching of architecture was largely confined to the consideration of a building without sufficient knowledge of its relationship to the social and economic problems surrounding it. In the growth of our American cities, a great deal of construction has been unwisely undertaken because of the lack of consideration of these two important elements in our economic life. Before an architect can make an intelligent approach to the problem of a building, he must first consider the actual needs of the people that are to occupy it and, most important of all, the relationship of the cost of the construction to the possible income. The architect is the trustee of his clients' funds and has a moral obligation to spend them wisely. Thus the relationship between the School of Architecture and the other departments of the Institute is of importance: first, because it teaches the students to coöperate with men in different fields of the same project; and, second, because it gives them a broader understanding of the engineering and scientific problems connected with architecture.

Further than that, the architect has an obligation to create beauty, not only in the individual building, but in its surroundings and in the cities, towns, and villages in which it may be erected. The field of architecture is a very widening one and includes city and regional planning, as well as industrial design. The architects must be promoters of ideas

and there are many types of developments of buildings which, one might say, are now almost non-existent and which are to become a most important part of our changing civilization. Perhaps the most pressing problem of all is that of shelter for people of small means, a problem which will require courage on the part of the architectural profession because they must oppose vested interests of all kinds interested in maintaining the status quo in building codes, zoning ordinances, and other practices in the building industry which are against the best interests of the average citizen. In architecture, in city and regional planning, and in industrial design, the field of opportunity is greater for this profession than it has been in the entire history of the country. The opportunity will not develop unless men of vision and courage are trained for the future. The most important element in training is to develop and encourage the inquiring mind, for in that quality of thinking lies the future success of this profession. The curriculum of the School of Architecture is being carefully studied with a view to creating a course which shall give a well-rounded training to students of architecture which will bring about the leadership so sorely needed.

Again, one of our students, Martin Rosse, Class of 1940, won the Rotch Travelling Scholarship of $1,000 for travel and study in Mexico. Two of our graduate students were awarded week-end prizes in competition with students from Harvard and the Boston Architectural Club.

WALTER R. MACCORNACK.

CITY PLANNING

The most important part of the program of instruction each year is the preparation by the senior class of a comprehensive regional plan of a group of adjoining communities in the Boston metropolitan region, each student being made responsible for the preparation of the survey maps, master plan, and report for one of the political subdivisions included in the region. The area chosen for study during the past year included the City of Quincy and the towns of Canton, Randolph, Braintree, Weymouth, Hingham, Cohasset and Hull, which proved to be a fortunate choice as a number of interest-

ing problems in the fields of transportation and housing have arisen in this area as a direct result of the tremendous increase in activity at Bethlehem's Fore River plant. Professor Hartzog, who at the beginning of the academic year was appointed Regional Coördinator for New England in the office of the Defense Housing Coördinator, was able to make frequent trips from Washington to assist in supervising the problem. The final plan of the region, together with the individual plans of each town, comprising an area of over a hundred square miles and a population of 143,000, were presented to official representatives of the communities concerned at a meeting held at Technology in May. The completion of this study brings up to thirty-five the number of cities and towns in the metropolitan region for which surveys and plans have been prepared on a collaborative basis.

The coöperative arrangement with municipal and state planning boards continues to function successfully, a number of graduate students having served during the past year in the offices of the Boston City Planning Board, the Massachusetts State Planning Board, and the New Hampshire State Planning and Development Commission. Mr. Frederick P. Clark, Executive Director of the latter agency, is now a regular lecturer on our staff. Mr. John R. Kellam, a graduate student in Course IV-C, during his three months of in-service training with the Massachusetts State Planning Board, prepared a report on "Planning Laws in Massachusetts," which was published last year as an official document by the Board.

A unique opportunity for coöperation occurred in connection with the redevelopment of part of the town of Marshfield which was destroyed by fire in April 1941. Nearly five hundred dwellings were demolished in a section which was laid out in a gridiron pattern with many small lots, especially along the water front. With the assistance of the State Planning Board and two members of our research staff, a revised plan of streets and lots was prepared which was acted on favorably by the State Legislature and approved at a special town meeting.

Due to the broader approach now given by governmental agencies to problems in city and regional planning, there is a growing need for men who are qualified to deal with not only

the technical aspects of these problems but also the economic and administrative. In view of the above a meeting of the Advisory Committee of the Course in City Planning was called to consider the whole problem of planning education, particularly with reference to the extent of instruction in economics, sociology, government, and administration. The meeting was held at Technology on March 11, 1941, and was attended by six members of the Committee and by Dr. Compton, Dean Bunker, Dean MacCornack and Professors Schell, Shurtleff and Adams. The consensus appeared to be in favor of stressing even more than at present the relationship of planning to the social sciences with emphasis on the practical application of political and economic theory. A new required subject, "Government and Public Administration" is to be included in the curriculum starting in 1941–42. Arrangements have also been made to offer a new elective subject in "Land Economics — Principles and Policies," in which a number of well-known experts will participate as seminar leaders.

FREDERICK J. ADAMS.

GRAPHICS

During the year the Section of Graphics offered a new course in nomographic charts for juniors and seniors. The course was well received and will hereafter be offered during the second term of each year.

Adjustments were made in the course in Descriptive Geometry to include some solutions of typical space problems by both graphical and analytical methods, in order that the student might compare the time required and judge the relative accuracy of the two approaches. This was done also because it was felt that many problems are best approached by a combination of both methods. Thus the student should have some practice in correlation.

JOHN T. RULE.

DIVISION OF HUMANITIES

Economics and Social Science

The year has been an active one for the Department of Economics and Social Science.

Teaching. In order to improve the course in Economic Principles, experiments have been conducted in the employment of cases as a teaching aid and in the use as a textbook of the report on "The Structure of the American Economy" prepared under the direction of the National Resources Committee. Both types of material were introduced last year with satisfactory results.

Some expansion of the teaching program has been made possible through the coöperation of the Departments of Mathematics and Chemical Engineering. New courses in statistics have been added as required by the new statistics option set up by the Mathematics Department. New courses in economic principles and industrial relations have been added to satisfy the enlarged economics program now being offered to a selected group of chemical engineering students. These developments represent a significant breaking down of departmental barriers.

Industrial Statistics. The statisticians of the Department have been active not only in connection with its expanded teaching program but also in meeting demands upon their time and energy arising from problems presented by research workers in other departments of the Institute and by industrial concerns. During the year more than thirty concerns have submitted statistical problems for solution and some of these questions have required visits to the plants. During the past three years, in coöperation with the Department of Mathematics, a summer course in Industrial Statistics has been offered to young business executives. There has been an enrolment of about fifteen in each of these courses and the results have been valuable not only to the concerns represented but also to the Department. Through this activity the scope of the Department's industrial contacts has been enlarged.

Industrial Relations Section. The Industrial Relations Section continues to develop its activity. During the past year the library of the section has been used increasingly by stu-

dents as well as by industry and the public. The library has recently started a series of bulletins which have been sent out to a limited group of industrial concerns, dealing with company practices with respect to current employer-employee problems. A number of research studies have been completed and others are now being carried on. One of the latter concerns the movement of wages in the United States in different industries since 1929. Another concerns the factors which have led to the location of industry in New England and the factors which have caused migration.

National Defense. The present defense emergency has affected the work of the Department in various ways. Lectures dealing with the economic problems of industrial mobilization are being given in the general course in economics which is required of all students. A special general study entitled "The Economics of War" was given the first term. One of our staff, Professor Douglass Brown, has been on leave of absence as the chief economic advisor to the raw materials division of the Office of Production Management. His leave has been extended until November in order that he may go with the American Economic Mission to Moscow. Members of the Industrial Relations Section have coöperated with various branches of the Federal Government; (1) in making a study of skilled labor shortages in the aviation and machine tool industries, (2) in a survey of the labor market in New England, (3) in consulting with the National Resources Planning Board on problems of industrial location, (4) in contributing to the "Training Within Industry" program of the Office of Production Management. Our statisticians have been called upon to consult with the Army Ordnance Department and one of them has been working on an important statistical problem at the Watertown Arsenal. Another member of our staff, Professor Paul A. Samuelson, has become a consultant to the National Resources Planning Board to study the economic problems of post-war adjustment in the United States.

Other Research. Professor Maclaurin has obtained a grant of funds from the Rockefeller Foundation to initiate a series of exploratory studies on the economics of technological change. Attention will be focussed in these studies on gather-

ing facts in different industries concerning the methods of planning for and introducing technological changes involving substantial capital investment.

The New Ph.D. Degree. For the first time the Department is offering a program of study and research leading to the Ph.D. degree in Industrial Economics. The aim will be to study economic forces as they operate in the various industries of the country. Attention will be centered on the application of economic principles in the analysis of actual business conditions. In emphasizing the analysis of particular industries — their labor relations, price policies, and technological changes — in emphasizing individual instruction and close contact between student and staff, the Department hopes to offer a type of education that is somewhat different from that available at other institutions.

Some special funds from outside sources were obtained for fellowships to assist this program and over three hundred applications were received in a competition held last spring. From this number twelve graduate students have been admitted for 1941–42.

RALPH E. FREEMAN.

ENGLISH AND HISTORY

Last year's report mentioned the effort which the Department is making in its options in literature and history to rely less upon textbooks and more upon original writings and outstanding critical studies. This effort has been greatly aided by the addition to Walker Memorial Library of a room in which many of the books needed for the work in English and history can be kept. Mr. Seaver and the members of the Library staff have made it possible for us to transfer approximately 2,500 titles from the Central Library to the new room. In addition, more than 1,200 titles have been purchased to fill in serious gaps in our collections in the fields of literature and history. A trained librarian administers the book reserves for our various options and assists students with their reference problems. In spite of the inevitable confusion resulting from the transfer of so many titles from one library to another, and in spite of the inadequacy of some of our reserves this first year, ample evi-

dence of the use of the library exists. Up to June 30, more than 4,600 overnight loans of books for English and history had been recorded.

At the suggestion and with the assistance of the Debating Society, a series of freshman inter-section debates was held during the first term. After a round of short talks, each E11 section selected a team to represent it in the contest. An elimination series followed, with preliminaries held in the English sections, subsequent rounds in meetings of the Debating Society, and the finals at a special dinner. The debates aroused much interest and gave an immediate purpose to the practice in oral presentation.

Two groups of students were given special attention in composition. After examining the entrance records of all foreign students, an instructor selected the men who he felt would have difficulty in a regular section of freshmen and gave them individual instruction. The second group consisted of a few juniors whose written work during their second year clearly revealed a need for further training in the fundamentals of composition. An instructor held individual conferences with these students.

During the first term, in an effort to stimulate interest in reading worth-while books, the department offered a Reading Seminar. The membership was limited to fifteen men. In addition to four books which for purposes of class discussion were read by all members of the group, each student, with suggestions from the instructor, worked out an individual program of reading which he felt would add to both his knowledge and pleasure. The results were so encouraging that the General Study Committee has granted permission to the department to give the Reading Seminar during both terms of the coming year.

Professor Roberts wrote the section on "Western and Central Europe since 1918" for the revised edition of *An Encyclopaedia of World History*. Professor Bartlett wrote for the National Research Council a monograph on the "Development of Industrial Research in the United States" which was published as part of a report of the National Resources Planning Board. Mr. Bates has had published several articles dealing with the development of science in America. Professor Copi-

thorne and Professor Smith have lectured many times to groups outside the Institute. Professor Smith gave a paper before the English Section at the annual meeting of the Society for the Promotion of Engineering Education, and Professor Bartlett spoke at a Conference for Teachers of English in Engineering Schools, which was held in July under the joint sponsorship of the S.P.E.E. and the University of Michigan.

With the death of Professor Robert E. Rogers, and with the retirement of Professor Archer T. Robinson, the Department has lost two beloved teachers. Only those members of the department who have worked with them daily for many years can know how keenly their absence will be felt.

HOWARD R. BARTLETT.

GENERAL STUDIES

The program of General Studies was continued along the same general lines as last year. Some courses which no longer meet a real need were discontinued, at least for the time being, including all with very small enrollments. Twenty-one subjects were offered in the first term with a total enrollment of 624 students, and 25 in the second term with an enrollment of 699. As in other recent years, the most popular courses have been those in Psychology, with Comparative Government a close second. A reasonable variety of choices has been maintained in each of four fields, namely, the history of science and thought, the history of civilization, literature and the fine arts, and the social sciences.

In accordance with a general policy adopted by the Committee on General Studies, subjects with less than six units of credit have been discouraged. It was felt that fewer subjects with more time for wide reading were especially needed. The new informal reading seminar, providing opportunity for reading good books under guidance was very successful. Next year a course of similar type under the heading "Comparative Literature" will give a further opportunity for direct acquaintance with the greater books of each of the significant periods of general literature. These two subjects are a return in a new form to the older experiment of summer reading once sponsored by President Maclaurin. In ways such as these we hope to

train an increasing number of students who are well read and genuinely thoughtful.

The death of Professor Rogers and the retirement of Professor Robinson make changes inevitable in our program for next year. We hope to find successors who will typify the same broad, humanistic conception of the purpose of education which these professors, and others like them, have so long maintained.

The chief problem of the general study program is to find sufficient time and attractive hours in crowded schedules. The various professional departments are now considering this question in a broad, constructive spirit which may be expected to lead to even greater emphasis on cultural subjects than has been possible heretofore.

ROBERT G. CALDWELL.

MILITARY SCIENCE AND TACTICS

Instruction was given during the year in accordance with War Department Program for the Reserve Officers' Training Corps.

Probably as a result of the present emergency, there was at first increased interest on the part of students, and an increase in the number of applications for the Advanced R.O.T.C. courses. However, several developments since the winter of 1940–41 have combined to alter this situation. The two most important factors appear to be the success of the Institute in obtaining draft deferments, supplemented by the prospect of obtaining employment on graduation in defense industries, and the attractive offers made by other agencies such as the Navy, which has sought candidates for the Naval Reserve on a basis involving little extra work by the students.

Instruction was conducted almost entirely by Reserve Officers called to active duty as replacements for the Regular Army Officers who were transferred to various important positions throughout the country.

As usual, all units of the Department were rated as "Excellent" by the Corps Area Inspectors.

Rifle and pistol teams had a successful season.

E. W. PUTNEY.

Modern Languages

The effects of the present war have obviously been unfavorable to foreign language study. Throughout our country the number of students taking French in school and college has rapidly and sharply declined; German has suffered much less, while Spanish has in comparison gained impressively. At the Institute similar trends are inevitable, especially in view of Defense activities, but though our numbers have declined we are gratified to report that the interest of our classes and the excellence of performance have never been better. Our numbers in French courses have fallen from 99 in 1939 (November) to 58 in 1940; German enrollment dropped from 277 to 232; Spanish remained practically unchanged (23 in 1939, 21 in 1940), the lack of growth being naturally due to curricular and schedule restrictions.

Two new courses were given during the year: a one-term continuation course in Intermediate German, scientific and cultural, for men in Course V, Third Year, and a General Study in the History of French Civilization with numerous lantern illustrations. The former of these was offered at the request of Course V to replace the course in foreign language chemical readings previously given in the Chemical Department. This coming year, in order to meet the increased interest in Spanish and Spanish America, a second year course in Spanish will be offered for the first time, and the first half of Elementary Spanish will be repeated in the second term. Another new course is one in Comparative Literature entitled "Great Traditions in European Literature" offered by Professor Koch. Though Portuguese is not offered in our curriculum, help for those interested is furnished by the complete Linguaphone Conversational Course in Portuguese available in our Phonograph Room, along with a limited number of reference books in the library. The Phonograph Room collection has also been enriched by new phonograph courses in Conversational Spanish.

In the field of extra-curricular activities the Department proposed and helped effect the reorganization of the Cercle Français as a club managed almost exclusively by the students instead of one managed by the Department. This change pro-

duced a considerable increase in interest and activity. A number of dinner meetings were held, in coöperation occasionally with other institutions of Greater Boston. Two of the speakers were Professors F. K. Morris and R. F. Koch of the Institute. The Grupo de Habla Espanola held a number of meetings, again coöperating with neighboring institutions. The principal speakers were Professor Anita Oyarzabál of Wellesley College, Dr. Aurelio Espinosa of Harvard, Professor Jorge Guillén of Wellesley, and Professor Pedro Henríquez Urena of the University of Buenos Ayres.

As contributors to the activities of the French Talking Films Committee we were able, as in the past, to distribute to our students a generous number of free tickets to the frequent showings of French films in Cambridge.

The Department was the host in December of the Eastern Massachusetts Group of the New England Modern Language Association; also host for the second time of the New England Chapter of the American Associations of Teachers of Spanish.

The Visiting Committee held a stimulating meeting with the Department discussing at length, among other problems, the general trend in education away from the humanities to practical and social studies, and possible ways of meeting it. The department is very grateful for their interest and helpfulness.

E. F. LANGLEY.

REPORT OF THE TREASURER

AUDITORS' CERTIFICATE

We have made an examination of the books and accounts of the Treasurer and the Bursar of the Massachusetts Institute of Technology for the year ended June 30, 1941, and we report thereon as follows:

We checked the investment accounts at June 30, 1941, with lists of securities at that date, certified by the Old Colony Trust Company of Boston, Massachusetts, Custodian, and we examined or tested the accounts and supporting records relating to the other assets and liabilities shown in the Balance Sheet, Schedule A. The collectibility of the balance of one account receivable for research (approximately $22,000.00) is doubtful and by direction of the executive committee an equivalent amount has been earmarked in the unrestricted funds as a reserve therefor.

We satisfied ourselves by extensive tests of the recorded transactions for the year that income receivable had been duly accounted for and expenditures properly controlled and authorized.

In our opinion, the accompanying Balance Sheet and Statements of Operating Income and Expense and of Surplus with the supporting schedules, which are in accordance with the books of the Institute, present fairly, on the basis indicated, the financial condition of the Institute at June 30, 1941, and the operating results for the year ended at that date.

We extended our examination for the year to include the transactions of the Joseph Hewett and George S. Witmer Funds, of which the Massachusetts Institute of Technology acts as Trustee, and satisfied ourselves that the provisions of the Trust Agreements had been fulfilled.

Our examination embraced also the accounts of the Massachusetts Institute of Technology Pension Association for the same period, which we found to be correctly stated.

The investment accounts of the Joseph Hewett and George S. Witmer Funds and of the Massachusetts Institute of Technology Pension Association at June 30, 1941, were also checked by us with lists of securities at that date certified by the Old Colony Trust Company of Boston, Massachusetts, Custodian.

PATTERSON, TEELE & DENNIS,
Accountants and Auditors

1 Federal Street, Boston, September 24, 1941

REPORT OF THE AUDITING COMMITTEE

To the Corporation of the
Massachusetts Institute of Technology:

The Auditing Committee reports that the firm of Patterson, Teele & Dennis, Accountants and Auditors, was employed to make an audit for the fiscal year ending June 30, 1941, and we submit herewith their certificate dated September 24, 1941.

Their full report covers the accounts of the Massachusetts Institute of Technology, the Hewett Fund, and the George S. Witmer Fund of both of which the Massachusetts Institute of Technology acts as Trustee.

The report also covers the account of the Massachusetts Institute of Technology Pension Association.

Respectfully submitted,

PAGE GOLSAN,
J. WILLARD HAYDEN,
HAROLD B. RICHMOND, *Chairman*

September 24, 1941

TREASURER'S STATEMENT

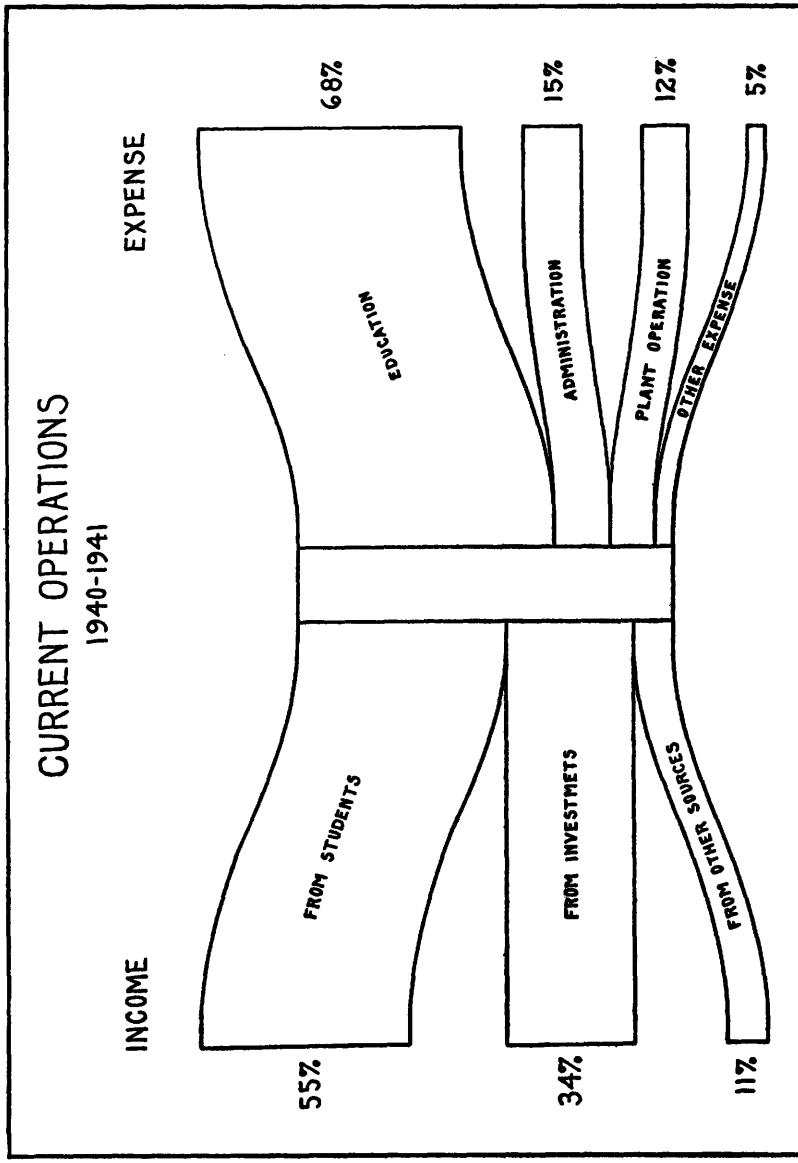
To the Corporation:

The statements and schedules submitted herewith in accordance with Section VI of the By-Laws of the Corporation show the financial condition of the Institute as of June 30, 1941, and also summarize the financial transactions during the year ended on that date.

There are three major schedules presented, (A) BALANCE SHEET, (B) OPERATING INCOME AND EXPENSE FOR THE YEAR and (C) CURRENT SURPLUS, in the order named. The first two are broken down into supporting schedules designated A-1, B-1, etc.

EDUCATIONAL PLANT

Educational Plant assets increased $396,000 during the year and now stand at $16,724,000. This increase includes the addition to the Sloan Automotive Laboratory, the completion of the Alumni Swimming Pool, the construction of a new low-cost building — intended for general storage purposes but immediately requisitioned for defense research — and finally expenditures up to June 30 on the Chemical Engineering Laboratory now being rushed to completion for occupancy by the United States Chemical Warfare Service in early fall. The sources of the greater part of this plant capital are indicated in a new arrangement of Schedule A-9, Principal Gifts and Appropriations for the Educational Plant.


CURRENT OPERATIONS
1940-1941
INCOME
EXPENSE
FROM STUDENTS
FROM INVESTMETS
FROM OTHER SOURCES
55%
34%
11%
EDUCATION
ADMINISTRATION
PLANT OPERATION
OTHER EXPENSE
68%
15%
12%
5%

Current Operations

The flow chart on the opposite page readily indicates the sources of net operating income and the distribution of net operating expense for the past year.

The income from students — including loans and scholarships granted — amounted to $1,821,000 — 55 per cent of the total income, and $4,000 over 1939–40.

Investment income fell below that of last year by $81,000 — 34 per cent of the total, compared with 37 per cent last year. This reduction is accounted for — first, by retention throughout the past six months of more than $1,000,000 of investment funds in cash — and latterly, by advances against national defense research operations, and for the construction of the new Chemical Engineering Laboratory.

On the expense side, Educational Expense amounted to $2,259,300 (68 per cent of the total), a drop of $49,000 from last year.

Total income for the year exceeded expenses by $50,462.51 and recoveries from previous year's appropriations and operations were considerably larger than usual. Year end appropriations from Surplus for 1941–42 Expenses totalled $44,554.49. The effect of all operations was to increase the Current Surplus by $21,225.23 and it now stands at $27,470.10.

Endowment Funds

The Book Value of the Endowment and other Funds* is $35,981,500, a decrease of $31,000 from last year. While there were capital gift additions during the year of $510,000 (see page 149), a substantial portion was applied to new building construction along with appropriations from certain unrestricted funds. There was also a decrease in the Endowment Reserve Fund of $224,000 as a result of investment changes, but through such changes an improvement in the list of securities was effected. The Endowment Reserve Fund now stands at $373,700.

* Funds for Educational Plant Capital not included.

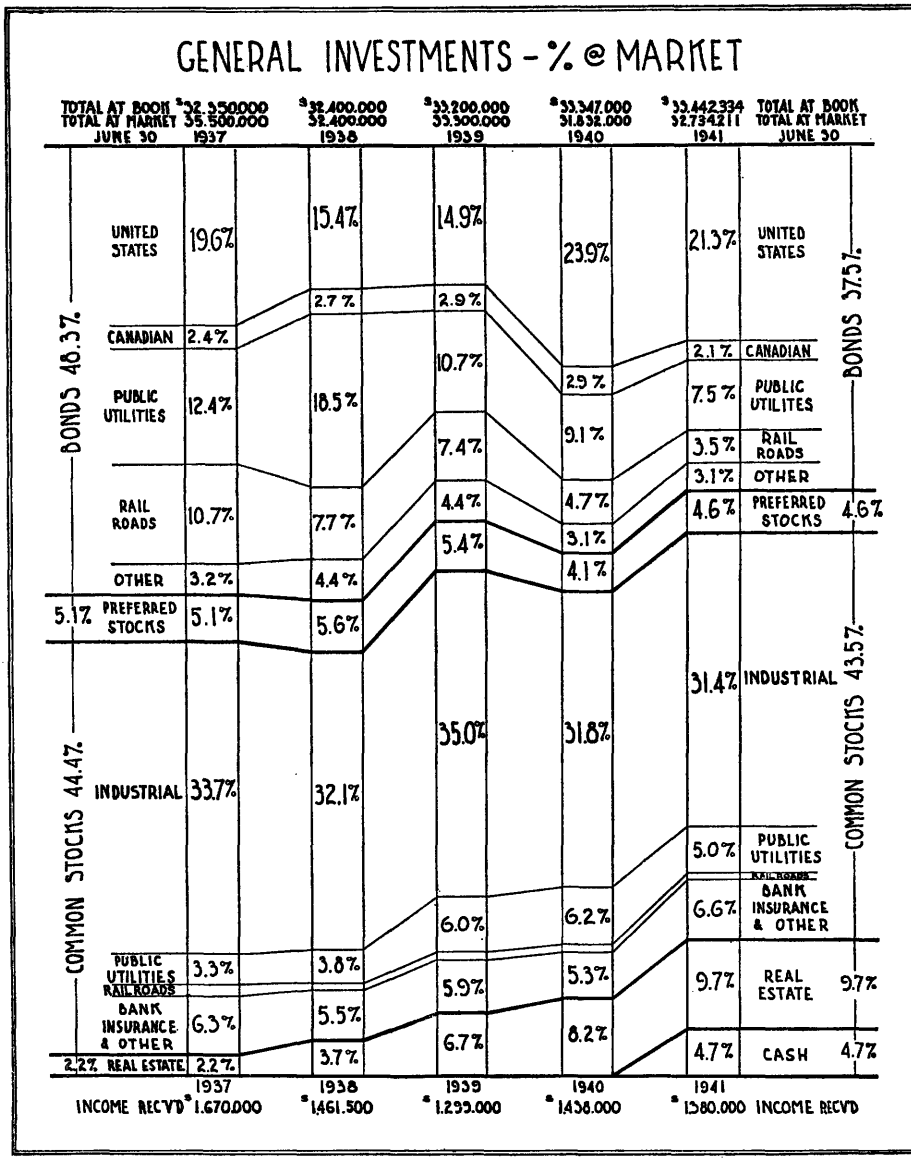
INVESTMENTS

SUMMARY OF INVESTMENTS AS OF JUNE 30, 1941

General Investments	*Book*	*Market*	*Per Cent at Market*
Bonds —			
United States Government	$6,747,875	$6,945,167	21.3
Canadian (all issues)	747,947	688,100	2.1
Public Utility	2,301,710	2,453,178	7.5
Railroad	1,201,268	1,159,562	3.5
Other	1,089,695	1,022,828	3.1
	$12,088,495	$12,268,835	37.5
Preferred Stocks	$1,600,337	$1,525,000	4.6
Common Stocks —			
Industrial	$10,419,503	$10,277,751	31.4
Public Utility	1,791,578	1,626,074	5.0
Railroad	199,002	174,700	.5
Bank, Insurance and Other	2,647,783	2,166,215	6.6
	$15,057,866	$14,244,740	43.5
Mortgages and Real Estate	$3,184,060	$3,184,060	9.7
*Cash	1,511,576	1,511,576	4.7
Total General Investments	$33,442,334	$32,734,211	100%
Special Investments	2,539,210	2,474,204	
TOTAL INVESTMENTS	$35,981,544	$35,208,415	

Changes in the pooled or general investments during the past five years are shown in the one hundred per cent component bar graph presented on the opposite page.

* $638,757.60 advanced for National Defense Research and new building construction.


GENERAL INVESTMENTS - % @ MARKET
TOTAL AT BOOK $32,250,000 TOTAL AT MARKET 35,500,000 JUNE 30 1937
$33,400,000 32,400,000 1938
$33,200,000 33,500,000 1939
$33,347,000 31,832,000 1940
$33,442,334 32,734,211 1941
TOTAL AT BOOK TOTAL AT MARKET JUNE 30
BONDS 48.3%
BONDS 37.5%
UNITED STATES 19.6% 15.4% 14.9% 23.9% 21.3% UNITED STATES
CANADIAN 2.4% 2.7% 2.9% 2.9% 2.1% CANADIAN
PUBLIC UTILITIES 12.4% 18.5% 10.7% 9.1% 7.5% PUBLIC UTILITIES
RAIL ROADS 10.7% 7.7% 7.4% 4.7% 3.5% RAIL ROADS
OTHER 3.2% 4.4% 4.4% 3.1% 3.1% OTHER
5.1% PREFERRED STOCKS 5.1% 5.6% 5.4% 4.1% 4.6% PREFERRED STOCKS 4.6%
COMMON STOCKS 44.4%
COMMON STOCKS 43.5%
INDUSTRIAL 33.7% 32.1% 35.0% 31.8% 31.4% INDUSTRIAL
PUBLIC UTILITIES 3.3% 3.8% 6.0% 6.2% 5.0% PUBLIC UTILITIES
RAIL ROADS
BANK INSURANCE & OTHER 6.3% 5.5% 5.9% 5.3% 6.6% BANK INSURANCE & OTHER
2.2% REAL ESTATE 2.2% 3.7% 6.7% 8.2% 9.7% REAL ESTATE 9.7%
4.7% CASH 4.7%
1937 INCOME RECV'D $1,670,000
1938 $1,461,500
1939 $1,295,000
1940 $1,436,000
1941 $1,380,000 INCOME RECV'D

INVESTMENTS — *Continued*

There have been many changes in the investment list during the year, notably a reduction in United States Treasury Bonds — more than offset by the 4.7 per cent cash uninvested — also a reduction in railroad bond holdings to 3.5 per cent (contrasted with 10.7 per cent five years ago), and finally an increase in real estate holdings. These latter have steadily grown since 1937 and now (excluding mortgages 1.7 per cent) total 8 per cent of the general investment account.

This real estate (page 164) consists of four commercial properties in Boston ($456,000) received through bequests or exchange, three properties in Cambridge ($880,000) including the Graduate House and the apartment house (Bexley Hall), both purchased, and seven commercial properties in Massachusetts, Connecticut and New York State ($1,318,000) purchased for and occupied by the Woolworth, Montgomery-Ward, and Kresge Companies in new stores on long-term leases providing for complete amortization of the buildings within the terms of the leases. To these latter will shortly be added the new Sears Roebuck Terminal in Somerville, a new property for Woolworth in New York State and another for Montgomery-Ward in Virginia, completing commitments in this field for the present.

The Market Value of the General Investments was just under 98 per cent of the Book Value. It was 100 per cent in 1938 and 1939 and 95 per cent last year.

INVESTMENT INCOME

The income available for distribution to the pooled funds permitted an allocation of 4.10 per cent contrasted with 4.38 per cent last year, 4.02 the year before. The yield on all investments held as of June 30, 1941, and figured at market value was 4.36 per cent — 4.32 per cent last year, and 3.89 per cent the year before.

GENERAL

On pages immediately following will be found (1) a record of the Gifts and Bequests received by the Institute during the fiscal year, (2) a Report of the Operations of the Technology Loan Fund Committee for the year, (3) a Report of the Trustees of the M. I. T. Pension Association.

Respectfully submitted,

August 15, 1941. HORACE S. FORD, *Treasurer.*

GIFTS AND BEQUESTS RECEIVED DURING YEAR ENDED JUNE 30, 1941

CAPITAL

Contributions to M. I. T. Alumni Fund, 1940–41 (additional).	$35,131.21
Contributions to M. I. T. Alumni Fund, 1941–42	41,667.06
Contributions to Alumni Gymnasium Fund (additional)	4,723.65
Louie G. Applebee Estate for Applebee Fund	300.00
Stephen L. Bartlett Estate for Bartlett Fund (additional)	63,075.00
Frank H. Briggs Estate for Major Briggs Fund	32,574.14
Class of 1896 for Scholarship Fund	125.00
Contribution to Class of 1909 Scholarship (additional)	1,000.00
Estate of Charles W. Eaton for C. W. Eaton Fund (additional)	726.16
Ellis Hollingsworth Estate for Hollingsworth Fund	10,000.00
Arthur E. Kennelly Estate for Kennelly Fund	65,588.99
Alexander G. Mercer Estate for Hall-Mercer Scholarship Fund	60,209.29
Hattie B. Morrill Estate for F. W. Morrill Scholarship Fund	2,000.00
Harriette A. Nevins Estate for George Blackburn Fund (additional)	53,390.34
B. E. Salisbury for Henry Webb Salisbury Fund	1,100.00
H. N. Slater for Wright Memorial Wind Tunnel (additional)	2,500.00
A. P. Sloan, Jr. for Automotive Laboratory	100,000.00
Anna Spooner Estate for Anna Spooner Fund (additional)	3,396.14
Elizabeth R. Stevens for Albert G. Boyden Fund (additional)	380.00
Joseph P. Turner Estate for E. K. Turner Fund	3,814.00
Contributions to Alice Brown Tyler Fund (additional)	559.64
Mary Louise Waterbury Estate for Charles Dann Waterbury Fund	13,407.28
Edwin S. Webster for Technology Loan Fund	15,000.00
	$510,667.90

MISCELLANEOUS

Contributions from Friends of Library	$ 915.00
Contributions to Industrial Relations Fund	47,700.00
Contributions to Industrial Economics Graduate Program Fund	8,250.00
Contributions to Metallurgy Clay Research	3,100.00
Contributions to Oxy-Cellulose Research	2,550.00
Contributions from Research Associates, 1940–41	16,200.00
Contributions to President's Portrait Fund	3,210.00
Contributions, Class of 1916 for Maclaurin Memorial	1,281.50
Allied Chemical and Dye Corp., for Chemical Engineering Dept.	1,500.00
American Institute of Baking for Fellowship	1,500.00
American Oncologic Hospital for Oncologic Fund	5,000.00
A. Anderson & Company, for Business and Engineering Case Research in Accounting	250.00
Anonymous for Albert Fund (Student House)	6,000.00
Anonymous for Cosmic Terrestrial Research Fund	800.00
Anonymous for Everett Morss Portrait Fund	1,500.00
Anonymous for President's Fund (Special)	10,000.00
Bausch & Lomb Optical Company for Fellowship	3,000.00
Boston Society of Civil Engineers for Freeman Hydraulic Fund	800.00
Godfrey L. Cabot for Cyclotron	1,000.00

Carnegie Corporation of New York for Nuclear Research (add'l.)	$4,000.00
Carnegie Institution of Washington for Spectroscopic Research	3,000.00
Carnegie Institution of Washington for Spectrograph Research	2,500.00
Carnegie Institution of Washington for Microwave Research	10,000.00
Thomas C. Desmond for Sailing Program	550.00
Dow Chemical Company for Fellowship	4,000.00
E. I. duPont de Nemours & Co., for Fellowship	750.00
Henry B. duPont for Boat House Equipment	100.00
Lammot duPont for Boat House Equipment	500.00
Eastman Kodak Company for Chemical Engineering Salaries	720.00
Eastman Kodak Company for Chemical Engineering Dept.	280.00
Engineering Foundation for Welding Research	1,400.00
Federation of Paint and Varnish Products for Fellowship	375.00
Kenneth Gardner for Scholarship	200.00
Mabel Brady Garvan for Stainless Steel Research	500.00
Charles Hayden Foundation for Charles Hayden Memorial Scholarship Fund, Class of 1944	30,000.00
Charles Hayden Foundation for Dental Clinic	10,000.00
Hoffmann-LaRoche, Inc., for Biology Vitamin Fund	500.00
Charles H. Hood Educational Trust for Scholarship in Health Education	800.00
L. J. and M. E. Horowitz for Building Engineering Construction Salaries (additional)	5,000.00
Godfrey M. Hyams Trust for Radiation Project (additional)	15,000.00
International Telephone and Telegraph Company for Electrical Engineering	3,750.00
Edward S. Larned for National Lime Association Account	100.00
Lever Brothers Company for Fellowship	2,000.00
William Lowell Prize Fund for Mathematics Putnam Fund	200.00
John and Mary R. Markle Foundation for Cyclotron	18,000.00
James C. Melvin Trust for Scholarships	7,200.00
C. Lillian Moore Trust for Grimmons Fund (additional)	1,930.47
National Academy of Sciences for Geology National Research Council	2,500.00
National Lime Association for Building Construction and Engineering	5,920.00
Philadelphia Technology Club for Scholarship	100.00
Joseph W. Powell for Scholarship	200.00
Radio Corporation of America for Sloan Fellowship Special	1,000.00
Research Corporation for Research	31,030.00
Revere Copper and Brass, Inc., for Research	1,600.00
Rockefeller Foundation for Salaries and Research	54,500.00
A. P. Sloan, Jr., for Fellowship	1,000.00
A. P. Sloan Foundation, Inc., for Sloan Fellowship Project	32,500.00
Society of Naval Architecture and Marine Engineering for Naval Architecture Department	500.00
Sperry Gyroscope Company for Salaries	2,500.00
Textile Foundation for Research	6,250.00
	$377,511.97
TOTAL CAPITAL AND MISCELLANEOUS GIFTS	$888,179.87

REPORT OF THE TECHNOLOGY LOAN FUND COMMITTEE

COMPARATIVE BALANCE SHEET

ASSETS

	June 30, 1941		*June 30, 1940*	
Cash	$20,593.46		$2,197.50	
Investments (Schedule A-1)	704,011.72	*$724,605.18	724,717.72	$726,915.22
Student Notes Receivable (Schedule A-3):				
Loans 1930 to date	$1,627,006.75		$1,485,210.75	
Less repayments (including write-offs $2,397.25), 1930 to date	715,256.38	911,750.37	599,581.46	885,629.29
TOTAL ASSETS		$1,636,355.55		$1,612,544.51

LIABILITIES

Technology Loan Fund (1930 to date):				
Total Subscriptions		$1,450,735.18		$1,435,735.18
Add:				
Investment Income (net)	$280,197.43		$256,217.98	
Interest from Loans	127,913.00	408,100.43	110,044.54	366,262.52
		$1,858,835.61		$1,801,997.70
Deduct:				
Net Loss on securities	$207,579.33		$176,642.16	
Write-offs, deceased borrowers	2,397.25		2,227.25	
Life insurance premiums	12,503.48	222,480.06	10,583.78	189,453.19
TOTAL LIABILITIES		$1,636,355.55		$1,612,544.51

* Total of Fund (see page 177).

RECEIPTS AND EXPENDITURES FOR 1940–1941

RECEIPTS

Income from Investments (net)	$23,969.45	
Interest from Loans	17,868.46	
Payment on Subscription	15,000.00	
TOTAL RECEIPTS		$56,837.91

EXPENDITURES

Loans made during the year	$141,796.00	
Less: Repayments	115,504.92	$26,291.08
Net Loss from sale of securities and Premium Amortization	$30,937.17	
John Hancock Mutual Life Insurance Co. Group Life Premium (net)	1,919.70	32,856.87
TOTAL EXPENDITURES		$59,147.95
NET DECREASE IN CASH AND INVESTMENTS (ABOVE)		$2,310.04

TECHNOLOGY LOAN FUND COMMITTEE

Karl T. Compton, *Chairman*

Gerard Swope Pierre S. du Pont John E. Aldred

Edwin S. Webster Horace S. Ford

REPORT OF THE TRUSTEES OF THE M. I. T. PENSION ASSOCIATION

COMPARATIVE BALANCE SHEET

Assets

	June 30, 1941	*June 30, 1940*
Cash	$20,077.11	$38,307.40
Investments (Schedule A-1)	[1]1,452,057.04	1,381,037.30
Total	$1,472,134.15	$1,419,344.70

[1] Market Value June 30, 1941, $1,386,847.00.

Liabilities

Teachers' Annuity Fund (5% Salary deduction, plus interest)	$829,237.36	$793,685.68
*M. I. T. Pension Fund (3% appropriation, plus interest)	531,754.94	506,646.41
Special Reserves for Annuity Payments	91,816.34	100,215.45
Total Liabilities	$1,452,808.64	$1,400,547.54
Reserve Fund	19,325.51	18,797.16
Total	$1,472,134.15	$1,419,344.70

*The Institute appropriates annually the equivalent of the 5% salary deduction, using 2% for payment of group insurance premiums.

RECEIPTS AND EXPENDITURES FOR 1940–1941

Receipts

5 per cent salary deductions added to Teachers' Annuity Fund	$77,140.72
3 per cent appropriations added to M. I. T. Pension Fund	46,482.00
Income from investments	58,282.01
Net profits on sales of securities	7,187.00
Contribution to Reserve Fund from M. I. T.	23,986.57
Total Receipts	$213,078.30

Expenditures

Paid on account of withdrawal or decease of members	$34,824.68
Used to purchase annuities for retiring members	105,547.51
Pensions paid directly to former retired members	10,589.90
Amortization of Bond Premiums	9,326.76
Total Expenditures	$160,288.85
Net Increase of Ledger Assets	$52,789.45

Trustees, M. I. T. Pension Association

Charles B. Breed — Horace S. Ford — Ralph E. Freeman
Karl T. Compton — John R. Macomber

BURSAR'S STATEMENT

To the Treasurer:

The following principal Schedules

BALANCE SHEET	(A)
OPERATING INCOME AND EXPENSE	(B)
CURRENT SURPLUS	(C)

together with their respective supporting schedules (A-1, B-1, etc.) have been drawn from the Institute's books of account. These summarize the financial condition of the Institute as of June 30, 1941, as well as the transactions during the year.

D. L. RHIND, *Bursar.*

W. A. HOKANSON, *Assistant Bursar.*

August 15, 1941

SCHEDULE A

BALANCE SHEET
JUNE 30, 1941

ENDOWMENT FUNDS, ASSETS			
Securities and Real Estate	(A-1)		$34,469,967.99
Cash: Uninvested			872,818.45
Advanced for Current Purposes (per contra)			435,982.45
Advanced for Plant Construction (per contra)			202,775.15
Total			$35,981,544.04
STUDENT LOAN ASSETS			
Notes Receivable	(A-3)		$ 936,784.59
CURRENT AND DEFERRED ASSETS			
Cash: For General Purposes			$ 49,217.04
Accounts Receivable	(A-4)		262,022.33
Students' Fees and Deposits, Receivable			1,140.66
Deposit on Fire Insurance Account			43,845.92
Advances and Inventories for 1941–42	(A-5)		681,917.56
Total			$1,038,143.51
EDUCATIONAL PLANT ASSETS			
Land, Buildings and Equipment	(A-8)		$16,724,671.45
Cash: For Construction			14,829.99
Total			$16,739,501.44
Total Assets			$54,695,973.58

AGENCY FUNDS, ASSETS			
Joseph Hewett Fund:			
Securities	(A-1)	$ 202,423.89	
Cash		6,831.67	
			$ 209,255.56
M. I. T. Pension Association:			
Securities	(A-1)	$1,452,057.04	
Cash		20,077.11	
			1,472,134.15
George S. Witmer Fund:			
Securities	(A-1)	$ 35,327.81	
Cash		1,083.11	
			36,410.92
[1]Students' Deposits:			
Cash			33,442.22
Total			$1,751,242.85

[1] Held for safe keeping only.

SCHEDULE A

BALANCE SHEET
JUNE 30, 1941

ENDOWMENT FUNDS, CAPITAL		
Endowment and Other Funds	(A-2)	$35,981,544.04
Total		$35,981,544.04
STUDENT LOAN CAPITAL		
Total	(A-3)	$ 936,784.59
CURRENT LIABILITIES AND SURPLUS		
Accounts Payable		$ 56,092.64
Students' Fees and Deposits	(A-6)	102,446.80
Current Funds	(A-7)	378,776.79
1940–41, Salaries Payable		37,374.73
Borrowed from Investment Cash (per contra)		435,982.45
Current Surplus (Schedule C)		27,470.10
Total		$1,038,143.51
EDUCATIONAL PLANT CAPITAL		
Endowment for Educational Plant	(A-9)	$16,536,726.29
Borrowed from Investment Cash (per contra)		202,775.15
Total		$16,739,501.44
Total Capital, Liabilities and Surplus		$54,695,973.58

AGENCY FUNDS, CAPITAL

Joseph Hewett Fund	$ 209,255.56
M. I. T. Pension Association	1,472,134.15
George S. Witmer Fund	36,410.92
[1]Students' Deposits	33,442.22
Total	$1,751,242.85

[1] Held for safe keeping only.

SCHEDULE B

OPERATING INCOME FOR YEAR 1940–1941

	Supporting Schedules		
EDUCATIONAL AND GENERAL			
FROM STUDENTS			
Fees — Cash		$1,491,060.20	
Fees Receivable		909.25	
Scholarship Awards		199,852.25	
Student Loans		121,422.00	
Total, Tuition Fees		$1,813,243.70	
Locker, Examination and Other Fees		7,855.92	
			$1,821,099.62
FROM INVESTMENTS			
Income — General and Special Investments	(A-1)	$1,492,330.00	
Less: Income Added to Funds	(A-2)	342,629.03	
			1,149,700.97
FROM OTHER SOURCES			
Federal Aid — Acts 1862 and 1890		$22,088.35	
Appropriations from Funds	(B-1)	203,322.19	
Contributions and Other Income	(B-2)	126,374.32	
			351,784.86
Total, Educational and General			$3,322,585.45
AUXILIARY ACTIVITIES			
Dormitories (*excl. Graduate House)	(B-11)	$137,650.86	
Dining Service, Walker Memorial	(B-13)	156,338.51	
Dining Service, Graduate House	(B-14)	111,386.77	
Total, Auxiliary Activities			405,376.14
Total Operating Income			$3,727,961.59

* See Investments (A-1), also (B-12).

SCHEDULE B

OPERATING EXPENSE FOR YEAR 1940–1941

	Supporting Schedules		
EDUCATIONAL AND GENERAL			
EDUCATIONAL EXPENSES			
Salaries	(B-3)	$1,944,405.20	
Departmental Expenses	(B-4)	228,028.19	
Library and Museum	(B-5)	86,905.85	
			$2,259,339.24
GENERAL EXPENSES			
Salaries of Officers		$129,164.00	
Clerical and Office Expense Administration	(B-6)	128,465.15	
General Administration Expense	(B-7)	258,095.43	
			515,724.58
PLANT OPERATION			
Department of Buildings and Power	(B-8)	$374,122.37	
Fire Insurance		3,998.03	
			378,120.40
OTHER EXPENSES			
Medical Department	(B- 9)	$58,682.81	
Undergraduate Budget Board	(B-10)	98,722.34	
			157,405.15
Total, Educational and General			$3,310,589.37
AUXILIARY ACTIVITIES			
Dormitories (*excl. Graduate House)	(B-11)	$99,184.43	
Dining Service, Walker Memorial	(B-13)	156,338.51	
Dining Service, Graduate House	(B-14)	111,386.77	
Total Auxiliary Activities			366,909.71
Total Operating Expenses			$3,677,499.08
Excess Income over Expense (Schedule C)			50,462.51
Total			$3,727,961.59

* See Investments, (A-1), also (B-12).

SCHEDULE C

CURRENT SURPLUS

BALANCE, June 30, 1940				$6,244.87
Add:				
Adjustments of Previous Years' Operations:				
Reimbursement, Microwave Research		$10,000.00		
Appropriations unexpended		5,233.72		
Sale of Equipment		974.00		
Miscellaneous		696.71		
		$16,904.43		
Less: Student and Other Accounts charged off	$1,185.31			
1940 Register of Former Students	401.91			
		1,587.22	$15,317.21	
Excess Income 1940–41 (Schedule B)			50,462.51	
				65,779.72
				$72,024.59
Deduct:				
Appropriations for 1941–42				
Special No. 1779 — Alterations			$22,000.00	
Special No. 1781 — Differential Analyzer			10,000.00	
Unexpended 1940–41 Departmental Appropriation Balances, reserved for 1941–42			12,554.49	
				44,554.49
BALANCE, June 30, 1941 (Schedule A)				$27,470.10

SCHEDULE A-1

INVESTMENTS — GENERAL

Par Value				*Book Value*	*Net Income*
	U. S. GOVERNMENT BONDS				
$2,000,000	U. S. Treasury.....	¾s	1944	$1,996,875.00	*—$787.30*
1,250,000	U. S. Treasury.....	2s	1950	1,264,000.00	*—138.89*
675,000	U. S. Treasury.....	2¼s	1956	675,000.00	13,652.12
500,000	U. S. Treasury.....	2½s	1948	530,000.00	12,500.00
1,000,000	U. S. Treasury.....	2½s	1954	1,007,000.00	.....
560,000	U. S. Treasury.....	2½s	1958	560,000.00	.....
650,000	U. S. Treasury.....	3¼s	1945	665,000.00	21,125.00
50,000	U. S. Defense G.....	2½s	1953	50,000.00	.....
	Income from bonds sold				115,395.47
	Total U. S. Government Bonds.....			$6,747,875.00	$161,746.40
	CANADIAN GOVERNMENT AND OTHER BONDS				
$250,000	Canada.....	2¼s	1944	$249,322.50	$5,625.00
100,000	Canada.....	5s	1952	99,427.64	5,000.00
91,000	Montreal.....	4¼s	1941	91,000.00	3,867.50
35,000	Ottawa.....	5s	1945	35,000.00	1,750.00
24,325	Toronto.....	4s	1948	22,622.25	973.32
50,000	Gatineau Power	3¾s	1969	49,125.00	1,875.00
200,000	Shawinigan W. & P..	4½s	1967	201,450.00	9,000.00
	Income from bonds sold or matured				15,464.36
	Total Canadian Bonds.....			$747,947.39	$43,555.18
	INDUSTRIAL BONDS				
$250,000	Eastern Gas and Fuel	4s	1956	$220,477.53	$10,000.00
200,000	National Dairy Prod.	3¼s	1960	209,000.00	3,078.47
17,000	Smith & Wesson....	5½s	1948	16,830.00	935.00
63,000	National Oil Prod. ..	3¼s	1955	63,500.00	881.56
	Income from bonds sold or called				4,874.44
	Total Industrial Bonds.....			$509,807.53	$19,769.47
Shares	INDUSTRIAL PREFERRED STOCKS				
500	American Tobacco, Pfd.....			$69,405.80	$3,000.00
2,500	Champion Spark Plug, Pfd.....			257,500.00	2,187.50
1,125	duPont de Nemours, Pfd.....			130,226.50	5,062.52
1,500	General Motors, Pfd.....			181,251.37	7,500.00
500	Liggett & Myers, Pfd.....			82,246.24	3,500.00
1,000	U. S. Steel, Pfd.....			103,412.85	7,000.00
	Total Industrial Preferred Stocks.....			$824,042.76	$28,250.02

SCHEDULE A-1 — (Continued)

Shares		*Book Value*	*Net Income*
	INDUSTRIAL COMMON STOCKS		
3,000	Air Reduction	$128,235.92	$6,000.00
3,030	American Can	307,408.67	11,910.00
400	Beechnut Packing	36,958.69	2,500.00
2,000	Borden	44,486.17	2,800.00
6,140	Borg Warner	218,806.72	10,096.00
2,000	Caterpillar Tractor	92,194.13	4,000.00
5,200	Central Aguirre Associates	137,114.33	7,800.00
100	Christiana Securities	250,000.00	13,300.00
3,180	Dow Chemical	411,768.25	9,105.00
2,200	Draper Corp.	101,780.20	11,000.00
2,872	du Pont de Nemours	352,284.24	20,041.00
13,000	Eastman Kodak	1,141,298.11	78,000.00
12,080	General Electric	283,516.80	22,261.25
5,000	General Motors	177,670.67	18,750.00
900	Hazel Atlas Glass	97,273.12	4,500.00
2,000	Hercules Powder	146,973.25	4,320.00
7,500	Humble Oil & Refining	486,789.80	15,000.00
2,720	Inland Steel	291,443.32	13,580.00
688	International Business Machines	89,760.87	3,984.00
3,100	International Harvester	123,863.98	7,440.00
7,240	International Nickel, Canada	261,895.60	13,565.00
1,500	Johns Manville	147,559.10	5,250.00
7,400	Kennecott Copper	312,987.29	22,200.00
4,000	Kroger Grocery and Baking	132,053.95	8,400.00
1,000	Libbey-Owens-Ford	69,365.24	3,500.00
2,500	Liquid Carbonic	37,825.90	600.00
4,137	Monsanto Chemical	300,309.15	11,703.50
3,400	Montgomery Ward	197,775.27	6,800.00
3,800	National Biscuit	118,500.80	6,080.00
2,000	National Lead	65,726.17	1,750.00
3,010	National Steel	231,536.41	9,030.00
5,100	Owens Illinois Glass	298,685.89	10,200.00
2,400	J. C. Penney	216,229.29	12,000.00
3,000	Phillips Petroleum	115,193.57	1,500.00
3,520	Pittsburgh Plate Glass	195,235.96	16,980.00
500	Poor & Co. A	9,965.00	531.25
5,753	Procter & Gamble	265,767.26	17,309.00
5,000	St. Joseph Lead	219,990.15	12,500.00
3,000	Sears Roebuck	231,604.16	13,500.00
1,000	Sherwin Williams	100,988.10	3,000.00

SCHEDULE A-1 — (Continued)

Shares				*Book Value*	*Net Income*
	INDUSTRIAL COMMON STOCKS (*Continued*)				
4,165	Standard Oil, Cal.			$140,714.83	$4,123.75
3,000	Standard Oil, Ind.			89,606.25	750.00
12,000	Standard Oil, N. J.			531,455.94	20,414.25
1,500	Timken Roller Bearing			106,312.70	5,250.00
6,520	Union Carbide & Carbon			377,929.12	17,472.00
2,000	United Carbon			137,565.94	6,000.00
5,550	United Fruit			254,110.84	22,200.00
3,844	United Shoe Machinery			262,187.28	13,177.75
845	Westinghouse Electric			70,798.30	4,180.00
	Income from stocks sold				22,018.25
	Total Industrial Common Stocks			$10,419,502.70	$558,372.00
Par Value	PUBLIC UTILITY BONDS				
$191,000	Alabama Power	5s	1946	$182,998.19	$9,550.00
50,000	Am. Tel. & Tel.	3¼s	1961	50,950.00	1,625.00
100,000	Appalachian Elec.	3¼s	1970	106,700.00	1,426.40
100,000	Arkansas Power & Light	5s	1956	100,750.00	5,000.00
150,000	Bell Tel. of Pa.	5s	1948	157,300.00	7,500.00
30,000	Conn. Light & Power	7s	1951	28,255.06	2,100.00
100,000	Cons. Edison, N. Y.	3¼s	1946	100,400.00	3,250.00
100,000	Consumers Power	3¼s	1969	105,100.00	3,250.00
100,000	Dayton Pr. & Lt.	3s	1970	103,850.00	3,000.00
100,000	Kentucky Utilities	4½s	1955	101,300.00	4,500.00
105,000	Miss. River Power	5s	1951	97,759.61	5,250.00
80,000	North American	3½s	1949	80,700.00	2,800.00
100,000	North Boston Ltg.	3½s	1947	100,000.00	3,500.00
81,000	Ohio Edison	4s	1967	86,700.00	2,189.78
50,000	Ohio Power	3¼s	1968	51,250.00	1,625.00
100,000	Penn. Power & Light	4½s	1974	103,400.00	4,500.00
50,000	Phila. Elec.	3½s	1967	52,900.00	1,750.00
75,000	Providence Gas	4s	1963	74,437.50	3,000.00
90,000	Pub. Service Colorado	3½s	1964	91,750.00	3,150.00
200,000	Southern Cal. Edison	3s	1965	209,400.00	1,650.00
50,000	Syracuse Lighting	5s	1951	52,400.00	2,500.00
165,000	Texas Power & Light	5s	1956	169,700.00	8,250.00
100,000	West Penn. Power	5s	1963	93,709.16	5,000.00
	Income from bonds sold, called or matured				27,657.17
	Total Public Utility Bonds			$2,301,709.52	$114,023.35

SCHEDULE A-1 — (Continued)

Shares				*Book Value*	*Net Income*
	PUBLIC UTILITY PREFERRED STOCKS				
3,000	Cons. Edison N. Y., Pfd.			$302,176.46	$15,000.00
2,500	Public Service N. J., 5%, Pfd.			254,816.98	12,500.00
3,000	United Corp., Pref.			139,276.75	6,750.00
	Income from stocks sold			.....	5.63
	Total Public Utility Preferred Stocks			$696,270.19	$34,255.63
	PUBLIC UTILITY COMMON STOCKS				
5,000	Am. Gas & Elec.			$203,626.96	$11,000.00
4,048	American Tel. & Tel.			539,521.58	36,432.00
12,550	Boston Edison			453,719.85	25,100.00
10,000	Commonwealth Edison			285,340.24	18,000.00
5,000	Detroit Edison			147,822.09	6,000.00
1,000	Lynn Gas & Electric			90,000.00	3,750.00
1,500	Pacific Gas & Elec.			39,225.60	3,000.00
1,000	Western Mass.			32,322.00	2,000.00
	Income from stocks sold				9,164.75
	Total Public Utility Common Stocks			$1,791,578.32	$114,446.75
Par Value	RAILROAD BONDS				
$50,000	Albany & Susquehanna	3½s	1946	$35,000.00	$1,750.00
100,000	Atch. Top. & Santa Fe C&A	4½s	1962	99,956.25	4,500.00
80,000	Atch. Top. & Santa Fe	4s	1995	77,176.00	3,200.00
50,000	B. & O., P., L. E. & W. Va.	4s	1951	48,668.75	2,000.00
50,000	Chicago & N. W.	4s	1987	48,250.00	.....
50,000	Chicago Union Sta.	3¾s	1963	51,650.00	1,875.00
50,000	Northern Pacific	4s	1997	45,128.29	2,000.00
100,000	Oreg. R.R. & Navigation	4s	1946	99,410.83	4,000.00
100,000	Pennsylvania	4½s	1960	113,300.00	4,500.00
100,000	Pennsylvania	4½s	1965	100,000.00	4,500.00
50,000	Pere Marquette A	5s	1956	44,410.34	2,500.00
25,000	Rio Grande Western	4s	1939	24,477.93	.....
50,000	St. L., Iron Mt. & So.	4s	1933	44,143.00	1,887.50
50,000	Southern Pacific	3¾s	1946	49,375.00	1,875.00
50,000	Southern Pacific	4s	1955	47,625.00	2,000.00
100,000	Union Pacific	4s	1947	100,000.00	4,000.00
75,000	Washington Term	3½s	1945	68,196.37	2,625.00
100,000	Washington Term	4s	1945	104,500.00	4,000.00
	Income from bonds sold or matured				24,110.87
	Total Railroad Bonds			$1,201,267.76	$71,323.37

SCHEDULE A-1 — (Continued)

Shares				*Book Value*	*Net Income*
	RAILROAD PREFERRED STOCKS				
1,000	Pere Marquette, Pr. Pref.			$80,024.40	.....
	Total Railroad Preferred Stocks			$80,024.40	.....
	RAILROAD COMMON STOCKS				
1,500	Chesapeake & Ohio			$73,380.45	$5,937.50
400	Norfolk & Western			58,542.78	6,000.00
500	Union Pacific			67,078.33	3,000.00
	Income from stocks sold				1,530.00
	Total Railroad Common Stocks			$199,001.56	$16,467.50
Par Value					
	OTHER BONDS				
$200,000	Adams Express	4¼s	1946	$199,388.81	$8,500.00
90,000	Aldred Invest. Trust	4½s	1967	90,000.00	4,050.00
44,625	Lawyers Mtge. Inv. Corp.	5½s	1940	44,379.92	1,673.44
186,000	Niagara Shares Corp.	5½s	1950	182,118.81	10,230.00
64,000	Railway & Lt. Securities.	3½s	1955	64,000.00	982.23
	Income from bonds sold, called or matured				2,257.81
	Total Other Bonds			$579,887.54	$27,693.48
Shares					
	BANK STOCKS				
3,000	Bankers Trust, N. Y.			$183,645.00	$5,245.00
1,600	Central Hanover Bk. & Tr., N. Y.			194,225.00	6,400.00
5,000	Chase National, N. Y.			261,212.50	7,000.00
3,000	Chemical Bank & Trust, N. Y.			190,618.75	4,860.00
1,000	Cont. Ill. Nat. Bank, Chicago			80,301.50	2,000.00
4,936	First National, Boston			297,874.96	9,827.00
100	First National, N. Y.			206,970.60	9,000.00
730	Guaranty Trust, N. Y.			240,223.04	8,745.00
500	Harris Trust & Savings, Chicago			146,450.00	3,500.00
6,000	National City, N. Y.			260,712.50	5,000.00
100	New England Trust, Boston			40,000.00	3,000.00
	Income from stocks sold				88.00
	Total Bank Stocks			$2,102,233.85	$64,665.00
	INSURANCE AND OTHER STOCKS				
275	Boston			$180,786.00	$5,775.00
2,500	Hartford			156,168.76	6,250.00
1,500	Phoenix			107,424.50	4,500.00
1,000	Stone & Webster, Inc.			29,507.65	500.00
680	Boston R. E. Trust			71,661.64	680.00
	Income from stocks written off				211.40
	Total Insurance Stocks			$545,548.55	$17,916.40

SCHEDULE A-1 — (Continued)

Par Value		*Book Value*	*Net Income*
	MORTGAGE NOTES		
$50,000	Edward Babb & Co.	$50,000.00	$2,283.75
4,300	Bigelow	4,300.00	215.00
142,125	Jordan Marsh Co.	142,125.00	5,797.50
2,550	McKenzie	2,550.00	133.76
13,000	Palfrey, J. G.	13,000.00	750.00
59,000	Walton Trust	59,000.00	2,462.22
150,000	M. I. T. Dormitory	150,000.00	6,000.00
	(M. I. T. Fraternity Houses)		
15,000	Beta Theta Pi	15,000.00	790.28
29,000	Delta Kappa Epsilon	29,000.00	1,608.34
3,000	Delta Tau Delta	3,000.00	150.00
13,250	Kappa Sigma	13,250.00	693.92
6,253	Phi Beta Delta	6,253.18	240.68
2,750	Phi Beta Epsilon	2,750.00	156.25
6,750	Phi Delta Theta	6,750.00	410.63
9,250	Phi Gamma Delta	9,250.00	543.75
7,500	Phi Kappa Sigma	7,500.00	404.38
5,500	Phi Mu Delta	5,500.00	368.79
10,000	Theta Chi	10,000.00	518.06
	Income from mortgages sold		433.35
	Total Mortgage Notes	$529,228.18	$23,960.66
	REAL ESTATE		
	111 Bay State Road, Boston	$21,200.00	$790.00
	Broad and High Streets, Boston	100,000.00	4,934.53
	Franklin Street, Boston	289,750.00	3,741.15
	Newbury Street, Boston	45,000.00	*—1,257.04*
	Memorial Drive, Cambridge	40,000.00	*—1,483.50*
	Graduate House, Cambridge	648,925.51	18,000.00
	Bexley Hall, Cambridge	191,113.55	9,200.00
	*Gloversville, N. Y.	94,800.00	1,116.20
	New London, Conn.	271,256.63	11,609.88
	Plattsburg, N. Y.	213,800.00	9,661.20
	Somerville, Mass.	114,006.10	366.67
	Taunton, Mass.	223,780.00	8,643.87
	Willimantic, Conn.	180,800.00	8,199.56
	Worcester, Mass.	220,400.00	9,982.60
	Income from real estate sold		333.32
	Total Real Estate	$2,654,831.79	$83,838.44

*Not including first mortgage of $51,750 with Connecticut Mutual Life Insurance Co. of Hartford, Conn.

SCHEDULE A-1 — (Continued)

	Book Value	*Net Income*
RECAPITULATION, GENERAL INVESTMENTS		
U. S. Gov. Bonds	$6,747,875.00	$161,746.40
Canadian Gov. and Other Bonds	747,947.39	43,555.18
Industrial Bonds	509,807.53	19,769.47
Industrial Preferred Stocks	824,042.76	28,250.02
Industrial Common Stocks	10,419,502.70	558,372.00
Public Utility Bonds	2,301,709.52	114,023.35
Public Utility Preferred Stocks	696,270.19	34,255.63
Public Utility Common Stocks	1,791,578.32	114,446.75
Railroad Bonds	1,201,267.76	71,323.37
Railroad Preferred Stocks	80,024.40	.....
Railroad Common Stocks	199,001.56	16,467.50
Other Bonds	579,887.54	27,693.48
Bank Stocks	2,102,233.85	64,665.00
Insurance and Other Stocks	545,548.55	17,916.40
Mortgage Notes	529,228.18	23,960.66
Real Estate	2,654,831.79	83,838.44
Total General Investments	$31,930,757.04	$1,380,283.65

INVESTMENTS — SPECIAL

Par Value or Shares					
	INVESTMENTS, BABSON FUND				
950	American Public Welfare Trust			$10,000.00	$237.50
	INVESTMENTS (Real Estate), ALBERT FARWELL BEMIS FUND				
	Miscellaneous building lots and land in Wellesley, Weston and Dedham, carried at			$53,079.24	.....
	INVESTMENTS, MALCOLM COTTON BROWN FUND				
$25,000	Met. West Side	4s	1938	$10,850.00	.....
1,400	U. S. Treasury	3¼s	1945	1,400.00	$45.50
	Total Brown Fund			$12,250.00	$45.50

SCHEDULE A-1 — (Continued)

Par Value or Shares				*Book Value*	*Net Income*
	INVESTMENTS, COFFIN MEMORIAL FUND				
$6,000	U. S. Treasury	3s	1948	$6,000.00	$180.00
350	Light & Pr. Sec. Co., Pfd.			35,000.00	2,100.00
10	United Gas & Imp., Pfd.			973.04	50.00
	Total Coffin Fund			$41,973.04	$2,330.00
	INVESTMENTS, DRAPER FUND				
$8,000	U. S. Treasury	2½s	1952	$8,400.00	[1]$150.00
4,000	U. S. Treasury	2½s	1958	4,000.00	.....
12,000	U. S. Treasury	3¼s	1945	12,100.00	[1]290.00
5,000	U. S. Treasury	3⅜s	1947	5,000.00	168.75
10,000	Ontario	5s	1959	9,950.00	500.00
8,000	Cons. Edison, N. Y.	3¼s	1946	8,050.00	[1]210.00
10,000	Detroit Edison, D.	3s	1970	10,701.69	[1]105.83
20,000	Montana Power	3¾s	1966	19,852.49	750.00
13,000	Ohio Power	3¼s	1968	13,475.00	[1]397.50
10,000	Texas Power & Light	5s	1956	10,180.00	[1]480.00
	Income from bonds sold or matured				[1]606.55
	Total Draper Fund			$101,709.18	$3,658.63
	INVESTMENTS, ARTHUR D. LITTLE MEMORIAL FUND				
466	A. D. Little, Inc., Pfd.			$46,600.00	$2,796.00
5,543	A. D. Little, Inc., Com.			110,860.00	27,715.00
	Total Little Fund			$157,460.00	$30,511.00
	INVESTMENTS, RICHARD LEE RUSSEL FUND				
$3,000	Mortgage Note (participation)			$3,000.00	$150.00
	INVESTMENTS, SOLAR ENERGY FUND				
100	Godfrey L. Cabot, Inc.			$647,700.00	$18,000.00
	INVESTMENTS, FRANCES E. AND SAMUEL M. WESTON FUNDS				
$8,950	Mortgage Note, Bartlett			$8,950.00	$357.96
	INVESTMENTS, JONATHAN WHITNEY FUND				
$40,000	U. S. Treasury	2½s	1958	$40,000.00	$.....
41,000	U. S. Treasury	3¼s	1945	41,000.00	1,332.50
50,000	U. S. Treasury	4s	1954	52,000.00	2,000.00
46,000	U. S. Treasury	3⅜s	1947	46,900.00	1,552.51
40,000	Canada	5s	1952	43,200.00	2,000.00

[1] Net after Premium Amortization.

SCHEDULE A-1 — (Continued)

Par Value or Shares				*Book Value*	*Net Income*
	INVESTMENTS, JONATHAN WHITNEY FUND *(Continued)*				
$25,000	Appalachian Electric....	3¼s	1970	$26,700.00	$406.25
25,000	Bangor Hydro. Elec.....	3¾s	1966	25,850.00	937.50
25,000	Montana Power.....	3¾s	1966	24,826.99	937.50
16,000	Niagara Falls Pr.....	3½s	1966	16,815.00	560.00
25,000	Pacific Gas & Elec.....	3¾s	1961	25,380.00	937.50
25,000	So. Cal. Edison.....	3s	1965	26,200.00	200.00
20,000	Va. Elec. Power.....	3½s	1968	21,000.00	700.00
25,000	Atch. Top. & S. Fe.....	4½s	1962	24,381.25	1,125.00
50,000	Kansas City Term.....	4s	1960	42,750.00	2,000.00
25,000	Southern Pacific.....	4s	1955	24,471.99	1,000.00
25,000	Virginia Ry.....	3¾s	1966	25,380.00	937.50
250	Boston Edison.....			8,250.00	.....
250	Bankers Trust, N. Y.....			14,187.50	125.00
250	First National, Boston.....			11,525.00	.....
50	Guaranty Trust, N. Y.....			14,850.00	150.00
	Income from bonds sold, called or matured				6,210.99
	Total Whitney Fund.....			$555,667.73	$23,112.25
	INVESTMENTS, TECHNOLOGY LOAN FUND				
$80,000	U. S. Treasury.....	2½s	1958	$80,000.00	$.....
55,000	U. S. Treasury.....	3⅜s	1947	56,000.00	1,856.25
50,000	U. S. Treasury.....	4s	1954	52,000.00	2,000.00
100,000	U. S. Treasury.....	2½s	1952	103,700.00	2,500.00
80,000	U. S. Treasury.....	2½s	1954	83,050.00	*—152.17*
38,000	U. S. Treasury.....	2⅞s	1960	40,500.00	1,092.50
100,000	U. S. Treasury.....	2¾s	1954	107,000.00	2,750.00
14,000	Pac. Gas & Elec.....	3¾s	1961	14,000.00	525.00
50,000	Southern Bell Tel.....	3¼s	1962	48,985.01	1,625.00
25,000	Baltimore & Ohio	4½s	1960	25,000.00	.....
207	Engineers Pub. Service.....			15,000.00	284.63
1,000	North American.....			36,447.80	1,461.15
115	Standard Oil, N. J.....			5,630.16	201.25
1,250	Stone & Webster, Inc.....			36,698.75	625.00
	Income from bonds sold or called.....				9,200.84
	Total Technology Loan Fund.....			$704,011.72	$23,969.45

SCHEDULE A-1 — (Continued)

Par Value or Shares				*Book Value*	*Net Income*
	INVESTMENTS, EDWIN A. WYETH FUND				
$16,000	U. S. Treasury	2½s	1958	16,000.00	$.....
10,000	U. S. Treasury	2¾s	1965	10,000.00	275.00
22,000	U. S. Treasury	3s	1948	22,000.00	[1]460.00
25,000	U. S. Treasury	4s	1954	26,000.00	[1]500.00
100	American Can			11,944.73	400.00
125	American Tel. & Tel.			13,125.00	1,125.00
200	General Electric			7,832.20	370.00
250	General Motors			8,500.00	937.50
101	Standard Oil, N. J.			5,816.08	176.75
100	Union Carbide and Carbon			4,640.00	270.00
100	United Shoe Machinery			8,941.25	350.00
10,000	Central N. Y. Power	3¾s	1962	10,250.00	[1]325.00
9,000	Columbia Gas & Elec.	5s	1952	8,310.78	450.00
10,000	Cons. Edison, N. Y.	3¼s	1946	10,000.00	325.00
13,000	Miss. River Power	5s	1951	13,150.00	[1]600.00
16,000	So. Cal., Edison	3s	1965	16,750.00	[1]78.00
10,000	Texas Pr. & Lgt.	5s	1956	10,150.00	[1]450.00
15,000	Balt. & Ohio	4s	1948	15,000.00	600.00
5,000	Can. Pac. Eq. Tr.	5s	1944	5,000.00	250.00
10,000	Kansas City Term.	4s	1960	10,000.00	400.00
10,000	Union Pacific	4s	1947	10,000.00	400.00
	Income from investments sold or called				[1]931.81
	Total Wyeth Fund			$243,410.04	$9,674.06
	Grand Total, General and Special Investments			$34,469,967.99	$1,492,330.00
				(Schedule A)	(Schedule B)

AGENCY FUNDS

Par Value or Shares				*Book Value*	*Net Income*
	INVESTMENTS, JOSEPH HEWETT FUND				
$31,000	U. S. Treasury	2½s	1958	$31,000.00	$.....
15,000	U. S. Treasury	2⅞s	1960	15,750.00	431.25
23,000	U. S. Treasury	4s	1954	23,700.00	920.00
19,000	Dom. of Canada	5s	1952	19,000.00	950.00
12,000	Adams Express	4¼s	1946	12,000.00	510.00
15,000	Alabama Power	5s	1951	13,425.00	750.00
15,000	Cent. N. Y. Power	3¾s	1962	15,000.00	562.50
15,000	Puget Sound Power & Lt.	4½s	1950	15,077.34	125.50

[1]Net after Premium Amortization.

SCHEDULE A-1 — (Continued)

Par Value or Shares				*Book Value*	*Net Income*
	INVESTMENTS, JOSEPH HEWETT FUND (*Continued*)				
$23,500	Texas Power & Light ...	5s	1956	$23,900.00	$1,175.00
20,000	Atch. Top. & S. Fe.....	4½s	1948	21,300.00	900.00
4,000	Can. Pac. Ry.....	5s	1944	4,000.00	200.00
50	du Pont de Nemours			8,271.55	350.00
	Income from bonds sold or called.....				2,385.72
	Total Hewett Fund.....			$202,423.89	$9,259.97
				(Schedule A)	
	INVESTMENTS, M. I. T. PENSION ASSOCIATION				
$40,000	U. S. Treasury.....	2½s	1958	$40,000.00	$.....
25,000	U. S. Treasury.....	2⅞s	1960	26,764.72	718.75
100,000	U. S. Treasury.....	3¼s	1945	102,700.00	3,250.00
100,000	U. S. Treasury.....	4s	1954	106,000.00	4,000.00
10,000	U. S. Treasury.....	3s	1948	10,000.00	300.00
35,000	Dom. of Canada	5s	1952	37,000.00	1,750.00
25,000	Gen. American Investors	3½s	1952	25,437.50	*—224.78*
32,000	Alabama Power.....	5s	1946	32,000.00	1,600.00
50,000	Appalachian Elec.....	3¼s	1970	53,500.00	713.20
30,000	Bell Tel. of Pa.....	5s	1948	31,000.00	1,500.00
50,000	Central N. Y. Power....	3¾s	1962	50,000.00	1,875.00
50,000	Detroit Edison.....	4s	1965	53,000.00	2,000.00
28,000	Miss. River Power.....	5s	1951	28,000.00	1,400.00
70,000	Pac. Gas & Elec.....	3¾s	1961	75,700.00	2,625.00
25,000	Texas Pr. &. Lgt.....	5s	1956	26,000.00	1,250.00
25,000	Atch. Top. & S. Fe.....	4½s	1948	26,600.00	1,125.00
25,000	Atlantic Coast Line.....	4s	1952	24,753.15	1,000.00
25,000	Balt. & Ohio.....	4s	1948	25,000.00	1,000.00
25,000	Can. Pacific Eq.....	5s	1944	25,000.00	1,250.00
50,000	Chicago Union Sta.....	3¾s	1963	52,000.00	1,875.00
50,000	Kansas City Term.....	4s	1960	52,000.00	2,000.00
50,000	Pennsylvania Co.	4s	1963	50,300.00	2,000.00
35,000	Southern Pacific.....	4s	1955	33,638.79	1,400.00
Shares					
200	Eastman Kodak.....			28,500.00	1,200.00
600	General Motors.....			29,332.24	2,250.00
800	General Electric Co.....			42,462.59	1,480.00
171	Int. Business Machines.....			26,269.72	990.00
800	National Biscuit.....			21,220.31	1,280.00

SCHEDULE A-1 — (Continued)

Shares		*Book Value*	*Net Income*
	INVESTMENTS, M. I. T. PENSION ASSOCIATION (*Continued*)		
400	Sears Roebuck	$29,391.89	$1,700.00
505	Standard Oil, N. J.	29,567.08	883.75
300	Union Carbide & Carbon	27,360.28	810.00
400	United Fruit	31,355.21	1,600.00
300	United Shoe Machinery	24,986.88	1,050.00
200	Am. Tel. & Tel. Co.	34,459.26	1,800.00
500	First National Bank, Boston	27,500.00	1,000.00
400	Bankers Trust Co.	23,687.50	800.00
500	Chemical Bank & Trust	25,187.50	900.00
	Real Estate, Albany, N. Y.	64,382.42	580.15
	Income from investments sold or called		5,550.94
	Total Pension Association	$1,452,057.04	$58,282.01
		(Schedule A)	

Par Value or Shares			
	INVESTMENTS, GEORGE S. WITMER FUND		
$2,000	Niagara Shares Corp. ... 5½s 1950	$2,000.00	$110.00
5,300	W. T. Doyle, Mortgage	5,300.00	291.50
23,000	Whitehaven St., Washington, D.C., Mtge.	23,000.00	1,275.00
25	General Motors	1,310.96	93.75
30	Union Carbide & Carbon	2,051.85	63.00
30	Bankers Trust, N. Y.	1,665.00	.....
	Income from mortgage paid	.....	58.42
	Total Witmer Fund	$35,327.81	$1,891.67
		(Schedule A)	

SCHEDULE A-2

ENDOWMENT FUNDS FOR GENERAL PURPOSES

No.	*Restricted Funds*	*Funds, June 30, 1940*	*Investment Income Added to Principal*	*Other Receipts*	*Expended or Transferred*	*Funds, June 30, 1941*
101	George Robert Armstrong ..	$5,000.00	$.....	.....	$.....	$5,000.00
103	George Blackburn Mem. ...	907,654.36	.....	$53,390.34	.....	961,044.70
105	Charles Choate.....	35,858.15	.....	.....	.....	35,858.15
107	Eben S. Draper.....	102,141.86	.....	98.75	.....	102,240.61
109	Coleman du Pont.....	221,325.48	.....	.....	.....	221,325.48
111	Eastman Contract.....	9,498,869.55	.....	.....	.....	9,498,869.55
113	George Eastman (Building).	553,013.89	.....	2,500.00	148,786.35	406,727.54
115	Charles W. Eaton.....	259,922.03	.....	726.16	.....	260,648.19
117	Educational Endowment ...	7,573,834.60	.....	.....	.....	7,573,834.60
119	Martha Ann Edwards.....	30,000.00	.....	.....	.....	30,000.00
121	William Endicott.....	25,000.00	.....	.....	.....	25,000.00
123	Francis Appleton Foster...	1,000,000.00	.....	.....	.....	1,000,000.00
125	John W. Foster.....	299,650.64	.....	.....	.....	299,650.64
127	Alexis H. French.....	5,000.00	.....	.....	.....	5,000.00
129	Jonathan French.....	25,212.48	.....	.....	.....	25,212.48
131	Henry C. Frick.....	1,831,053.42	.....	.....	.....	1,831,053.42
133	General Endowment.....	1,527,449.00	.....	.....	.....	1,527,449.00
135	Eliot Granger.....	21,568.43	.....	.....	.....	21,568.43
136	Charles Hayden.....	1,000,000.00	.....	.....	.....	1,000,000.00
137	James Fund.....	163,654.21	.....	.....	.....	163,654.21
139	Katherine B. Lowell.....	5,000.00	.....	.....	.....	5,000.00
141	Thomas McCammon	15,000.00	.....	.....	.....	15,000.00
143	M. I. T. Alumni (Gym.) ...	.....	82.00	4,723.65	4,805.65	.....
144	M. I. T. Alumni (1940–41) .	16,116.60	1,025.00	35,131.21	40,322.25	*11,950.56
145	M. I. T. Alumni (1941–42) .	.....	164.00	41,777.06	11,030.00	30,911.06
146	Kate M. Morse.....	25,000.00	.....	.....	.....	25,000.00
147	Everett Morss.....	25,000.00	.....	.....	.....	25,000.00
149	Richard Perkins.....	50,000.00	.....	.....	.....	50,000.00
150	J. W. and B. L. Randall ...	83,452.36	.....	.....	.....	83,452.36
151	Wm. Barton Rogers Mem...	250,225.00	.....	.....	.....	250,225.00
152	Saltonstall Fund.....	63,415.41	656.00	.....	.....	64,071.41
153	Samuel E. Sawyer.....	4,764.40	.....	.....	.....	4,764.40
155	Andrew Hastings Spring ...	50,000.00	.....	.....	.....	50,000.00
156	George G. Stone.....	4,677.35	.....	.....	.....	4,677.35
157	Seth K. Sweetser.....	25,061.62	.....	.....	.....	25,061.62
159	William J. Walker.....	23,613.59	.....	.....	.....	23,613.59
161	Horace Herbert Watson....	34,076.69	.....	.....	.....	34,076.69
163	Albion B. K. Welch	5,000.00	.....	.....	.....	5,000.00
165	Everett Westcott.....	171,394.00	.....	.....	.....	171,394.00
167	Marion Westcott.....	238,202.00	.....	.....	.....	238,202.00
169	George Wigglesworth.....	25,993.15	106.60	.....	.....	26,099.75
171	Edwin A. Wyeth.....	247,571.15	4,344.62	2,360.94	4,344.62	249,932.09
		$26,449,771.42	$6,378.22	$140,708.11	$209,288.87	$26,387,568.88

Note. Where no investment income is indicated the amount allocated has been carried directly to Current Income.

*Approximately $5,700 to be refunded by Alumni Association from Technology Review profits and reduced expenses of Association.

SCHEDULE A-2 — (Continued)

No.	*Unrestricted Funds*	*Funds, June 30, 1940*	*Investment Income Added to Principal*	*Other Receipts*	*Expended or Transferred*	*Funds, June 30, 1941*
172	Edmund D. Barbour.....	$20,736.94	$.....	$.....	$.....	$20,736.94
173	Stephen L. Bartlett.....	206,501.26	.....	63,075.00	62,058.65	207,517.61
176	Ellis Hollingsworth.....	.....	.....	10,000.00	.....	10,000.00
187	Industrial Fund.....	8,808.12	205.00	24,378.20	21,692.98	11,698.34
190	John Wells Morss.....	50,000.00	.....	.....	.....	50,000.00
195	Emerette O. Patch.....	5,240.84	.....	.....	2,964.23	2,276.61
196	H. B. Perkins.....	250.00	.....	.....	250.00	.....
201	Robert E. Rogers.....	380.77	.....	.....	380.77	.....
205	Frank G. Webster	25,000.00	.....	.....	.....	25,000.00
		$316,917.93	$205.00	$97,453.20	$87,346.63	$327,229.50

FUNDS FOR DESIGNATED AND SPECIAL PURPOSES

Special Deposit and Agency Funds

210	Endowment Reserve.....	$598,000.94	$30,874.55	$242,039.30	$497,192.56	$373,722.23
211	Income Equalization Reserve	39,993.56	1,640.00	.....	.....	41,633.56
212	Albert Fund.....	2,677.94	205.00	6,296.79	4,095.83	5,083.90
214	Alpha Chi Sigma House Fund	3,378.84	123.00	65.00	100.00	3,466.84
216	Anonymous (1924).....	2,280.05	82.00	.....	.....	2,362.05
218	Ass'n of Class Secretaries..	.....	82.00	2,252.79	.....	2,334.79
220	Basket Ball Fund.....	3,060.34	123.00	.....	.....	3,183.34
221	Bess Bigelow Fund.....	28,350.04	1,148.00	.....	.....	29,498.04
222	Ednah Dow Cheney.....	16,001.74	656.00	.....	201.22	16,456.52
223	Class of 1914.....	763.08	32.80	.....	.....	795.88
224	Class of 1918 (Organ Fund).	311.00	16.40	160.00	.....	487.40
225	Class of 1923.....	11,714.30	492.00	658.37	217.25	12,647.42
226	Class of 1924.....	22,397.89	902.00	162.52	142.47	23,319.94
227	Class of 1925.....	14,119.99	574.00	159.07	124.65	14,728.41
229	Class of 1926.....	17,537.03	738.00	379.50	17.66	18,636.87
230	Class of 1927.....	15,783.43	656.00	799.66	.....	17,239.09
231	Class of 1928.....	35,148.02	1,435.00	.....	.....	36,583.02
232	Class of 1929.....	11,711.76	492.00	660.06	.....	12,863.82
233	Class of 1930.....	1,576.30	65.60	200.58	.....	1,842.48
237	Class of 1934.....	454.06	20.50	.21	.....	474.77
238	Class of 1935.....	372.62	16.40	.06	.....	389.08
239	Class of 1936.....	519.90	20.50	.....	.....	540.40
240	Class of 1939.....	668.16	28.70	27.49	.....	724.35
245	Cosmic Terr. Research.....	30,657.00	984.00	1,531.87	10,000.00	23,172.87
247	Drama Club Theatre Fund .	433.52	16.40	.....	.....	449.92
248	Friends of the Library	.....	.....	915.00	915.00	.....
249	Hayden Found.(Dental Clinic)	.....	246.00	10,000.00	.....	10,246.00
250	Industrial Economics.....	.....	82.00	8,250.00	.....	8,332.00
251	Industrial Relations.....	75,972.21	3,977.00	47,700.00	20,234.18	107,415.03
253	Major Briggs Fund.....	.....	1,230.00	32,574.14	1,905.19	31,898.95
255	M. I. T. Employees Fund ..	235.87	8.20	346.95	365.25	225.77
260	M. I. T. Teachers' Insurance	7,242.35	.....	30,887.97	30,772.76	7,357.56
261	M. I. T. Teachers' Insurance (Special).....	97,432.70	3,772.00	7,242.35	34,352.63	74,094.42
263	M. I. T. Alumni Association Permanent Funds.....	88,472.74	3,649.00	200.46	.....	92,322.20
264	Henry A. Morss Nautical ..	1,979.52	82.00	.....	.....	2,061.52

Note. Where no investment income is indicated the amount allocated has been carried directly to Current Income.

SCHEDULE A-2 — (*Continued*)

No.		Funds, June 30, 1940	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1941
	SPECIAL DEPOSIT AND AGENCY FUNDS (*Continued*)					
265	Louisville Technology Foundation Fund	$50.00	$.....	$.....	$.....	$50.00
266	Class of 1917, Special	112.93	4.10	.....	.....	117.03
268	Class of 1934, Special	612.22	24.60	.....	.....	636.82
270	Class of 1898 Loan	9,663.05	397.70	.....	.....	10,060.75
273	Class of 1874	226.29	8.20	.....	.....	234.49
274	President's Fund, Special	.....	164.00	10,000.00	.....	10,164.00
277	W. P. Ryan, Special	4,092.12	151.70	.....	700.00	3,543.82
279	Sedgwick Memorial Lecture	11,649.38	492.00	237.84	.....	12,379.22
281	Lillie C. Smith	5,293.70	205.00	.....	.....	5,498.70
283	Walter B. Snow	3,583.85	172.20	2,000.00	.....	5,756.05
285	Technology Matrons' Teas	9,152.38	369.00	.....	398.76	9,122.62
286	W. B. S. Thomas' Fund	2,223.99	82.00	.....	.....	2,305.99
290	Undergraduate Activities Trust	1,377.95	57.40	.....	.....	1,435.35
292	Undergraduate Publication Trust	17,389.58	697.00	.....	700.00	17,386.58
294	Undergraduate Dues, Res. Athletics	10,563.94	369.00	.....	1,600.00	9,332.94
296	Undergraduate Dues, Res. Contingent	16,491.39	656.00	.....	349.39	16,798.00
298	Charles Dann Waterbury	.....	41.00	13,407.28	.....	13,448.28
		$1,221,729.67	$58,360.95	$419,155.26	$604,384.80	$1,094,861.08
	FUNDS FOR SALARIES					
301	Samuel C. Cobb For General Salaries	$36,551.31	.....	.....	.....	$36,551.31
303	Sarah H. Forbes For General Salaries	500.00	.....	.....	.....	500.00
305	George A. Gardner For General Salaries	20,000.00	.....	.....	.....	20,000.00
309	James Hayward Professorship of Engineering	18,800.00	.....	.....	.....	18,800.00
311	William P. Mason Professorship of Geology	18,800.00	.....	.....	.....	18,800.00
313	Henry B. Rogers For General Salaries	25,000.00	.....	.....	.....	25,000.00
315	Nathaniel Thayer Professorship of Physics	25,000.00	.....	.....	.....	25,000.00
317	Elihu Thomson Professorship of Elec. Eng.	23,680.87	.....	.....	.....	23,680.87
		$168,332.18	.....	.....	.....	$168,332.18

Note. Where no investment income is indicated the amount allocated has been carried directly to Current Income.

SCHEDULE A-2 — (Continued)

No.		Funds, June 30, 1940	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1941
	FUNDS FOR LIBRARY					
321	Walter S. Barker	$10,427.24	$410.00	$.....	$400.00	$10,437.24
325	Frank Harvey Cilley	85,696.33	3,526.00	.....	3,817.00	85,405.33
327	Charles Lewis Flint	5,754.02	246.00	.....	222.52	5,777.50
341	William Hall Kerr	3,983.95	164.00	.....	42.04	4,105.91
343	George A. Osborne	10,364.60	410.00	.....	114.66	10,659.94
345	Arthur Rotch, Architectural	6,835.81	287.00	.....	223.63	6,899.18
349	John Hume Tod	3,257.43	123.00	.....	68.68	3,311.75
351	Theodore N. Vail Mem. Library	69,029.72	2,747.00	1,100.00	3,000.00	69,876.72
		$195,349.10	$7,913.00	$1,100.00	$7,888.53	$196,473.57
	FUNDS FOR DEPARTMENTS					
401	William Parsons Atkinson	$13,082.20	$.....	$.....	$.....	$13,082.20
403	Frank Walter Boles Memorial	33,325.77	1,353.00	.....	861.36	33,817.41
405	William E. Chamberlain	7,309.77	.....	.....	.....	7,309.77
407	Chemical Engineering Practice	257,772.97	.....	.....	.....	257,772.97
409	Crosby Honorary Fund	1,798.62	82.00	.....	.....	1,880.62
411	Susan E. Dorr	95,955.67	.....	.....	.....	95,955.67
412	George Eastman	400,000.00	.....	.....	.....	400,000.00
413	Arthur E. Kennelly	.....	1,968.00	65,588.99	1,000.00	66,556.99
414	Arthur Dehon Little Memorial	157,460.00	30,511.00	.....	30,511.00	157,460.00
416	John Lawrence Mauran	.....	.....	2,853.02	.....	2,853.02
417	George Henry May	5,000.00	.....	.....	.....	5,000.00
419	Susan Minns	40,000.00	.....	.....	.....	40,000.00
420	Forris Jewett Moore	22,979.29	943.00	261.52	1.38	24,182.43
422	Edward D. Peters	6,679.99	287.00	.....	514.85	6,452.14
423	Pratt Naval Architectural	392,520.44	2,950.00	.....	2,946.68	392,523.76
425	Richards Memorial	763.01	32.80	.....	.....	795.81
426	Frances E. Roper	2,000.00	.....	.....	.....	2,000.00
427	Arthur Rotch	25,000.00	.....	.....	.....	25,000.00
429	W. T. Sedgwick	73,210.83	2,993.00	.....	.....	76,203.83
431	Edmund K. Turner	264,294.69	2,747.00	3,839.62	.....	270,881.31
433	William Lyman Underwood	15,142.74	533.00	.....	2,227.82	13,447.92
434	William R. Ware	14,721.19	615.00	54.85	374.85	15,016.19
		$1,829,017.18	$45,014.80	$72,598.00	$38,437.94	$1,908,192.04
	FUNDS FOR RESEARCH					
441	Albert Farwell Bemis	$272,072.34	$12,710.00	$25,547.20	$11,717.60	$298,611.94
442	Albert Farwell Bemis Land Account	96,605.96	.....	.....	43,526.72	53,079.24
443	Samuel Cabot	51,111.99	2,091.00	.....	2,500.00	50,702.99
449	Ellen H. Richards	23,324.05	943.00	.....	500.00	23,767.05
451	Charlotte B. Richardson	46,073.28	1,886.00	.....	2,000.00	45,959.28
452	William Barton and Emma Savage Rogers	140,390.77	5,740.00	.....	.....	146,130.77
453	Solar Energy	649,121.70	18,000.00	.....	17,970.00	649,151.70
454	Henry N. Sweet	9,497.20	369.00	.....	.....	9,866.20
456	Textile Research Fund	2,171.58	65.60	.....	500.00	1,737.18
		$1,290,368.87	$41,804.60	$25,547.20	$78,714.32	$1,279,006.35

Note. Where no investment income is indicated the amount allocated has been carried directly to Current Income

SCHEDULE A-2 — (*Continued*)

No.		Funds, June 30, 1940	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1941
	FUNDS FOR FELLOWSHIPS					
462	American Institute of Baking..	$.....	$.....	$1,500.00	$1,378.85	$121.15
463	William Sumner Volles.....	28,250.41	1,107.00	.....	1,200.00	28,157.41
464	Malcolm Cotton Brown.....	12,491.44	45.50	.....	.....	12,536.94
465	Francis W. Chandler.....	10,589.81	451.00	.....	400.00	10,640.81
466	Collamore.....	14,710.02	615.00	.....	600.00	14,725.02
467	Dalton Graduate Chemical ...	7,525.69	307.50	.....	300.00	7,533.19
468	Dow Chemical.....	.....	.....	1,500.00	1,500.00	.....
469	du Pont de Nemours.....	.....	.....	750.00	750.00	.....
474	Rebecca R. Joslin.....	9,633.18	410.00	.....	.....	10,043.18
476	Wilfred Lewis.....	5,903.29	246.00	.....	250.00	5,899.29
478	Moore.....	33,399.58	1,353.00	.....	1,500.00	33,252.58
480	Willard B. Perkins.....	6,664.58	287.00	.....	.....	6,951.58
484	Proprietors Locks and Canals.	3,221.56	123.00	.....	600.00	2,744.56
486	Henry Bromfield Rogers	25,580.80	1,066.00	.....	1,000.00	25,646.80
488	Richard Lee Russel.....	3,376.35	150.00	.....	150.00	3,376.35
490	Henry Saltonstall.....	10,947.74	451.00	.....	450.00	10,948.74
492	James Savage.....	12,715.83	533.00	.....	250.00	12,998.83
493	Sloan.....	1,000.00	.....	1,000.00	1,000.00	1,000.00
495	Susan H. Swett.....	9,850.44	410.00	.....	100.00	10,160.44
496	Gerard Swope.....	138.75	.....	.....	.....	138.75
497	Frank Hall Thorp..... . .	10,667.82	451.00	.....	300.00	10,818.82
498	Luis Francisco Verges.....	10,185.71	410.00	.....	400.00	10,195.71
		$216,853.00	$8,416.00	$4,750.00	$12,128.85	$217,890.15
	FUNDS FOR SCHOLARSHIPS					
501	Elisha Atkins.....	$5,070.65	$205.00	$.....	$200.00	$5,075.65
503	Billings Student.....	51,251.62	2,091.00	.....	2,900.00	50,442.62
504	Jonathan Bourne.....	10,090.82	410.00	.....	400.00	10,100.82
505	Albert G. Boyden.....	588,908.45	24,149.00	380.00	10,708.40	602,729.05
506	Harriet L. Brown.....	7,691.49	315.70	.....	300.00	7,707.19
508	Nino Tesher Catlin.....	1,017.41	41.00	.....	50.00	1,008.41
511	Lucius Clapp.....	5,056.22	205.00	.....	300.00	4,961.22
513	Class of 1896.....	†6,592.41	270.60	125.00	.....	†6,988.01
514	Class of 1909.....	1,851.07	82.00	1,002.91	.....	2,935.98
515	Class of 1938.....	627.32	24.60	8.93	.....	660.85
516	Lucretia Crocker.....	79,332.55	3,239.00	.....	2,500.00	80,071.55
517	Isaac W. Danforth.....	5,101.98	205.00	.....	300.00	5,006.98
520	Ann White Dickinson.....	40,500.10	1,640.00	.....	2,000.00	40,140.10
521	Thomas M. Drown.....	51,844.04	2,132.00	.....	3,500.00	50,476.04
524	Farnsworth.....	5,735.62	233.70	.....	600.00	5,369.32
525	Charles Lewis Flint.....	5,091.34	209.10	.....	200.00	5,100.44
526	Sarah S. Forbes.....	3,842.05	155.80	.....	600.00	3,397.85
527	Hall-Mercer.....	.....	2,255.00	60,209.29	2,000.00	60,464.29
528	Charles Hayden Memorial(1943)	41,826.60	1,722.00	.....	800.00	42,748.60
529	Charles Hayden Memorial(1944)	.....	1,148.00	30,000.00	10,350.00	20,798.00

† Exclusive of student notes receivable. (See Schedule A-3.)

SCHEDULE A-2 — (*Continued*)

No.		Funds, June 30, 1940	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 19
	FUNDS FOR SCHOLARSHIPS (*Continued*)					
531	George Hollingsworth	$5,424.08	$221.40	$.....	$600.00	$5,045.48
533	T. Sterry Hunt	3,040.11	123.00	.....	150.00	3,013.11
534	William F. Huntington	5,186.63	213.20	.....	350.00	5,049.83
536	Joy Scholarships	17,863.38	738.00	.....	700.00	17,901.38
538	William Litchfield	5,192.65	213.20	.....	200.00	5,205.85
539	Elisha T. Loring	5,586.42	229.60	.....	600.00	5,216.02
541	Lowell Institute Scholarship	2,761.63	114.80	150.00	100.00	2,926.43
542	Rupert A. Marden	2,077.10	86.10	.....	100.00	2,063.20
543	George Henry May	†7,921.13	328.00	35.00	250.00	†8,034.13
545	James H. Mirrlees	2,740.42	110.70	.....	200.00	2,651.12
546	Fred W. Morrill	.....	28.70	2,000.00	.....	2,028.70
547	Nichols Scholarship	5,162.82	213.20	.....	350.00	5,026.02
548	Charles C. Nichols	5,558.99	229.60	.....	600.00	5,188.59
550	John Felt Osgood	5,147.28	209.10	.....	350.00	5,006.38
551	George L. Parmelee	18,669.24	779.00	.....	2,000.00	17,448.24
552	Richard Perkins	52,995.00	2,173.00	.....	5,000.00	50,168.00
553	Thomas Adelbert Read	21,288.88	861.00	.....	800.00	21,349.88
554	John Roach	6,418.00	262.40	.....	350.00	6,330.40
555	William P. Ryan Memorial	4,780.57	196.80	25.00	.....	5,002.37
556	John P. Schenkl	45,467.96	1,845.00	.....	3,450.00	43,862.96
557	Thomas Sherwin	5,228.57	213.20	.....	275.00	5,166.77
558	Horace T. Smith	33,402.55	1,353.00	.....	1,800.00	32,955.55
559	Sons and Daughters New England Colony	616.10	24.60	.....	.....	640.70
560	Samuel E. Tinkham	2,525.89	102.50	.....	200.00	2,428.39
562	F. B. Tough	693.23	28.70	.....	.....	721.93
563	Susan Upham	1,208.25	49.20	.....	250.00	1,007.45
565	Vermont Scholarship	25,561.58	1,066.00	.....	700.00	25,927.58
567	Ann White Vose	60,844.69	2,501.00	.....	2,700.00	60,645.69
569	Arthur M. Waitt	9,949.95	410.00	.....	600.00	9,759.95
571	Louis Weissbein	4,182.60	172.20	.....	200.00	4,154.80
573	Frances Erving Weston	7,763.87	310.18	.....	.....	8,074.05
574	Samuel Martin Weston	5,397.25	215.88	.....	200.00	5,413.13
576	Amasa J. Whiting	4,559.42	184.50	.....	200.00	4,543.92
577	Elizabeth Babcock Willmann	5,495.59	225.50	.....	200.00	5,521.09
		$1,302,143.57	$56,765.76	$93,936.13	$61,183.40	$1,391,662.06
	FUNDS FOR PRIZES					
580	Babson	$10,593.75	$237.50	$.....	$500.00	$10,331.25
581	Robert A. Boit	5,514.63	225.50	.....	110.00	5,630.13
583	Class of 1904	647.75	24.60	.....	15.00	657.35
584	William Emerson	2,236.56	90.20	.....	60.00	2,266.76
585	Roger Defriez Hunneman	1,056.89	41.00	.....	50.00	1,047.89
587	James Means	3,373.05	139.40	.....	175.00	3,337.45
589	Arthur Rotch	7,535.34	307.50	.....	200.00	7,642.84
591	Arthur Rotch, Special	11,367.94	467.40	.....	.....	11,835.34
592	Henry Webb Salisbury	.....	20.50	1,100.00	.....	1,120.50
593	Samuel W. Stratton	1,656.44	69.70	.....	100.00	1,626.14
		$43,982.35	$1,623.30	$1,100.00	$1,210.00	$45,495.65

† Exclusive of student notes receivable. (See Schedule A-3.)

SCHEDULE A-2 — (Continued)

No.		*Funds, June 30, 1940*	*Investment Income Added to Principal*	*Other Receipts*	*Expended or Transferred*	*Funds, June 30, 1941*
	FUNDS FOR RELIEF					
600	Louie G. Applebee	$.....	$.....	$300.00	$.....	$300.00
601	Edward Austin	433,846.58	17,794.00	.....	21,953.00	429,687.58
603	Thomas Wendell Bailey	2,342.99	94.30	.....	100.00	2,337.29
604	Charles Tidd Baker	33,693.94	1,394.00	.....	650.00	34,437.94
606	Levi Boles	11,089.47	451.00	.....	1,400.00	10,140.47
608	Bursar's Fund	†21,216.59	861.00	1,641.89	1,564.60	†22,154.88
610	Mabel Blake Case	27,492.16	1,107.00	.....	3,000.00	25,599.16
612	Fred L. and Florence L. Coburn	5,193.75	213.20	.....	200.00	5,206.95
614	Coffin Memorial	42,001.00	2,330.00	.....	2,400.00	41,931.00
615	George R. Cooke	3,500.28	143.50	.....	120.00	3,523.78
616	Dean's Fund	†6,308.51	258.30	803.58	585.00	†6,785.39
618	Carl P. Dennett	†906.31	36.90	1.00	.....	†944.21
620	Dormitory Fund	4,083.27	164.00	.....	200.00	4,047.27
621	Frances and William Emerson	†102,178.50	4,182.00	210.00	4,700.00	†101,870.50
623	Norman H. George	95,828.30	3,936.00	.....	5,000.00	94,764.30
025	John A. Grimmons	†2,623.80	131.20	2,975.33	1,942.81	†3,787.52
627	James H. Haste	185,493.69	7,626.00	.....	7,000.00	186,119.69
628	David L. Jewell	26,638.39	1,107.00	.....	800.00	26,945.39
629	Llora Culver Krueger	4,362.19	180.40	.....	600.00	3,942.59
630	Charles A. Richards	31,752.92	1,312.00	.....	1,200.00	31,864.92
631	William B. Rogers	†42,755.55	1,763.00	758.07	1,800.00	†43,476.62
632	Anna Spooner	7,561.60	410.00	3,396.14	450.00	10,917.74
633	Summer Surveying Camp	†1,751.54	69.70	187.35	100.00	†1,908.59
634	Teachers' Fund	111,792.23	4,305.00	.....	8,572.00	107,525.23
635	Technology Loan Fund	†726,915.22	23,969.45	153,734.22	180,013.71	†724,605.18
636	Alice Brown Tyler	1,157.68	49.20	559.64	.....	1,766.52
637	Thomas Upham	394,912.42	16,195.00	.....	14,000.00	397,107.42
638	Samson R. Urbino	1,038.05	41.00	.....	50.00	1,029.05
639	Jonathan Whitney	578,404.22	23,112.25	5,934.87	38,574.29	568,877.05
640	Morrill Wyman	71,467.35	2,911.00	.....	3,150.00	71,228.35
		$2,978,308.50	$116,147.40	$170,502.09	$300,125.41	$2,964,832.58
	Totals	$36,012,773.77	$342,629.03	$1,026,849.99	$1,400,708.75	$35,981,544.04

RECAPITULATION OF FUNDS

	Funds June 30, 1940	*Funds June 30, 1941*
Restricted	$26,449,771.42	$26,387,568.88
Unrestricted	316,917.93	327,229.50
Special Deposit Funds	1,222,492.68	1,094,861.08
Salaries	168,332.18	168,332.18
Libraries, etc.	195,349.10	196,473.57
Departments	1,828,254.17	1,908,192.04
Research	1,290,368.87	1,279,006.35
Fellowships	216,853.00	217,890.15
Scholarships	1,302,143.57	1,391,662.06
Prizes	43,982.35	45,495.65
Relief	2,978,308.50	2,964,832.58
	$36,012,773.77	$35,981,544.04

†Exclusive of student notes receivable. (See Schedule A-3.)

SCHEDULE A-3
STUDENT NOTES RECEIVABLE

Fund	*Notes Receivable June 30, 1940*	*Loans Made 1940–41*	*Loans Repaid 1940–41*	*Notes Receivable June 30, 1941*	*Interest Received 1940–41*
Technology Loan Fund ...	$885,629.29	$141,796.00*	$115,674.92	$911,750.37	$17,868.46
Bursar's Fund.....	6,251.20	1,564.60	†1,586.89	6,228.91	125.00
Rogers Fund.....	3,841.95	.....	589.93	3,252.02	168.14
Dean's Fund.....	2,465.06	585.00	773.07	2,276.99	30.51
C. E. Summer Camp Fund	505.00	100.00	180.00	425.00	7.35
Grimmons Sch. Loan Fund	1,184.00	.....	734.00	450.00	310.86
Dennett Fund.....	665.00	.....	.....	665.00	1.00
G. H. May Sch. Fund	4,905.00	250.00	35.00	5,120.00	.....
Hygiene Special Fund	3,918.83	532.06	235.21	4,215.68	11.84
Class of 1896 Fund.....	1,500.00	.....	.....	1,500.00	.....
Emerson Fund.....	529.93	.....	210.00	319.93	.....
Chemical Engineering Fund	355.69	.....	25.00	330.69	.....
President's Fund.....	250.00	.....	.....	250.00	.....
Total.....	$912,000.95	$144,827.66	$120,044.02	$936,784.59	$18,523.16

(Schedule A)

* Includes $170 written off.
† Includes 70 written off.

SCHEDULE A-4
ACCOUNTS RECEIVABLE

Chemical Foundation.....	$22,492.23
Anaesthesia Committee (Hospital Research).....	5,330.10
Sperry Gyroscope Co.....	4,001.49
United States National Defense Research Contract.....	116,584.01
United States Army, Navy and Weather Bureau Contracts.....	15,165.00
Wind Tunnel Accounts.....	9,547.01
Division of Industrial Coöperation Contracts	81,199.10
Miscellaneous Accounts.....	7,703.39
Total (Schedule A).....	$262,022.33

SCHEDULE A-5

ADVANCES AND INVENTORIES FOR 1941–1942

Advances:		
1941 Summer Session Salaries	$1,290.00	
1941–42 Salaries	75.00	
1941 Spectroscopy Conference	155.00	
Carnegie Foundation Pension	4,350.40	
1941–42 Sloan Fellowships	5,455.50	
Research in Progress — Industry	78,297.03	
Research in Progress — United States Gov't	463,258.62	
Special Appro. No. 1772 (1941–42) Repairs	630.13	
Premiums Paid on Unexpired Insurance	4,181.67	
Electrical Engineering Special No. 1642	6,993.97	
Tech Press Special No. 1494	3,354.16	
1941–42 Purchases and Expenses	25,436.63	
Metallurgy Department Overdraft	1,082.50	
Chemical Warfare Development Laboratory	83.01	
		$594,643.62
Inventories:		
Undergraduate Dormitories, Supplies	$2,072.27	
Graduate House, Supplies	4,727.20	
Walker Dining Service, Food and Utensils	9,437.87	
Graduate House Dining Service, Food and Utensils	9,547.30	
Fuel Oil	1,731.93	
Walker Games, Candy and Cigars	409.93	
Letter Shop, Supplies	543.89	
Postage Stamps	232.17	
Department of Buildings and Power, Supplies	26,858.14	
Division of Laboratory and Office Supplies	28,744.11	
Photographic Service, Supplies	2,867.95	
Civil Engineering Camp, Supplies	101.18	
		87,273.94
Total (Schedule A)		$681,917.56

SCHEDULE A-6

STUDENTS' FEES IN ADVANCE, AND DEPOSITS RETURNABLE

1941 Summer Session:		
Tuition Fees	$78,381.00	
Students' Deposits	5,659.07	
Dormitory Rentals	6,944.00	
Graduate House Rentals	5,356.00	
Civil Engineering Camp	453.00	
		$96,793.07
1940–41 Students' Deposits, Returnable		5,546.23
1941–42 Dormitory Rentals		107.50
Total (Schedule A)		$102,446.80

SCHEDULE A-7

CURRENT FUNDS

Name	*Balance June 30, 1940*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1941*
Additional Group Insurance Fund	$41.48	$6,552.74	$6,476.25	$117.97
Aeronautical Engineering				
Spec. No. 1613 Equipment ...	1,268.68	237.02	1,505.70	.....
Spec. No. 1598 Equipment ...	201.01	.....	201.01	.....
C.A.A. Pilot Training No. 3360	459.00	10,200.00	10,109.90	549.10
C.A.A. Pilot Training No. 5599	.....	1,828.00	1,733.26	94.74
C.A.A. Pilot Training No. 8547	.....	1,572.00	1,039.31	532.69
C.A.A. Pilot Training No. 10427	.....	186.40	3.68	182.72
C.A.A. Pilot Training No. 10738	.....	127.60	.....	127.60
Forest Service Research.....	625.10	1,440.00	1,071.58	993.52
Flying Instruction.....	.....	500.00	500.00	.....
U.S. Government Intensive Aero. Summer Course.....	.....	3,033.59	3,033.59	.....
U.S. Government Meteorology Summer Course.....	.....	4,000.00	4,000.00	.....
Weather Bureau Research....	5.37	15,283.75	13,434.75	1,854.37
Aerodynamic Research	10,140.00	2,500.00	12,368.96	271.04
Spec. 500–762 Acct.....	1,468.51	.....	.....	1,468.51
Summer Shop Course.....	395.98	200.00	514.55	81.43
Wind Tunnels.....	5,010.36	68,676.90	41,696.13	31,991.13
Alcohol Research No. 1175...	27.24	12.91	40.15	.....
Detonation Research.....	1,832.91	.....	1,832.91	.....
Weather Bureau Special Meteor. Course.....	.....	6,550.00	6,498.54	51.46
Alumni Day 1941.....	.....	4,860.50	4,860.50	.....
Alumni Fund — Expense	.....	22,594.11	22,594.11	.....
Alumni Fund — Special Appro. No. 1559 Councilors.....	1,000.00	.....	1,000.00	.....
Alumni Fund — Special Appro. No. 1560 Bulletin.....	3,000.00	.....	1,109.43	1,890.57
Architecture:				
Spec. No. 1533A Cases	2,728.97	.....	2,728.97	.....
Spec. No. 1606 Nolan Library	16.30	.....	16.30	.....
Traveling Scholarship.....	1,500.00	1,500.00	500.00	2,500.00
Special No. 1095A.....	.....	7,747.08	7,747.08	.....
1941 Bulletin.....	3,000.00	.....	3,000.00	.....
Bemis Foundation Research....	.....	24,271.79	24,271.79	.....
Biology — Food Research.....	1,163.41	1,617.85	2,664.83	116.43
Biology Eng. Special.....	.....	2,567.68	2,567.68	.....
Special Equipment No. 1878..	110.00	.....	110.00	.....
Hospital Research.....	.....	5,422.00	5,422.00	.....
Health Education.....	95.99	8.50	95.56	8.93

SCHEDULE A-7 — (Continued)

Name	*Balance June 30, 1940*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1941*
Biology (*Continued*)				
Dow Fellowship	$1,477.94	$2,500.00	$1,573.55	$2,404.39
Hood Fund	4,584.07	.....	3,219.51	1,364.56
Williams-Waterman Biochem. Fellowship	.....	2,400.00	2,292.82	107.18
Hood Scholarship Fund	.....	800.00	800.00	.....
Rockefeller Vitamin Research	.....	2,124.50	2,107.18	17.32
Account 4133	1.62	.....	1.62	.....
Biological Shop	.....	1,419.78	1,419.78	.....
Lever Bros. Fellowship	.....	2,000.00	1,700.93	299.07
Rockefeller Fd.— Biological Eng.	.....	40,044.53	18,284.30	21,760.23
Rockefeller Nutrition Biochem.	.....	7,000.00	3,281.37	3,718.63
Nat. Res. Council Grant N.A.S.	80.98	.....	80.98	.....
Barlett Arkel Fund	10,000.00	366.50	6,521.26	3,845.24
Special No. 1648 Biol. Eng. Shop	10,000.00	.....	7,391.23	2,608.77
Blue Cross Hospitalization	.....	9,424.25	9,424.25	.....
Boat House Equipment	.....	3,286.91	3,128.91	158.00
Boston Airport Project	.....	432.40	432.40	.....
Bryant (Dixie Lee), Sch. 1940–41	600.00	.....	50.00	550.00
Building Key Account	2,511.64	1,573.00	1,263.87	2,820.77
Building Eng. and Const. — National Lime Association	.....	6,209.78	5,615.99	593.79
Bus. and Eng. Administration				
Book Account	.....	324.85	57.45	267.40
Case Research Account	70.18	250.00	129.48	190.70
Graduate Fellowship Fund	180.22	.....	.....	180.22
Human Relationships Acct.	172.31	46.70	92.31	126.70
Sloan Fellowship Fund 1939	2,702.31	.....	120.38	2,581.93
Sloan Fellowship Fund 1940	.....	35,586.40	33,619.65	1,966.75
Sloan Fellowship Fund 1941	.....	5,555.50	5,555.50	.....
Sloan Fellowships Special	.....	1,000.00	.....	1,000.00
J. R. Macomber Fund	5.84	.....	.....	5.84
Carnegie Foundation Pensions	.....	56,703.43	56,703.43	.....
Chemistry:				
Polymerization Research	333.10	2,050.00	423.02	1,960.08
Special No. 1628 (Ventilation)	140.53	.....	140.53	.....
Moore Lecture Fund	87.50	.....	87.50	.....
National Defense Salary Acct.	.....	10,500.00	10,500.00	.....
Special No. 1260 — Foyer	174.02	.....	174.02	.....
Inorganic Equipment	909.02	.....	.....	909.02
Special No. 1324, Alterations	50.73	.....	.....	50.73
Special No. 1617 Compressor	940.94	16.00	387.33	569.61
Warren Fund — Schumb	74.14	.....	.....	74.14
A. A. A. & S. — Davis	83.50	.25	83.75	.....
Research Corp. Vitamin "C" Research	16.55	.....	.....	16.55

SCHEDULE A-7 — (Continued)

Name	*Balance June 30, 1940*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1941*
Chemistry (*Continued*)				
Phys. Chem. Royalties	$472.33	$.....	$.....	$472.33
Research Corp. Synthesis of Vitamins A and D	.....	8,180.10	8,099.12	80.98
Oxycellulose Research	.....	2,550.00	.....	2,550.00
Chemical Engineering:				
Allied Chemical and Dye Corp. Fellowship	.....	1,500.00	.....	1,500.00
Alsifilm Research	.....	1,500.00	1,298.14	201.86
Chemical Warfare Service Development Laboratory	.....	83.01	83.01	.....
Fuels Research	2,429.26	.....	.....	2,429.26
Special No. 1635, Colloid Res.	603.32	1,000.00	1,058.39	544.93
Paint and Varnish Res. Fell.	.....	750.00	750.00	.....
Special No. 1207, Colloid Chem.	281.28	.....	.....	281.28
Special No. 1421, Research	250.00	.....	.....	250.00
Civil Engineering:				
Freeman Hydraulic Fund	.....	800.00	.....	800.00
Special No. 1364, Research	3,555.28	100.00	1,078.19	2,577.09
Soil Mechanics	175.15	3,455.73	1,888.88	1,742.00
Reserve for 1941–42	.....	2,702.30	.....	2,702.30
Special No. 1056, Cement Res.	356.10	1,628.35	1,509.39	475.06
Special No. 1326, Equipment	590.03	.....	77.18	512.85
River Hydraulic Laboratory	7.25	763.00	765.16	5.09
Structural Laboratory	112.44	1,400.00	1,107.76	404.68
U. S. Cape Cod Canal Res.	93.35	.....	.....	93.35
Cosmic Terrestrial Research	3,914.18	6,000.00	8,746.19	1,167.99
Crafts Library Fund	479.53	.....	.....	479.53
Dining Service Reserve	1,667.16	5,617.15	4,155.92	3,128.39
Div. of Indus. Coöperation	11,389.82	321,092.00	304,708.62	27,773.20
D. I. C. No. 5973 —	.....	660,990.34	660,990.34	.....
D. I. C. No. 5973A —	.....	80,319.49	80,319.49	.....
D. I. C. No. 5973-3	.....	6,365.49	6,365 49	.....
D. I. C. Defense	.....	85,753.15	85,753.15	.....
D. I. C. Special No. 5925	.....	15,000.00	15,000.00	.....
Economics:				
Babson Special Res. No. 1729.	.....	500.00	500.00	.....
Electrical Engineering:				
Balsbaugh Research	2,336.34	13,520.29	14,607.18	1,249.45
Course VI-A Works Instruction	.....	980.00	980.00	.....
VI-A Fund — Travel, etc.	.....	1,000.00	826.72	173.28
Humane Society of Mass. — Fog Research	12.09	.....	12.09	.....
Fog Research — Navy	95.46	12.09	2.00	105.55
Network Analyzer	9,091.14	9,734.84	12,086.19	6,739.79
Edgerton Film Fund	264.95	584.83	593.02	256.76
Round Hill Research	163.26	.....	151.68	11.58

SCHEDULE A-7 — (Continued)

Name	*Balance June 30, 1940*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1941*
Electrical Engineering (*Continued*)				
Navy Fire Control Research..	$.....	$1,750.00	$1,698.70	$51.30
Differential Analyzer.....	710.92	1,259.35	1,387.70	582.57
Spec. No. 1588, Fire Cont. Lab.	228.68	.....	161.58	67.10
General Radio Co., for VIA ..	1,200.00	.....	1,200.00	.....
Nat. Res. Council, Micro. Film	1,947.50	.....	1,210.32	737.18
Oncologic Fund.....	.....	7,386.25	7,386.25	.....
Rapid Selection Research	9,475.65	5,399.86	7,888.78	6,986.73
Rapid Selec. Research Special.	556.13	120.46	608.05	68.54
C. A. A. Instrument Lan. Res..	.....	28,554.41	28,554.41	.....
Center of Analysis.....	24,267.77	2,264.48	20,864.52	5,667.73
Research Corp. Arith. Mach...	700.82	5,729.99	4,083.50	2,347.31
Int. Tel. and Tel. Research...	623.40	3,750.00	224.02	4,149.38
Glass Fracture Research.....	458.46	.....	458.46	.....
Loomis Laboratory Research .	.....	984.45	984.45	.....
Microwave Research.....	13,400.00	244.94	9,644.10	4,000.84
Moon Spectro-Radiometer ...	.....	1,300.00	729.77	570.23
Network Analyzer Special....	.....	3,800.38	3,202.51	597.87
Notes — Special No. 1642....	.....	9,354.47	9,354.47	.....
Equipment, Special No. 1450A	7.73	.....	7.73	.....
Hyams Radiation Project....	.....	22,004.94	22,004.94	.....
Radio Research, No. 1541....	1,369.30	30.12	569.80	829.62
Radio Research, No. 1550....	2,705.97	.....	1,096.79	1,609.18
Research Corp., High Volt ...	780.08	.....	274.33	505.75
Rock. Diff. Anal., No. 2	1.13	.....	1.13	.....
Rock. Diff. Anal., No. 3	1,007.00	25.47	1,032.47	.....
Rock. Diff. Anal., No. 4	.....	7,870.35	5,893.42	1,976.93
von Hippel Res. 1219, 1275...	191.93	2,184.77	2,158.59	218.11
Course Revision No. 1250....	1,031.00	5,755.80	4,065.51	2,721.29
Loomis Fund Research.....	733.86	.37	618.75	115.48
Reserve for 1941–42	.....	7,550.60	.....	7,550.60
Sperry Localizer Research....	2,353.70	1,000.00	3,353.70	.....
Sperry Short Wave Antena Res.	1,043.50	4,001.49	5,044.99	.....
Special Appropriation No. 1705	.....	4,550.00	4,550.00	.....
Eng. and History, Spec. No. 1536	154.27	500.00	300.26	354.01
International Relations Library	105.29	.....	7.66	97.63
Engin. Defense Training Program	.....	53,708.50	53,632.05	76.45
Geology:				
Carnegie Institution of Washington, Research.....	2,155.52	2,546.50	2,389.24	2,312.78
N. R. C. Research.....	1,462.26	2,500.00	2,430.26	1,532.00
Age of Earth Research.....	825.00	4,727.66	5,552.66	.....
Special No. 242–38	1,867.40	1,000.00	2,299.13	568.27
Spectrograph Account.....	.53	1.47	2.00	.....
U. S. Smelting, Ref. and Min. Co. Special Research Fellow.	.....	1,800.00	.....	1,800.00

SCHEDULE A-7 — (Continued)

Name	*Balance June 30, 1940*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1941*
Graduate House Dining Service Reserve	$.....	$2,169.45	$.....	$2,169.45
Graphics—Nat.Res.Council Grant	500.00	500.00	471.27	528.73
Guide Service, 1558	565.86	.....	81.00	484.86
Gymnasium Special	.....	1,000.00	.....	1,000.00
Historic Memorials	.....	500.00	234.58	265.42
Library:				
Special No. 1	506.77	13.00	21.85	497.92
Walker Library, No. 1655	3,000.00	10.08	3,010.08	.....
Lindgren Library, No. 1508	232.12	.....	184.65	47.47
Library Growth Account	2,738.64	5,597.98	1,278.26	7,058.36
Dewey Library	204.40	.....	109.22	95.18
A. D. Little Mem. Income Acct.	22,561.22	30,511.00	25,000.00	28,072.22
Mathematics:				
Journal of Math. and Physics.	462.42	2,425.01	2,039.16	848.27
Putnam Fund	69.74	200.00	57.45	212.29
Maclaurin Memorial, Class 1916	.....	1,373.44	1,373.44	.....
Mechanical Engineering:				
Textile Fund Grant	809.27	6,250.00	3,827.54	3,231.73
Special Research	391.90	500.00	579.21	312.69
Research No. 1254	201.35	1,900.00	864.69	1,236.66
A. S. M. E. Gear Research	37.71	.....	.....	37.71
A. S. M. E. Special Research	.....	300.00	292.99	7.01
Friction Conference	14.50	1.51	16.01	.....
Special 1774	.....	1,200.00	.....	1,200.00
Spec. No. 1523 T. M. Lab.	816.40	250.00	486.40	580.00
Testing Machine, No. 1624	7,269.14	64.41	6,457.90	875.65
Cavitation Research	1,039.99	610.00	632.51	1,017.48
Textile Lab., Spec. No. 1595	200.00	.....	200.00	.....
Mechanical Eng. 1941–42	.....	196.79	.....	196.79
Nat. Aero. W., No. 465	.....	22.80	22.80	.....
Nat. Aero. W., No. 623	.....	89.22	89.22	.....
Nat. Aero. W., No. 563	.....	18.64	18.64	.....
Nat. Aero. W., No. 566	252.77	.....	252.77	.....
Nat. Aero. W., No. 731	.....	1,663.10	1,663.10	.....
Nat. Aero. W., No. 643	.....	835.46	835.46	.....
Nat. Aero. W., No. 727	.....	543.70	543.70	.....
Vib. Research, No. 1333	94.20	935.37	956.72	72.85
Medical Dept. Special	†1,326.92	247.05	547.06	†1,026.91
Melvin Trust Scholarships	.....	7,200.00	7,200.00	.....
Metallurgy:				
Magnetic Laboratory, No. 1222	165.97	2,660.88	2,277.28	549.57
Mineral Dressing Research	.....	3,293.64	3,293.64	.....
Revere Copper and Brass Res.	.....	1,600.00	1,517.78	82.22
International Nickel Co.	300.97	34.06	335.03	.....

† Exclusive of Student Notes Receivable.

SCHEDULE A-7 — (Continued)

Name	*Balance June 30, 1940*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1941*
Metallurgy (*Continued*)				
Engineering Foundation for Welding Research	$.....	$1,400.00	$411.37	$988.63
Vanadium Corporation	.....	450.00	450.00	.....
Clay Research	1,272.51	3,100.00	1,811.20	2,561.31
Chilled Iron Research	60.82	.....	.....	60.82
Cuban Am. Manganese Fell.	600.00	.....	600.00	.....
Chipman Research, No. 1337	.....	2,068.25	1,822.19	246.06
Special No. 1354, Research	736.87	200.00	313.82	623.05
Am. Inst. Min. and Met. Eng., O. H. Comm. Fellowship	900.00	100.00	1,000.00	.....
Special No. 1259, Equipment	309.06	193.29	321.48	180.87
Special No. 1129, Research	.....	937.26	937.26	.....
American Welding Society Acct.	63.53	.....	.....	63.53
Special No. 1234, Equipment	268.12	291.75	43.06	516.81
Penrose Fund	85.02	.....	85.02	.....
Mining Engineering:				
Ore Dressing	2.87	.....	2.87	.....
Mineral Dressing, No. 1528	1.90	3.00	4.90	.....
Mortgage Interest Account — Gloversville	.....	880.47	.....	880.47
Morss, Everett — Portrait Fund.	.....	1,500.00	1,260.00	240.00
Museum Committee	2,139.91	4,814.07	6,411.19	542.79
National Academy of Sciences — De-Icing	.....	3,389.16	3,389.16	.....
National Defense Program	.....	55,059.67	26,776.76	28,282.91
National Defense — Safety Comm.	.....	675.00	499.36	175.64
National Defense — Alterations.	.....	74,828.54	74,828.54	.....
Naval Architecture:				
Propeller Tunnel, No. 1548A	104.45	1,500.00	1,165.98	438.47
Towing Tank, No. 1377	11.86	.....	11.86	.....
N. Y. Exhibit Special 1473	711.93	.....	711.93	.....
News Service No. 1519	75.00	.....	75.00	.....
Paper Museum	143.01	.....	143.01	.....
Patent Committee	77.51	.....	.....	77.51
Placement Committee Fund	10.83	.....	10.83	.....
Photographic Service	1,077.97	45,578.07	43,848.04	2,808.00
Physics Department:				
Nuclear Research	4,937.01	16,685.11	7,945.59	13,676.53
Bausch & Lomb Optical Co.	533.26	3,000.00	2,210.00	1,323.26
Rumford, Harrison No. 5	68.41	.....	35.07	33.34
Rumford, Hardy	120.72	.....	120.72	.....
Rumford, Stockbarger	371.19	.....	.....	371.19
Roentgen Ray	232.26	.....	.....	232.26
Rockefeller Special Research	600.00	.....	600.00	.....
Milton Iodine Research	10.14	11.04	21.18	.....
Nat. Res. Protein Fell., Warren	.....	1,009.17	1,009.17	.....
Conference on Applied Nuclear	.....	1,580.00	1,580.00	.....

SCHEDULE A-7 — (Continued)

Name	*Balance June 30, 1940*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1941*
Physics Departments (*Continued*)				
Crystal Research	$350.63	$250.00	$.....	$600.63
Microscope, No. 1650	2,439.65	.....	2,046.34	393.31
Carnegie Institution of Washington, Vallarta	900.00	.....	40.00	860.00
Markle Cyclotron Research	6,702.89	24,791.27	31,494.16	.....
Glass Industry Fellowship	750.00	.....	500.00	250.00
Radioactivity Research	2,788.65	1,507.22	1,994.81	2,301.06
Carnegie Institution of Washington, Boyce	2,872.24	3,014.84	2,832.84	3,054.24
Nat. Res. Council No. 185	3.24	.....	3.24	.....
Spectroscopy, Special	1,060.26	1,948.40	780.75	2,227.91
Staff Scholarships 1941–42	.....	400.00	.....	400.00
Zeeman Effect Program	.....	1,570.00	1,570.00	.....
President's Fund	446.25	1,000.00	1,300.15	146.10
President's Portrait Fund	.....	3,210.00	1,553.50	1,656.50
Register Former Students 1940	.....	568.06	568.06	.....
R. O. T. C. Uniforms	442.39	9,360.70	9,370.34	432.75
Research Associates M.I.T. 1941	.....	16,200.00	16,200.00	.....
Royalty Receipts, Patent 665135	2,167.22	1,787.71	802.20	3,152.73
Sailing Trophy Fund	3.52	.....	.....	3.52
Society of Arts	.....	1,978.29	1,978.29	.....
Solar Energy No. 1476	128.18	.....	.....	128.18
Solar Energy — C	25.97	2,000.00	1,428.83	597.14
Solar Energy — E	214.47	1,030.00	844.29	400.18
Solar Energy — G	621.29	126.95	.....	748.24
Solar Energy — H	.....	1,450.00	1,356.76	93.24
Solar Energy — M	209.52	538.88	181.45	566.95
Special, No. 1755, Zeeman Effect Program	.....	700.00	39.75	660.25
Special, No. 1747, Traffic Signals	.....	1,795.00	9.94	1,785.06
Special, No. 1746, Changes Cement Laboratory	.....	850.00	850.00	.....
Special, No. 1736	.....	5,000.00	5,000.00	.....
Special, No. 1762, War Risk Ins.	.....	1,875.00	1,875.00	.....
Special, No. 1779, Summer Altera.	.....	22,000.00	122.37	21,877.63
Special, No. 1682, Visiting Committees, Reports	274.16	.....	89.98	184.18
Special, No. 1656, New Boats	36.15	22.30	58.45	.....
Special, No. 1756, M.E.Dept.Assts.	.....	150.00	150.00	.....
Special, No. 1781, Differential Analyzer Program	.....	10,000.00	.....	10,000.00
Special, No. 1772, Bldg. 33-410	.....	630.13	630.13	.....
Special, Departmental 1940–41 Unexpended Balances	.....	12,554.49	.....	12,554.49
Special, No. 1649, Space Changes	40,593.61	2,468.65	43,062.26	.....
Special, No. 1643, Alterations	.....	1,200.00	1,200.00	.....
Special, No. 1717, Morse & Stratton	.....	2,550.00	2,073.34	476.66

SCHEDULE A-7 — (Continued)

Name	*Balance June 30, 1940*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1941*
Special, No. 1637, Bemis Research	$.....	$1,000.00	$500.00	$500.00
Special, No. 1647	.....	800.00	800.00	.....
Special, No. 1677, Sloan Lab. Eq.	.....	3,605.81	3,551.12	54.69
Special, No. 1678, Office Space Vail Library	.....	1,000.00	1,000.00	.....
Special, No. 1683, Parking Space	.....	1,810.12	1,810.12	.....
Special, No. 1691, Alt'ns, Bldg. 33	.....	76,500.00	76,500.00	.....
Special, No. 1715, Swimming Pool	.....	2,730.14	2,730.14	.....
Special, No. 1727, Electric Service	.....	10,400.00	10,400.00	.....
Special, No. 1735, Metallurgy Dept.	.....	899.74	899.74	.....
Summer School 1941 — Graduate Scholarships	.....	1,500.00	.....	1,500.00
Suspense Accounts	.....	834.22	834.22	.....
Suspense Acct. 1939–40 Balances	31,341.34	.....	31,341.34	.....
Swimming Pool Equipment	100.00	.....	19.10	80.90
Tau Beta Fellowship	.....	2,400.00	2,400.00	.....
Technology Club of Philadelphia	.....	100.00	.....	100.00
Tech Press, No. 1494	.....	5,226.70	5,226.70	.....
Tech Press, No. 1468	3,471.67	498.15	4.39	3,965.43
Tech Press, No. 1468A	727.05	1,416.85	1,535.58	608.32
Tucker (Ross Francis), Mem. Fd.	224.46	.....	1.34	223.12
Tyler Portrait Fund	559.64	.....	559.64	.....
Undergraduate Dues	.....	21,399.00	21,399.00	.....
Walker Memorial Library	440.76	3,150.00	3,211.56	379.20
Totals	$338,175.60	$2,376,363.50	$2,335,762.31	$378,776.79

(Schedule A)

SCHEDULE A-8
EDUCATIONAL PLANT ASSETS

Land in Cambridge:		
Campus — east of Massachusetts Avenue	$1,125,766.67	
Campus — west of Massachusetts Avenue	850,014.82	
		$1,975,781.49
Educational Buildings, Cambridge:		
Main Group	$5,633,419.62	
George Eastman Research Laboratories	1,225,098.58	
Pratt School of Naval Architecture	674,971.70	
Chemical Engineering Laboratories (uncompleted)	139,879.74	
Guggenheim Aeronautical Laboratory	293,637.46	
Wright Brothers Memorial Wind Tunnel	217,506.25	
Magnetic Substation	76,272.73	
Sloan Automotive Laboratories	206,271.93	
Mechanic Arts Building	83,658.89	
Nuclear Research Laboratory	34,891.27	
Cyclotron Laboratory	20,247.92	
Solar Energy Laboratory	10,500.00	
Hyams Radiation Laboratory	13,500.00	
Research Building (new)	76,835.88	
Hydraulic and Compression Laboratories	68,301.88	
		8,774,993.85
Educational Equipment		2,039,953.60
Undergraduate Dormitories		1,308,923.79
Infirmary, Recreational and Athletic Buildings:		
Homberg Memorial Infirmary	$188,441.60	
Walker Memorial	714,587.02	
Alumni Swimming Pool	364,367.21	
Boat House	54,244.13	
Barbour Field House	84,042.54	
Sailing Pavilion	28,849.09	
Briggs Field House and Track	114,440.13	
		1,548,971.72
Summer Camps:		
East Machias, Maine	$120,558.00	
Dover, New Jersey	35,000.00	
		155,558.00
Miscellaneous:		
Power Plant	$389,064.17	
Steam and Electrical Distribution System	154,055.24	
Service Building and Garages	55,369.74	
Other Plant Assets	321,999.85	
		920,489.00
Total, June 30, 1941 (Schedule A)		$16,724,671.45

[1]Not including Graduate House (see investments, page 164).

SCHEDULE A-9

PRINCIPAL GIFTS AND APPROPRIATIONS FOR EDUCATIONAL PLANT

For Land:		
T. C. duPont	$625,000.00	
A. F. and Ida F. Estabrook Funds	105,000.00	
Maria A. Evans	169,080.60	
Edmund D. Barbour Fund	234,634.18	
From Miscellaneous Contributors	277,222.89	
Appropriations from Funds — Blake, $5,000; Lyman, $5,000; Kimball, $10,000; McGregor, $2,500; Philbrick, $2,000; Richards, $1,000; Perkins, $3,252.32; Current Income, $6,500	35,252.32	
		$1,446,189.99
For Educational Buildings (including Homberg Infirmary, President's House, Power Plant and buildings other than Dormitories and those used for Student Recreational and Athletic Purposes):		
*George Eastman	$5,509,453.87	
T. C. and P. S. duPont, Charles Hayden, Arthur Winslow for Mining Engineering Building	225,000.00	
Maria A. Evans Fund	100,000.00	
C. A. Stone and E. S. Webster	187,500.00	
Sale of Land and Building in Boston (1938)	972,283.33	
Pratt Fund, for School of Naval Architecture	675,150.00	
Guggenheim Fund, for Aeronautical Laboratory	230,000.00	
Appropriations for Aeronautical Laboratory— From Funds: Perkins, $12,508.02; Hayden, $42,700.76; Frisbie, $7,614.98	62,823.76	
Alfred P. Sloan, Jr., for Automot ve Laboratory	165,000.00	
Appropriation for Automotive Laboratory— From Current Income	60,000.00	
Edmund D. Barbour Fund for:		
Nuclear Laboratory	32,341.27	
Magnetic Laboratory	40,772.73	
Power Plant	90,006.59	
Miscellaneous Contributions and Appropriations from Funds for: Magnetic Lab., $5,500; Nuclear Research Lab., $2,500; Cyclotron, $20,247.92; Hyams Radiation Lab., $13,500; and Solar Energy Lab., $7,500; Anonymous, $1,000, Bldg. 6	50,247.92	
†Subscriptions to Wright Brothers Memorial Wind Tunnel	95,795.00	
Appropriation for Wind Tunnel — Current Income	9,000.00	

* Includes Mr. Eastman's original gift of $3,500,000 together with appropriations from the Building Fund of $2,500,000 which he established.
† Otherwise paid for from Eastman Building Fund.

SCHEDULE A-9 — (Continued)

For Educational Buildings (*Continued*):		
Miscellaneous Appropriations from Current Income for: Compression Lab., $31,000; Tractor Garage, $6,400; Building 20, $15,000; Hangar-Building 12, $20,000....	$72,400.00	
Julius Rosenwald and family — Homberg Infirmary.....	110,225.00	
Appropriations from Funds — Homberg Infirmary.....	67,163.47	
Chase, $4,090.09; A. H. Munsell, $7,908.28; M. A. Munsell, $1,105.32; Industrial, $41,137.61; A. F. Estabrook, $10,000; I. F. Estabrook, $2,157.51; Perkins, $764.66		
Appropriation for Homberg Infirmary from Current Funds.....	11,500.00	
		$8,766,662.94
For Educational Equipment:		
Emma Rogers Fund.....	$528,077.06	
F. W. Emery Fund.....	126,423.80	
C. L. W. French Fund.....	100,843.34	
Equipment moved from Boston (1916) Est.	500,000.00	
Alumni Fund.....	82,119.38	
Appropriations from Funds — Drew, $305,171.52; Peabody, $52,238.89; duPont, $12,500; Tuttle, $50,000; Thayer, $25,000; Dorr, $49,573.47.....	494,483.88	
Appropriations from Current Income — $205,000; $42,945.10; $28,539.31.....	276,484.41	
Miscellaneous Contributions.....	14,429.80	
		2,122,861.67
For Summer Camps:		
Appropriations from Current Income — For Civil Engineering Camp, Maine.....	$73,807.19	
For Mining Engineering Camp, New Jersey.....	35,000.00	
		108,807.19
*For Dormitories:		
Maria A. Evans Fund.....	$261,192.55	
T. C. duPont.....	100,000.00	
Alumni Dormitory Fund.....	566,945.66	
Edmund D. Barbour Fund.....	258,599.40	
Appropriations from Funds — Robb, $28,750; Thorndike, $15,000; Hodges, $57,316.26; Wood, $28,750.....	129,816.26	
Appropriated, Current Income.....	17,367.82	
		1,333,921.69
For Recreational and Athletic Buildings:		
Walker Memorial Fund.....	$167,303.96	
Improvement Fund, for Walker Memorial..	24,491.34	
Alumni Fund, for Walker Memorial.....	490,000.00	

* Excluding Graduate House, purchased and carried as an investment.

SCHEDULE A-9 — (Continued)

For Recreational and Athletic Buildings (*Continued*):		
Edmund D. Barbour Fund, for Field House.	$55,000.00	
Alumni Fund, for Swimming Pool.....	225,545.38	
Stephen Bartlett Fund, for Swimming Pool.	60,000.00	
Class of 1923, Sun Garden.....	10,000.00	
Alumni Fund, for Briggs Field House and Track.....	156,169.13	
Edmund D. Barbour Fund, Sailing Pavilion.	13,363.89	
Anonymous for Boat House.....	30,000.00	
Appropriations from Current Income for:		
Boat House.....	6,500.00	
Sailing Pavilion.....	15,485.20	
Squash Courts.....	29,042.54	
Rifle Range.....	1,500.00	
		$1,284,401.44
Miscellaneous:		
From Sale of Land and Buildings in Boston 1916.....	$656,919.45	
Other Contributions, Appropriations, etc....	816,961.92	
		1,473,881.37
Total June 30, 1941 (Schedule A).....		$16,536,726.29

SCHEDULE B-1

APPROPRIATIONS FROM FUNDS FOR TEACHING RESEARCH AND ADMINISTRATION

Administration.....				$3,664.00
Teachers Fund	$2,000.00	National Defense Fund	$1,664.00	
Aeronautical Engineering.....				19,271.91
Weather Bureau	10,047.59	N. A. W. 623	816.65	
Wind Tunnel	6,157.67	Nat. Acad. of		
Forest Fire Res.	900.00	Science	1,350.00	
Biology.....				15,515.87
Genradco Research	4,000.00	Underwood Fd.	1,267.82	
Hospital Research	1,888.02	Rockefeller Res.	8,360.03	
Building Construction.....				1,950.00
National Lime Asso.	1,950.00			
Business and Engineering Administration.....				1,800.00
Sloan Fellowship	1,800.00			

SCHEDULE B-1 — (Continued)

Chemistry				$22,183.34
Richards Fund	$500.00	Nat. Acad. of Science	$1,800.00	
Teachers Fund	2,500.00	A. D. Little Fund	10,000.00	
National Defense Fund	4,800.00	Res.Corp.Vit.Res.	2,583.34	
Chemical Engineering				14,500.00
Richardson Fund	2,000.00	A. D. Little Fund	10,000.00	
		Cabot Fund	2,500.00	
Electrical Engineering				55,090.87
Center of Analysis	4,200.00	Radio Inst. Meas.	187.50	
Assoc. Edis.Co. Acct.	5,018.40	Rock. Diff. Anal.	1,300.00	
Microwave Research	5,445.00	Hyams Research	5,260.00	
Arith. Mach. Res.	3,000.00	Short Wave Res.	2,065.00	
Network Anal.	4,560.00	Rapid Selection	6,720.00	
No. 1219	100.00	Radiation Lab.	6,519.00	
No. 1550	2,100.00	National Defense Fund	3,850.00	
C.A.A. Inst. Land.	3,565.97			
D. I. C.	1,200.00			
English				372.00
Teachers Fund	372.00			
Geology				550.00
Carnegie Institution of Washington	550.00			
Library				2,667.00
Vail Fund	2,000.00	Cilley Fund	667.00	
Mechanical Engineering				8,003.34
Teachers Fund	1,000.00	Textile Research	3,470.00	
Special No. 1643	1,200.00	1254 Acct.	333.34	
		D.I.C.	2,000.00	
Metallurgy				2,460.00
Cuban American Manganese Fellow.	300.00	Clay Research	600.00	
		A.I.M. and M.O.H. Fellowship	600.00	
Revere Brass and Copper Fellowship	600.00			
Engineering Foundation Welding Research	360.00			
Naval Architecture				1,000.00
Teachers Fund	1,000.00			
Physics				17,045.00
Age of Earth Research	3,000.00	Rockefeller Res.	600.00	
Zeeman Effect Prog.	1,570.00	Special No. 1650	1,200.00	
Bausch & Lomb Co. Fellowships	500.00	Carnegie Institution of Washington	1,375.00	
Markle Cyclotron	8,800.00			
Upham Fund for Staff Scholarships				14,000.00
1939–40 Department Appropriations, Reserves				23,248.86
Total (Schedule B)				$203,322.19

SCHEDULE B-2
CONTRIBUTIONS AND OTHER INCOME

L. J. and M. E. Horowitz Foundation for Building Engineering and Construction Course	$5,000.00
General Electric Company for Course VI-A	7,000.00
Boston Edison Company for Course VI-A	1,200.00
Anonymous for Chemical Engineering	1,500.00
Sperry Gyroscope Co. for Electrical Engineering	1,250.00
Eastman Kodak Co. for Chemical Engineering	1,000.00
General Radio Co. for Electrical Engineering	1,200.00
United States Government for Special Meteorology Course	1,797.13
United States National Defense Research Program	80,319.49
Trustees of H. C. Frick Estate	2,648.50
United States Navy Fire Control Research	750.00
Photographic Service, Rental	2,000.00
Land Rentals	5,509.20
Contributions, M. I. T. Research Associates	15,200.00
Total (Schedule B)	$126,374.32

SCHEDULE B-3

SALARIES OF TEACHERS, ACCESSORY TO TEACHING AND LABORATORY SERVICE

Department	*Teachers Salaries*	*Wages Accessory to Teaching*	*Wages Laboratory Service*	*Total*
Summer Session 1940	$71,233.03	$.....	$.....	$71,233.03
Aeronautical Engineering	102,976.92	3,441.67	8,004.58	114,423.17
Architecture	68,621.14	6,669.18	1,768.00	77,058.32
Biology and Public Health	68,384.92	1,561.50	3,863.50	73,809.92
Business and Eng. Adminis	53,875.96	5,033.27	.....	58,909.23
Building Construction	18,000.00	1,233.50	.....	19,233.50
Chemistry	163,461.71	7,565.01	16,662.04	187,688.76
Chemical Engineering	84,058.00	5,096.00	6,695.80	95,849.80
Chemical Eng. Practice School	14,290.00	.....	.....	14,290.00
Civil Engineering	83,187.13	3,059.34	5,648.44	91,894.91
Division of Laboratory Supplies	.....	.....	22,844.00	22,844.00
Economics	49,600.00	3,189.00	.....	52,789.00
Electrical Engineering	213,587.62	9,394.05	18,431.26	241,412.93
English and History	59,089.70	1,173.00	.....	60,262.70
Gen. Eng. and General Science	3,000.00	1,200.00	.....	4,200.00
Geology	53,950.00	2,504.35	2,399.80	58,854.15
Graphics	25,900.00	849.31	.....	26,749.31
Lantern Operation	.....	.....	1,566.09	1,566.09
Mathematics	64,750.00	950.00	.....	65,700.00
Mechanical Engineering	194,346.93	8,058.06	22,289.93	224,694.92
Metallurgy	103,838.46	3,729.49	7,508.17	115,076.12
Military Science	8,050.00	1,098.37	.....	9,148.37
Modern Languages	18,600.00	338.38	.....	18,938.38
Naval Architecture	43,825.00	1,369.33	1,892.71	47,087.04
Physics	153,554.47	5,701.81	31,435.27	190,691.55
Totals	$1,720,180.99	$73,214.62	$151,009.59	$1,944,405.20

(Schedule B)

SCHEDULE B-4

DEPARTMENT EXPENSES

Aeronautical Engineering				$10,382.75
General	$3,100.00	Staff Scholarships	$900.00	
Flying Instruction	425.70	Meteorology	5,457.05	
Weather Bureau Research	500.00			
Architecture				4,771.26
General	4,771.26			
Biology and Public Health				8,100.00
General	3,000.00	Biol. Eng. Equip.	2,000.00	
Food Research	1,600.00	Staff Scholarships	900.00	
Tuition Award	600.00			
Building Construction				957.57
General	957.57			
Business and Engineering Administration				7,917.76
General	4,269.76	Staff Scholarships	648.00	
Sloan Fellowship	3,000.00			
Chemistry				32,147.87
General	23,147.87	Staff Scholarships	7,800.00	
		Polymerization Res.	1,200.00	
Chemical Engineering				24,953.62
General	10,647.24	Staff Scholarships	6,589.50	
Practice School	7,716.88			
Civil Engineering				17,444.62
General	3,300.00	River Hydraulic Res.	700.00	
Soil Mechanics	2,800.00	Summer Camp	6,044.62	
Structural Laboratory	1,400.00	Staff Scholarships	1,700.00	
Cement Research	1,500.00			
Division of Graphics				516.76
General	516.76			
Economics and Social Sciences				2,485.51
General	2,485.51			
Electrical Engineering				28,349.68
General	16,975.00	Staff Scholarships	3,000.00	
von Hippel Research	1,600.00	Center of Analysis	1,219.80	
Course via Travel	1,000.00	Special No. 1723	54.88	
Special No. 1250	4,500.00			
English and History				951.85
General	451.85	Special No. 1536	500.00	

SCHEDULE B-4 — (Continued)

General Engineering and General Science				$50.03
General	$50.03			
General Studies				168.50
General	168.50			
Geology				5,852.00
General	4,652.00	Staff Scholarships	1,200.00	
Humanics				209.32
General	209.32			
Mathematics				3,402.50
General	702.50	Staff Scholarships	900.00	
Journal of Mathematics	1,800.00			
Mechanical Engineering				23,113.00
General	16,250.00	Vibration Research	400.00	
Plasticity Research	500.00	Staff Scholarships	4,063.00	
Fatigue Research	1,900.00			
Metallurgy				14,944.88
General	4,949.00	Special No. 1647	400.00	
Magnetic Research	2,160.88	Chipman Research	1,535.00	
Mineral Dressing Res.	2,500.00	Staff Scholarships	3,150.00	
Special No. 1735	250.00			
Military Science				1,233.25
General	1,233.25			
Mining Engineering				536.44
Summer Camp	536.44			
Modern Languages				287.94
General	287.94			
Naval Architecture				3,468.64
General	1,268.64	Special No. 1643	1,200.00	
Propeller Tunnel	1,000.00			
Physics				35,782.44
General	26,173.44	Nuclear Conference	1,500.00	
Nuclear Research	2,500.00	Special No. 1755	700.00	
Staff Scholarships	4,909.00			
Total (Schedule B)				$228,028.19

SCHEDULE B-5

LIBRARY AND MUSEUMS

Library		$74,805.85
Salaries of Officers	$14,794.00	
Wages, Office and Clerical	38,791.85	
Expenses	21,220.00	
Museum		12,100.00
Museum Committee	$ 7,100.00	
Dard Hunter Museum	5,000.00	
Total (Schedule B)		$86,905.85

SCHEDULE B-6

CLERICAL AND OFFICE EXPENSE — ADMINISTRATION

	Salaries	*Expenses*	*Total*
President	$ 6,884.00	$ 3,015.32	$ 9,899.32
Dean of Engineering	1,576.04	420.58	1,996.62
Dean of Science	1,211.00	231.89	1,442.89
Dean of Humanities	.....	214.25	214.25
Dean of Students	1,978.80	327.51	2,306.31
Dean of Graduate School	.....	702.26	702.26
Registrar	26,168.06	11,674.83	37,842.89
Director of Admissions	10,156.01	4,025.42	14,181.43
Treasurer and Bursar	23,078.97	6,995.15	30,074.12
Superintendent	8,927.81	1,631.64	10,559.45
News Service	1,260.00	1,344.25	2,604.25
Undergraduate Scholarship and Loan Fund Board	6,439.17	3,576.86	10,016.03
New Student Publicity	.....	2,617.52	2,617.52
Register of Former Students	.....	4,007.81	4,007.81
Totals	$87,679.86	$40,785.29	$128,465.15

(Schedule B)

SCHEDULE B-7

GENERAL ADMINISTRATION EXPENSE

Bulletins				$12,339.73
President's Report	$1,749.10	Summer Bulletin	$2,604.78	
Directory	897.50	General Catalogue	7,088.35	
Other Publicity				7,087.99
Honoraria	750.00	Alumni Day	1,000.00	
Tech Review to Schools	1,893.36	Spectroscopy Conf.	1,165.92	
Research Reports	1,192.98	News Bulletin in Review	533.36	
Summer Publicity	360.57	School Prizes	191.80	
General Expense				213,500.05
Allowances	18,000.00	Graduation, etc.	8,138.63	
Pensions	16,040.00	Travel	8,536.83	
[1]Insurance, etc.	6,027.39	Telephone Service	28,006.28	
Taxes, Cambridge	8,028.10	Dues, Fees, etc.	1,927.14	
Auditing	2,000.00	Services (net)	782.48	
Staff Pensions	76,894.95	Society of Arts	1,978.29	
Employees Pensions	36,139.96	President's Fund	1,000.00	
Special Expense				25,167.66
Alumni Fund	2,100.00	Air Flight Insurance —		
Historic Memorials	500.00	Defense Projects	7,500.00	
New Equipment	755.45	Tuition Awards (2)	1,200.00	
D.I.C. Expense on Defense Projects	13,112.21			
Total (Schedule B)				$258,095.43

[1] Includes Workmen's Compensation, General Liability and all coverages except Fire Insurance (see Schedule B)

SCHEDULE B-8

DEPARTMENT OF BUILDINGS AND POWER

Building Service				$130,137.17
Janitors	$42,877.54	Heat'g and Vent'g	$11,852.22	
Night Cleaners	41,505.22	Shop Foreman(net)	3,317.82	
Watchmen	11,767.46	Mail and Elevators	6,182.94	
Window Clean.	6,138.49	Shipper, Stock Room, Matron, Messenger	6,495.48	
Power Plant and Electric Power (net)				113,912.98
Fuel Oil			$69,043.86	
Cambridge Electric Light Co., Power			58,279.24	
Salaries			18,242.22	
Repairs			6,935.73	
Water Supplies, etc.			2,547.72	
Total Operating Cost			$155,048.77	
[1]Less: Credits — Electric Power		$17,573.15		
Steam		23,562.64	41,135.79	
Repairs, Alterations and Maintenance				130,072.22
Buildings	$60,592.55	Water and Gas	$12,585.38	
President's House	7,678.51	Furniture	4,747.92	
Grounds, Roads, etc.	24,017.57	Elevators	2,710.52	
Mains and Conduits	14,528.35	Miscellaneous(net)	3,211.42	
Total (Schedule B)				$374,122.37

[1] Including Dormitories, Graduate House, Walker Memorial and Bexley Hall.

SCHEDULE B-9

MEDICAL DEPARTMENT

Salaries, Staff				$24,220.00
Expense of Clinic				17,313.55
Salaries	$7,900.89	X-Ray Operation	$ 1,976.44	
Supplies, etc.	3,143.52	Physical Examinations	4,292.70	
Expense of Infirmary				17,149.26
Salaries	11,285.37	Food (net)	1,804.59	
Equipment	1,983.07	Laundry	2,076.23	
Total (Schedule B)				$58,682.81

SCHEDULE B-10

UNDERGRADUATE BUDGET BOARD

Athletic Coaches Salaries	$19,800.00
Undergraduate Dues	21,399.00
Walker Memorial (excluding Dining Service) (net)	18,718.60
Athletic Fields, Maintenance	18,353.52
Sailing Pavilion and Activities (net)	5,758.72
Boat House and Launches, Maintenance	6,383.99
Musical Clubs	675.00
Swimming Pool	6,338.19
Publicity and Administration Expense	1,295.32
Total (Schedule B)	$98,722.34

SCHEDULE B-11

UNDERGRADUATE DORMITORY OPERATION

Income: Total, Schedule B			$137,650.86
Rentals	$145,779.75		
Miscellaneous	1,832.61	$147,612.36	
Less: Refunds	$6,904.00		
House Tax Allowance	3,057.50	9,961.50	
Expense: Total, Schedule B			99,184.43
Salaries	$49,404.50	Equipment	$2,990.11
Light, Heat, Power, Water	15,490.80	Laundry	3,335.32
Repairs	16,786.97	Administration	2,634.91
Supplies (net)	2,541.82	Mortgage Int.	6,000.00
Net Income			$38,466.43

SCHEDULE B-12

GRADUATE HOUSE OPERATION

Income:			
Rentals	$96,148.33		
Miscellaneous	2,670.55	$98,818.88	
Less: Refunds	$1,288.14		
House Tax Allowance	2,002.50	3,290.64	
Total			$95,528.24
Expense:			
Salaries	$37,359.57		
Real Estate Tax	11,734.70		
Light, Heat, Power and Water	9,563.70		
Repairs	3,243.61		
Supplies (net)	3,107.63		
Equipment	1,749.64		
Laundry	3,263.07		
Administration	2,450.51		
Depreciation	5,055.81		
Total		$77,528.24	
Balance transferred to Investment Income		18,000.00	
Total			$95,528.24

SCHEDULE B-13

WALKER DINING SERVICE

Income:			
Sale of Coupon Books (net)	$77,418.69		
Cash	78,919.82		
Total (Schedule B)			$156,338.51
Expense:			
Food	$86,451.56		
Salaries	48,534.22		
Light, Heat, Power, Water	5,502.82		
Laundry	2,853.05		
Equipment	3,326.57		
Repairs	1,996.32		
Administration	2,929.00		
Occupancy	2,000.00		
Total Expense		$153,593.54	
Less: Increase in Inventory at June 30, 1941		2,872.18	
		$150,721.36	
Balance transferred to Walker Dining Service Reserve		5,617.15	
Total (Schedule B)			$156,338.51

SCHEDULE B-14

GRADUATE HOUSE DINING SERVICE

Income:			
Cash	$111,386.77		
Total (Schedule B)			$111,386.77
Expense:			
Food	$63,363.47		
Salaries	36,321.83		
Light, Heat, Power, Water	2,734.96		
Laundry	2,222.68		
Equipment	3,034.06		
Repairs	951.03		
Administration	1,548.50		
Occupancy	1,000.00		
Total Expense		$111,176.53	
Less: Increase in Inventory at June 30, 1941		1,959.21	
		$109,217.32	
Balance transferred to Graduate House Dining Service Reserve		2,169.45	
Total (Schedule B)			$111,386.77

A BRIEF DESCRIPTION OF THE ENDOWMENT AND OTHER FUNDS OF THE INSTITUTE

Including funds which have been wholly expended since 1916 for plant, equipment, facilities and special projects. The reference numbers correspond with the active funds, listed by groups on pp. 171–177, Schedule A-2.

212 ALBERT FUND, 1930–1940. Gifts from anonymous donor to pay fourteen years rental of M. I. T. Student House on Bay State Road, Boston.

214 ALPHA CHI SIGMA HOUSE FUND (Alpha Zeta Chapter), 1935–1940. Deposited for investment purposes only.

462 AMERICAN INSTITUTE OF BAKING FUND, 1939–40, $1,500. Contribution to provide fellowships in Food Technology on problems relating to baking.

216 ANONYMOUS, 1924, $1,052.50. Gift of member of Class of 1924 to accumulate until twenty-fifth reunion of Class in 1949.

600 LOUIE G. APPLEBEE, 1941, $300. Bequest for assisting deserving students.

101 GEORGE ROBERT ARMSTRONG FUND, 1902, $5,000. Bequest of George W. Armstrong in honor of son. Income available for general purposes of the Institute.

218 ASSOCIATION OF CLASS SECRETARIES FUND, 1940 Held for investment purposes only.

501 ELISHA ATKINS SCHOLARSHIP FUND, 1894, $5,000. Bequest of Mary E. Atkins.

401 WILLIAM PARSONS ATKINSON FUND, 1918, $13,000. Bequest of Charles F. Atkinson as a memorial to father — for English Department of the Institute.

601 EDWARD AUSTIN FUND, 1899, $400,000. Bequest. Interest paid to needy, meritorious students and teachers to assist in payment of studies.

580 BABSON FUND, 1938, $10,000. Gift of Babson's Statistical Organization, Inc. Income to be applied at intervals of not more than three years as prizes for one or more persons for certain studies and research in Economics.

603 THOMAS WENDELL BAILEY FUND, 1914, $2,200. Bequest. Income used for rendering assistance to needy students in Department of Architecture.

604 CHARLES TIDD BAKER FUND, 1922, $20,000. Bequest. One-half of net income for assistance of poor and worthy students and one-half to principal.

172 EDMUND DANA BARBOUR FUND, 1926, $847,000. Bequest. Principal and income for general purposes of Institute. Over $700,000 used for buildings and equipment.

321 WALTER S. BARKER FUND, 1927, $10,000. Bequest. Income only available for purposes of the Library.

SIDNEY BARTLETT FUND, 1889, $10,000. Bequest. Appropriated for new dormitories, 1924.

173 STEPHEN L. BARTLETT FUND, 1939–41, $369,822.40. Bequest. Principal and income unrestricted. $42,700 appropriated in 1940 for plant and current purposes.

220 BASKET BALL FUND. Excess receipts from Eastern Massachusetts basket ball competitions held for account of M. I. T. A. A. for investment purposes only.

441 ALBERT FARWELL BEMIS FUND, 1938, $270,000. Bequest. To establish and maintain the Albert Farwell Bemis Foundation for research on housing. Increased in 1941 through proceeds of sale of land carried under No. 442.

442 ALBERT FARWELL BEMIS FUND — LAND ACCOUNT, 1938, $119,450. Estimated book value of land in Wellesley, Newton and Dedham received under bequest. Proceeds of sales carried to No. 441.

ALBERT FARWELL BEMIS, 1923. $100,000. Gift. Used for new dormitory unit, 1923.

221 BESS BIGELOW FUND, 1936–38, $25,000. Anonymous donation for special purposes subject to approval of President.

503 BILLINGS STUDENT FUND, 1900, $50,000. Bequest of Robert C. Billings. Students receiving benefit are expected to abstain from use of alcohol or tobacco in any form.

103 GEORGE BLACKBURN MEMORIAL FUND, 1931–41, $960,390. Bequest of Harriette A. Nevins. Income for general purposes.

STANTON BLAKE FUND, 1889, $5,000. Bequest. Used for educational plant, 1926.

581 ROBERT A. BOIT FUND, 1921, $5,000. Bequest. Income to stimulate students' interest in best use of English Language through annual prizes or scholarships.

403 FRANK WALTER BOLES MEMORIAL FUND, 1915, $25,200. Under agreement between Harriet A. Henshaw and M. I. T., income paid to committee of Department of Architecture, to purchase fine arts material and to supplement and strengthen instruction in architectural design.

606 LEVI BOLES FUND, 1915, $10,000. Bequest of Frank W. Boles in memory of father. Income for assistance of needy and deserving students.

463 WILLIAM SUMNER BOLLES FUND, 1924, $9,400. Bequest of William P. Bolles in memory of son, to maintain either fellowship, traveling scholarship or resident scholarship. Recipient to have character, ability or promise.

504 JONATHAN BOURNE FUND, 1915, $10,000. Bequest of Hannah B. Abbe. Income to aid deserving students.

505 ALBERT G. BOYDEN FUND, 1931–41, $602,729.05. Bequest. Estate of Elizabeth R. Stevens. Income for scholarships. Preference to students from Fall River and Swansea, Mass.

253 MAJOR BRIGGS FUND, 1940–41, $32,574.14. Bequest under will of Frank Harrison Briggs, the principal and/or income to be used as Advisory Council in Athletics may decide. No part of either principal or income to be used to defray living expenses or tuition fees of any student.

506 HARRIET L. BROWN FUND, 1922, $6,000. Bequest. Income to needy and deserving young women students, as would otherwise be unable to attend. In case two or more applicants of equal merit, preference given to native of either Massachusetts or New Hampshire.

464 MALCOLM COTTON BROWN FUND, 1919, $11,000. Under agreement between Caroline Cotton Brown, Charles A. Brown and M. I. T., to establish memorial to son, Lieutenant Brown, R. A. F., for advanced study and research in Physics.

608 BURSAR'S FUND, 1907, $6,000. Bequest of Lyman S. Rhoads. Income and repayments used for loans to students in discretion of Bursar, subject to approval of President and Treasurer.

443 SAMUEL CABOT FUND, 1912, $50,000. Gift of Helen N. Cabot in honor of husband. Income for purchase of apparatus and supplies required in conduct of research in Industrial Chemistry.

HOWARD A. CARSON FUND, 1932, $1,000. Bequest. Used for new equipment.

610 MABEL BLAKE CASE FUND, 1920, $25,000. Bequest of Caroline S. Freeman. Income to aid deserving students (preferably women) who are in need of assistance.

508 NINO TESHER CATLIN FUND, 1926, $1,000. Gift of Maria T. Catlin in memory of son. Income for needy and deserving students — not a condition but if possible award to be made to member of Lambda Phi Fraternity.

405 WILLIAM E. CHAMBERLAIN FUND, 1917–19, $6,000. Bequest. Income used for Department of Architecture.

465 CHANDLER FUND, 1927–36, $4,511. Originally a gift from Architectural Society and used as a loan fund to be administered by Head of Architectural Department. Increased by $5,000 in 1939, gift of Mr. and Mrs. William Emerson and income to be used for Travelling Fellowship in City Planning.

WILLIAM L. CHASE FUND, 1925, $11,590.09. Bequest, $7,500 appropriated for Homberg Infirmary, 1927. Balance used for educational plant, 1928.

407 CHEMICAL ENGINEERING PRACTICE FUND, 1915–16, $300,000. Gift of George Eastman for Chemical Engineering Stations provided Institute will carry forward this plan of education for a reasonable period.

222 EDNAH DOW CHENEY FUND, 1905–06, $13,900. Bequest. Income for maintenance and care of Margaret Cheney Room for women students.

105 CHARLES CHOATE FUND, 1906–21, $35,800. Bequest. Income for general purposes.

325 FRANK HARVEY CILLEY FUND, 1913, $57,700. Bequest. Income and such part of principal as necessary for purchase of suitable books, photographs, statuary, etc., for library and gymnasium of Walker Memorial.

511 LUCIUS CLAPP FUND, 1905, $4,900. Bequest. Income to worthy students who may not be able to complete their studies without help.

273 CLASS OF 1874 FUND, 1934, $180. Held subject to use by Class of 1874.

513 CLASS OF '96 FUND, 1923–41, $2,397. Gift. Award subject to approval of Class Secretaries. Preference to descendants of members of Class. Scholarships to be considered a loan to be repaid when and if able.

270 CLASS OF 1898 FUND, $5,535. By subscription of certain members of class from 1927–31. Income only for scholarship loans, as authorized by committee of class.

583 CLASS OF 1904 FUND, 1925, $392. Contributions received by Professor Gardner for Architectural Department prizes.

514 CLASS OF 1909 SCHOLARSHIP FUND. Being accumulated through contributions and from proceeds of life insurance policies. Principal to be invested, income available for scholarship aid with preference to direct descendants of members of Class of 1909.

223 CLASS OF 1914 FUND. Held for investment purposes only.

266 CLASS OF 1917. SPECIAL, 1937, $100. For deposit only.

224 CLASS OF 1918 (ORGAN) FUND. Subscriptions by class members toward purchase of an organ for Walker Memorial.

268 CLASS OF 1934 FUND, SPECIAL. Held for investment purposes only.

515 CLASS OF 1938 SCHOLARSHIP FUND, 1938, $165. Gift of Class of 1938. Income for scholarships.

225–240 inc.

CLASS FUNDS

Note: These funds are being accumulated for the several classes whose members took out life insurance toward a gift to the Institute on their Twenty-Fifth Reunions. From certain of these, a portion may be applied in accordance with the terms of the several plans toward keeping alive policies that might lapse on account of non-payment or as otherwise designated. By vote of the Class of 1923, $10,000 was appropriated in 1940 from their Class Fund toward construction of the sun garden adjoining new swimming pool.

301 SAMUEL C. COBB FUND, 1916, $36,000. Bequest. Income for salaries of President and professors.

612 FRED L. AND FLORENCE L. COBURN FUND, 1932, $5,000. Bequest. Income to aid needy and worthy students, preference being given to those residing in Somerville, Mass.

614 COFFIN MEMORIAL FUND, 1929, $35,000. Gift of the Estate of Charles A. Coffin. For loans or other aid to students as determined by Executive Committee.

466 COLLAMORE FUND, 1916, $10,000. Bequest of Helen Collamore. Income primarily to aid women students in post-graduate courses, secondarily, for purchase of instruments for Chemical Laboratory.
HELEN COLLAMORE FUND, 1917, $12,384.97. Bequest. Used for new dormitories, 1924.
SAMUEL P. COLT FUND, 1920–22, $20,000. Bequest. Used for new dormitories, 1924.

615 GEORGE R. COOKE, 1939–40, $3,500. Gift of George R. Cooke, Jr. Income to be awarded, preferably in Civil Engineering or related field, to student preparing for Public Service and Government.

245 COSMIC TERRESTRIAL RESEARCH FUND, 1938–40, $61,000. Gift (anonymous) for special research.
CRANE AUTOMOTIVE FUND, 1928, $5,000. Gift of Henry M. Crane. Used for purchase of equipment for Aeronautical Laboratory, 1928–40.

516 LUCRETIA CROCKER FUND, 1916, $50,000. Bequest of Matilda H. Crocker. Income for establishment of scholarships for women in memory of sister.

409 CROSBY HONORARY FUND, 1916, $1,633. Contributions in honor of William Otis Crosby (Professor Emeritus). Income for upbuilding of the Geological Department, especially its collections.
EDWARD CUNNINGHAM FUND, 1917, $15,000. Gift. For new building and equipment at Civil Engineering Summer Camp, Maine.

467 DALTON GRADUATE CHEMICAL FUND, 1896, $5,000. Gift of Charles H. Dalton. Income for scholarships for American male graduates of M.I.T., for advanced chemical study and research — preference given to chemical research especially applicable to textile industries.

517 ISAAC W. DANFORTH FUND, 1903, $5,000. Bequest of James H. Danforth. Income for scholarship purposes as a memorial to brother.

N. LORING DANFORTH FUND, 1937, $5,000. Bequest. Principal and income for general purposes. Appropriated for educational plant, 1940.

616 DEAN'S FUND, 1924, $3,350. Contributions. To be loaned by Dean to needy students.

618 CARL P. DENNETT FUND, 1926, $500. Gift. To be loaned to students, preferably Freshmen, at discretion of President.

520 ANN WHITE DICKINSON FUND, 1898, $40,000. Bequest. Income used to establish free scholarships. Such persons enjoying benefit shall be worthy young men of American origin.

620 DORMITORY FUND, 1903, $2,700. Contributions. Income for scholarship purposes.

GEORGE B. DORR FUND, 1890, $49,573.47. Bequest. Appropriated for educational plant, 1918.

411 SUSAN E. DORR FUND, 1914, $95,000. Bequest. Income for use and benefit of Rogers Physical Laboratory.

468 DOW CHEMICAL COMPANY FUND, 1939–40. Gift. $1,500 for fellowships.

247 DRAMA CLUB THEATRE FUND, 1938, $400. Deposited by Drama Club of M.I.T. toward future purchase of theatrical equipment.

107 EBEN S. DRAPER FUND, 1915, $100,000. Bequest. Income used for general purposes of the Institute.
CHARLES C. DREW FUND, 1920, $305,171.52. Bequest. Appropriation to educational plant, 1921–24.

521 THOMAS MESSINGER DROWN FUND, 1928, $50,000. Bequest of Mary Frances Drown. Income to establish scholarships for deserving undergraduate students.

109 COLEMAN DU PONT FUND, 1931–38, $216,000. Bequest. Income for support and maintenance of the Institute.
PIERRE DU PONT FUND, 1938, $25,000. Gift. Used for new equipment.

469 DU PONT DE NEMOURS FUND. For graduate scholarship in Chemical Engineering.

111 EASTMAN CONTRACT FUND, 1924, $9,500,000. Gift of George Eastman. Income for general purposes of the Institute.

113 GEORGE EASTMAN BUILDING FUND, 1916–17, $2,500,000. Gift of George Eastman on condition that $1,500,000 be raised by alumni and others. Balance to be used as needed for new educational buildings. $1,225,000 used for George Eastman Research Laboratories in 1932, $725,000 for New Rogers Building and Wind Tunnel in 1939.

412 GEORGE EASTMAN FUND, 1918, $400,000. Gift of George Eastman. Income for Chemistry and Physics. Principal available for addition to EASTMAN BUILDING FUND after latter is exhausted.

115 CHARLES W. EATON FUND, 1929–40, $259,000. Bequest. Income for advancement of general purposes of Institute (also from 1911 to 1923 Mr. Eaton gave $1,550.45 for Civil Engineering Summer Camp in Maine).

117 EDUCATIONAL ENDOWMENT FUND, 1920–21, $7,574,000. $4,000,000 gift from George Eastman and balance contributed by alumni and others. Income for current educational expenses.

119 MARTHA ANN EDWARDS FUND, 1890, $30,000. Gift. Income for general purposes.

621 FRANCES AND WILLIAM EMERSON FUND, 1930, $100,000. Gift. Income for aid of regular and special students in Department of Architecture.

584 WILLIAM EMERSON PRIZE FUND, 1939, $2,059. Contributed by friends as a fund for prizes to architectural students.

F. W. EMERY FUND, 1916, $120,000. Bequest. Used for buildings and equipment.

121 WILLIAM ENDICOTT FUND, 1916, $25,000. Bequest. Income for general purposes.

210 ENDOWMENT RESERVE FUND, 1924. Created and otherwise increased by gains from sales or maturities of investments and decreased by premium amortization of bonds and losses and charges from sales or maturities. Belongs to all funds sharing general investments.

ARTHUR F. ESTABROOK FUND, 1923–38, $100,800. Bequest. Used for purchase of land and equipment.

IDA F. ESTABROOK FUND, 1926–37, $22,157.51. Bequest. Used for educational plant.

524 FARNSWORTH FUND, 1889, $5,000. Bequest of Mary E. Atkins. Income for scholarships.

HENRIETTA G. FITZ FUND, 1930, $10,000. Bequest. For general purposes. Appropriated for educational plant, 1940.

525 CHARLES LEWIS FLINT FUND, 1889, $5,000. Bequest. Income for support of worthy student, preference given graduate of English High School, Boston.

327 CHARLES LEWIS FLINT FUND, 1889, $5,000. Bequest. Income for purchase of books and scientific publications for library.

303 SARAH H. FORBES FUND, 1901, $500. Gift of Malcolm Forbes as memorial to mother. Income for salaries.

526 SARAH S. FORBES FUND, 1913, $3,400. Gift of Sarah S. Forbes, William B. Rogers and Henry S. Russell. Income for maintenance and education of scholar in M. I. T.

123 FRANCIS APPLETON FOSTER FUND, 1922, $1,000,000. Bequest. Income for purposes of Institute.

125 JOHN W. FOSTER FUND, 1938, $299,650. Bequest. Income for purposes of the Institute.

127 ALEXIS H. FRENCH FUND, 1930, $5,000. Bequest. Income for general purposes of Institute.

CAROLINE L. W. FRENCH FUND, 1916, $100,843.34. Bequest. Used for new equipment, 1928.

129 JONATHAN FRENCH FUND, 1915–16, $25,000. Bequest of Caroline L. W. French. Income for purposes of the Institute.

131 HENRY CLAY FRICK FUND, 1925–38, $1,831,000. Bequest. Institute received ten shares of a total of one hundred shares of his residuary estate. Income for general purposes.

248 FRIENDS OF THE LIBRARY FUND. Contributions for purchase of books and for other purposes of the Institute Library.

WALTER L. FRISBIE FUND, 1923, $7,614.98. Bequest. Used for educational plant, 1928.

305 GEORGE A. GARDNER FUND, 1898, $20,000. Gift. Income for salaries of instructors.

133 GENERAL ENDOWMENT FUND, 1921, $1,527,000. Contributions by alumni and others to meet George Eastman's condition relative to gift of $2,500,000, his building fund (No. 108).

623 NORMAN H. GEORGE FUND, 1919–25, $93,400. Bequest. Income for assistance of worthy and needy students.

CHARLES W. GOODALE FUND, 1929, $50,000. Bequest. Used for new dormitory, 1930.

135 ELIOT GRANGER FUND, 1936, $20,000. Bequest under will of Mary Granger in memory of deceased son. Income for the general purposes of the Institute.

625 JOHN A. GRIMMONS FUND, 1930–40. Bequest of C. Lillian Moore of Malden. Principal held by Old Colony Trust Co., Trustee. Income for loans to undergradutaes in Electrical Engineering. Unused balances available for purchase of apparatus and equipment in Department of Electrical Engineering.

527 HALL-MERCER SCHOLARSHIP FUND, 1940, $60,209.29. Bequest under will of Alexander G. Mercer. The income to be used for tuition and other necessary expenses of students.

GEORGE WYMAN HAMILTON FUND, 1935, $54,414.15. Appropriated for new equipment, 1937–39.

627 JAMES H. HASTE FUND, 1930, $181,000. Bequest. Income for aid of deserving students of insufficient means.

136 CHARLES HAYDEN FUND, 1937, $1,000,000. Bequest of Charles Hayden. Income for general educational purposes of the Institute.

CHARLES HAYDEN, 1925, $42,700.76. Gift. Used for educational plant.

CHARLES HAYDEN, 1927, $100,000. Gift for new dormitories.

528 CHARLES HAYDEN MEMORIAL SCHOLARSHIP FUND, 1940, $50,000. (For Class of 1943.) From the Charles Hayden Foundation. For entrance scholarships and preference given to students from Boston and New York City.

529 CHARLES HAYDEN MEMORIAL SCHOLARSHIP FUND, 1940, $30,000. (For Class of 1944.) See No. 528.

249 CHARLES HAYDEN FOUNDATION DENTAL CLINIC FUND, 1940, $10,000. To assist in establishment of and necessary equipment for a Dental Clinic available to entire student body.

309 JAMES HAYWARD FUND, 1866, $18,800. Bequest. Income for salaries.

JAMES W. HENRY FUND, 1935, $8,226. Bequest. Used for new equipment.

FREDERICK S. HODGES FUND, 1928, $57,316.26. Bequest. Appropriated for new dormitories.

176 ELLIS HOLLINGSWORTH FUND, 1940, $10,000. Bequest for unrestricted use.

531 GEORGE HOLLINGSWORTH FUND, 1916, $5,000. Bequest of Rose Hollingsworth. Income used for scholarship.

585 ROGER DEFRIEZ HUNNEMAN PRIZE FUND, 1927, $1,060. Gift of W. C. Hunneman in memory of Roger Defriez Hunneman, '23. Income paid as annual award to most meritorious student in Chemical Engineering who has shown most outstanding originality in his work as determined by that Department.

ABBY W. HUNT FUND, 1936–38, $76,000. Bequest. For general purposes. $60,000 used for alterations, 1937. Balance for new equipment, 1938.

533 T. STERRY HUNT FUND, 1894, $3,000. Bequest. Income to a student in Chemistry.

534 WILLIAM F. HUNTINGTON FUND, 1892, $5,000. Gift of Susan E. Covell. Income to deserving students. Preference to be given to students in Civil Engineering.

211 INCOME EQUALIZATION RESERVE FUND, 1937. Created by appropriation of excess income from general investments for year 1936–37 toward maintenance of income for ensuing years.

187 INDUSTRIAL FUND, 1924–40. This fund succeeded "Tech Plan" Contracts, payments under which went to the Educational Endowment Fund. Now receives surplus from operations of Division of Industrial Coöperation and Research. Used for purchase of new equipment and support of special research.

250 INDUSTRIAL ECONOMICS FUND, 1940–41, $8,250. Contributions of Industrial organizations in support of Graduate Program.

251 INDUSTRIAL RELATIONS FUND, 1938–41, $161,000. Contributions from Industrial organizations in support of the Industrial Relations Section of the Department of Economics.

CHARLES C. JACKSON, 1912, $25,000. Gift. Used for purchase of new site.

137 JAMES FUND, 1898–99, $163,000. Bequest of Julia B. H. James. Income for development of M. I. T.

628 DAVID L. JEWELL FUND, 1928, $25,000. Bequest. Income for tuition of five young men who are worthy of assistance and who, were it not for such assistance, might be unable to pursue their studies at M. I. T.

474 REBECCA R. JOSLIN FUND, 1924–36, $6,540. Gift and Bequest. Income awarded as a loan to advanced student in Chemical Engineering on recommendation of that Department — restricted to native and resident of Massachusetts. Beneficiary to abstain from using tobacco in any form.

536 JOY SCHOLARSHIPS, 1886, $7,500. Gift of Nabby Joy. Income for scholarships for one or more women studying natural science at M. I. T.

WILLIAM R. KALES, 1925–27, $11,000. Gift for new dormitories.

413 ARTHUR E. KENNELLY FUND, 1940, $65,588.99. Bequest. Income only to be used for the study of mathematics directed toward physics or physical applications.

341 WILLIAM HALL KERR FUND, 1896, $2,000. Gift of Alice M. Kerr. Income for the annual purchase of books and drawings in machine design.

DAVID P. KIMBALL FUND, 1924, $10,000. Bequest. Used for educational plant, 1926.

629 LLORA CULVER KRUEGER SCHOLARSHIP FUND, 1936, $5,573.75. Bequest. Both principal and income to be available for needy and worthy students from Schenectady and vicinity.

476 WILFRED LEWIS FUND, 1930, $5,000. Gift of Emily Sargent Lewis. Income for maintenance of graduate student in Mechanical Engineering.

538 WILLIAM LITCHFIELD FUND, 1910, $5,000. Bequest. Income for scholarship on competitive examination.

414 ARTHUR DEHON LITTLE MEMORIAL FUND, 1937, $157,460. Bequest under will of Dr. A. D. Little. Income to be used in Departments of Chemistry and Chemical Engineering. (The income from 5,543 shares of common stock of A. D. Little, Inc., held by Voting Trustees for the benefit of the Institute under declaration of trust dated November 18, 1936 and in force for twenty years is included in this total.)

HIRAM H. LOGAN FUND, 1933–38, $19,455. Bequest. Principal and income for general purposes of M. I. T. Appropriated for educational plant, 1940.

JOHN M. LONGYEAR, 1915–16, $30,000. Gift. Used for land and equipment, 1916.

539 ELISHA T. LORING FUND, 1890, $5,000. Bequest. Income for assistance of needy and deserving pupils.

265 LOUISVILLE TECHNOLOGY FOUNDATION FUND, 1935, $50. Founded by Louisville Tech Club toward scholarship aid for local student.

541 LOWELL INSTITUTE FUND, 1923, $2,300. Gift from alumni of Lowell Institute to establish scholarship for its graduates.

139 KATHARINE B. LOWELL FUND, 1895, $5,000. Gift of Augustus Lowell in honor of Mrs. Lowell. Income for purchase of books and apparatus for Department of Physics.

ARTHUR T. LYMAN FUND, 1913, $5,000. Bequest. Used for educational plant, 1926.

JAMES McGREGOR FUND, 1913, $2,500. Bequest. Used for educational plant, 1926.

542 RUPERT A. MARDEN FUND, 1933, $2,000. Gift (anonymous). Income to aid worthy student — Protestant and of American origin — preference to student taking Coöperative Course in Electrical Engineering (Course VI-A).

311 WILLIAM P. MASON FUND, 1868, $18,800. Bequest. Income to support a professorship in the Institute.

M. I. T. ALUMNI FUND, 1907. Total subscriptions of alumni to 1924, $632,500. $632,000 appropriated for new equipment, Walker Memorial 1916 Reunion and Dormitories.

143 M.I.T. ALUMNI GYMNASIUM FUND, 1938–41. Total subscription $400,000. Appropriated for Briggs Field House, Athletic Field and for new swimming pool unit of the proposed alumni gymnasium.

144 M. I. T. ALUMNI FUND, 1940–1941. First year of plan adopted by the alumni of the Institute for the annual raising of funds for support of the Alumni Association and the *Technology Review* — the balance to be applied toward specific purposes other than operating expenses of the Institute.

145 M. I. T. ALUMNI FUND, 1941–1942. Subscriptions to date of second year operation. (See No. 144.)

263 M. I. T. ALUMNI ASSOCIATION PERMANENT FUND, 1929–38. Deposited with M. I. T. for investment purposes only.

255 M. I. T. EMPLOYEES' FUND, 1938. Proceeds of employees' social activities held for benefit and relief purposes.

260 M. I. T. TEACHERS' INSURANCE FUND, 1926–38. Balance of two per cent salary deductions under M. I. T. Pension and Insurance Plan in excess of Group Insurance Premiums paid.

261 M. I. T. TEACHERS' INSURANCE FUND, SPECIAL, 1928–38. Refund of premiums paid on Group Insurance under M. I. T. Pension and Insurance Plan held at interest and accumulated. Appropriated for special pension purposes.

JOHN LAWRENCE MAURAN FUND, 1934, $10,000. Bequest. Principal and income for benefit of Department of Architecture. Used, in part, toward house projects in Wellesley and Wakefield, 1937–40.

417 GEORGE HENRY MAY FUND, 1914, $4,250. Gift. Income for benefit of Chemical Department.

543 GEORGE HENRY MAY FUND, 1914, $5,000. Gift. Income to assist graduates of Newton High School recommended as eligible by superintendent and head masters of Newton High Schools. Beneficiary to issue a note payable without interest.

141 THOMAS McCAMMON FUND, 1930, $15,000. Bequest in honor of father, James Elder McCammon. Income available for general purposes.

587 JAMES MEANS FUND, 1925, $2,700. Gift of Dr. James H. Means as a memorial to father. Income for annual prize for essay on an aeronautical subject.

METALLURGY, SPECIAL FUND, 1938, $10,000. Subscription (anonymous) used for special equipment for Department of Metallurgy.

HIRAM F. MILLS FUND, 1923, $10,175. Bequest. Appropriated for educational plant, 1937.

419 SUSAN MINNS FUND, 1930. Gift of Miss Susan Minns — tract of land on Memorial Drive for use in any way deemed best for benefit of plan regarding construction and maintenance of an hydraulic laboratory.

545 JAMES H. MIRRLEES FUND, 1886, $2,500. Gift of James Buchanan Mirrlees. Income to such student in third or fourth year Mechanical Engineering most deserving pecuniary assistance.

420 FORRIS JEWETT MOORE FUND, 1927–31, $32,000. Gift of Mrs. F. Jewett Moore as a memorial to husband. Income or principal expended subject to approval of Executive Committee by a committee of three members of the Department of Chemistry — to make the study of Chemistry more interesting and surroundings of such study more attractive.

478 MOORE FUND, 1914–28–29, $24,200. Gift of Mrs. F. Jewett Moore. Income to help some Institute graduate to continue studies in Europe, especially organic chemistry. Preference to student who has distinguished himself in this subject while an undergraduate.

546 FRED W. MORRILL FUND, 1941, $2,000. Bequest. Income for financial assistance to students.

146 KATE M. MORSE FUND, 1925, $25,000. Bequest. Income for general purposes of M. I. T.

147 EVERETT MORSS FUND, 1934, $25,000. Bequest. Income for general purposes of M. I. T.

EVERETT MORSS, 1916, 1921–25, $35,000. Gifts. For Walker Memorial murals.

264 HENRY A. MORSS NAUTICAL FUND, 1937, $3,500. Gift for maintenance of sailing activities and sailing pavilion.

190 JOHN WELLS MORSS FUND, 1940, $50,000. Bequest. Principal and income for general purposes.

ALBERT H. MUNSELL FUND, 1920, $7,908.28. Bequest. Used for educational plant, 1928.

MARGARET A. MUNSELL FUND, 1920, $1,105.32. Bequest. Used for educational plant, 1928.

NATHANIEL C. NASH FUND, 1881, $10,000. Bequest. Appropriated for new dormitories, 1924.

547 NICHOLS FUND, 1895, $5,000. Bequest of Betsy F. W. Nichols. Income for scholarship to student in Chemistry.

548 CHARLES C. NICHOLS FUND, 1904, $5,000. Bequest. Income for scholarship.

WILLIAM E. NICKERSON FUND, 1928, $50,000. Gift. Principal and income used to finance chair in Humanics, 1928–40.

MOSES W. OLIVER FUND, 1921, $12,870.49. Used for educational plant, 1938.

343 GEORGE A. OSBORNE FUND, 1928, $10,000. Bequest. Income for benefit of mathematical library.

550 JOHN FELT OSGOOD FUND, 1909, $5,000. Bequest of Elizabeth P. Osgood in memory of husband. Income for scholarship in Electricity.

551 GEORGE L. PARMELEE FUND, 1921, $17,000. Bequest. Income for tuition of either special or regular worthy students.

195 EMERETTE O. PATCH FUND, 1935–38, $8,240.84. Bequest. $3,000 used for special expenditures, 1938.

FRANK E. PEABODY FUND, 1920, $51,467.35. Bequest. Used for educational plant, 1921 and 1926.

FRANCES M. PERKINS, 1912, $122,569.67. Bequest. Used for educational plant.

H. B. PERKINS, 1940, $250. Bequest. Used for new equipment, 1940.

149 RICHARD PERKINS FUND, 1887, $50,000. Bequest. Income for general purposes.

552 RICHARD PERKINS FUND, 1887, $50,000. Bequest. Income for scholarships.

480 WILLARD B. PERKINS FUND, 1898, $6,000. Bequest. Income to be expended every fourth year for travelling scholarships in architecture.

422 EDWARD D. PETERS FUND, 1924, $5,000. Bequest of Elizabeth W. Peters. Income for the Department of Mineralogy.

E. S. PHILBRICK FUND, 1922, $36,213.92. Bequest. Used for educational plant, 1926.

PRESTON PLAYER FUND, 1933, $20,000. Bequest. Used for educational plant, 1938.

423 PRATT NAVAL ARCHITECTURAL FUND, 1916, $1,071,000. Bequest of Charles H. Pratt to endow the Department of Naval Architecture and Marine Engineering to be called forever Pratt School of Naval Architecture and Marine Engineering — to erect a building — remainder held in trust. Income to support said school.

274 PRESIDENT'S FUND, SPECIAL, 1941, $10,000.00. Gift. Principal and/or income to be used by President as desired.

CHARLES O. PRESCOTT, 1935, $30,640.78. Principal and income used for educational plant, 1938.

484 PROPRIETORS LOCKS AND CANALS FUND, 1927, $4,000. Gift to finance post-graduate scholarship in Textile Research, mechanical or chemical, to American-born graduate of Lowell Textile School, nominated by the Trustees of that School and approved by Executive Committee of Locks and Canals.

150 J. W. &. B. L. RANDALL FUND, 1897, $83,000. Bequest of Belinda L. Randall as a permanent fund or in erecting a building with those names.

553 THOMAS ADELBERT READ FUND, 1934–35, $21,117. Bequest of Julia A. Read to establish scholarship in memory of her brother and their father and mother. Income to be awarded to some worthy and needy student, preferably resident of Fall River, Mass.

630 CHARLES A. RICHARDS, 1939, $31,719.32. Bequest. Income only to be used for assistance of poor Protestant students in the Institute.

449 ELLEN H. RICHARDS FUND, 1912, $15,000. Income for promotion of research in Sanitary Chemistry, for fellowships to advanced students, for employment of research assistants and in such other ways as will best promote investigation in that field.

425 RICHARDS MEMORIAL FUND, 1929. Balance of subscriptions from friends for portrait of Professor Richards available for Mining Department.

451 CHARLOTTE B. RICHARDSON FUND, 1891, $30,000. Bequest. Income to support of Industrial Chemical School.

554 JOHN ROACH SCHOLARSHIP FUND, 1937, $3,000. Bequest under will of Emeline Roach, income to provide annual scholarship to needy and deserving student in Naval Architecture and Marine Engineering.

RUSSELL ROBB FUND, 1928, $28,750. Bequest. Appropriated for new dormitories, 1930.

ROCKEFELLER FOUNDATION RESEARCH FUND, 1931–36, $170,000. Contributed and expended for Research in Science Departments over period of five years.

313 HENRY B. ROGERS FUND, 1873, $25,000. Gift. Income for salaries of one or more professors or instructors.

486 HENRY BROMFIELD ROGERS FUND, 1921, $20,000. Bequest of Anna Perkins Rogers. Income to establish fellowship or scholarship for women graduates of M. I. T. or other colleges whose graduate work is carried on at M. I. T.

ROBERT E. ROGERS FUND, 1886, $7,600. Bequest in memory of his brother, William B. Rogers. Used for new equipment, 1940.

631 WILLIAM BARTON ROGERS FUND. Present, $39,000. Established by subscriptions of members of Alumni Association through Prof. R. H. Richards for loans to students. By vote of Executive Committee in March 1935, approved by Alumni Council, the income, not now needed for loans, is made available for special scholarship aid in the discretion of the President and Treasurer.

151 WILLIAM BARTON ROGERS MEMORIAL FUND, 1883–84–85, $250,000. Contributions from 91 persons. Income for support of Institute.

452 WILLIAM BARTON AND EMMA SAVAGE ROGERS FUND, 1937, $102,064.18. Bequest of Dr. Francis H. Williams. Income to be added to principal for twenty years — after which eighty (80) per cent of income may be used for research in pure science — balance to be added to fund.

426 FRANCES E. ROPER FUND, 1936, $2,000. Bequest. Income for use in Department of Mechanical Engineering.

345 ARTHUR ROTCH ARCHITECTURAL FUND, 1895, $5,000. Bequest. Income for Library or collection of Department of Architecture.

427 ARTHUR ROTCH FUND, 1895, $25,000. Bequest. Income for general purposes of Department of Architecture.

589 ARTHUR ROTCH FUND, 1895, $5,000. Bequest. Income for annual prize to student in regular course in Architecture graduating highest in class.

591 ARTHUR ROTCH SPECIAL FUND, 1895, $5,000. Bequest. Income for annual prize to student who shall be ranked highest at end of two years special course in Architecture.

488 RICHARD LEE RUSSEL FUND, 1904, $2,000. Gift of Theodore E. Russel. Income to assist worthy student of high standing in Department of Civil Engineering either undergraduate or post-graduate.

555 WILLIAM PATRICK RYAN MEMORIAL FUND, 1935, $3,637. Contributed by friends of Professor Ryan. Income for scholarship in Chemical Engineering.

277 WILLIAM PATRICK RYAN SPECIAL FUND, 1933, $3,000. Appropriation. Educational fund for three children of late Prof. W. P. Ryan.

592 HENRY WEBB SALISBURY, 1941, $1,100. Gift. Income for award to outstanding student in Aeronautics — initially in form of reference books in Aeronautics. ($100 of gift to be considered as income.)

152 SALTONSTALL FUND, 1901, $40,000. Bequest of Henry Saltonstall. One-fourth income each year added to principal and remaining three-fourths expended for benefit of Institute.

490 HENRY SALTONSTALL FUND, 1901, $10,000. Bequest. Income to aid one or more needy students.

492 JAMES SAVAGE FUND, 1873, $10,000. Bequest. Income for scholarships in institution "where my son-in-law, William B. Rogers, is President."

153 SAMUEL E. SAWYER FUND, 1895, $4,700. Bequest. Income to be used in such manner as will best promote interests of M. I. T.

556 JOHN P. SCHENKL FUND, 1922, $43,800. Bequest of Johanna Pauline Schenkl in memory of father. Income for scholarships in Department of Mechanical Engineering.

THEODORE EDWARD SCHWARZ MEMORIAL FUND, 1937–38, $4,391.86. Gift. For equipment of a suitable room for proposed map collection.

279 SEDGWICK MEMORIAL LECTURE FUND, 1930–38, $9,500. Bequest of Mary Katrine Sedgwick in memory of husband. All copyrights and interest in copyrights and benefits from contracts with publishers for Department of Biology and Public Health.

429 W. T. SEDGWICK FUND, 1928, $69,500. Received from Trustees of the Estate of W. T. Sedgwick under Agreement and Declaration of Trust following decease of Mary Katrine Sedgwick, for Department of Biology and Public Health.

RICHARD B. SEWALL FUND, 1919, $30,000. Bequest. Used for educational plant, 1924.

557 THOMAS SHERWIN FUND, 1871, $5,000. Gift of Committee on Sherwin Memorial Fund for free scholarship to graduate of English High School.

493 SLOAN FUND, 1933–41, $1,000. Annual gift of A. P. Sloan, Jr. for Fellowship in Automotive Engineering.

ALFRED P. SLOAN, JR., 1929–41, $165,000. Gift. For automotive laboratory.

ELLEN VOSE SMITH FUND, 1930, $25,000. Bequest. Used for new equipment.

558 HORACE T. SMITH FUND, 1930, $32,988.76. Bequest. Income for scholarships. Preference to graduates of East Bridgewater (Mass.) and Bridgeport (Conn.) High Schools.

281 LILLIE C. SMITH FUND, 1937, $4,800. Bequest to M. I. T. Women's Association for purposes of the Association.

283 WALTER B. SNOW, 1938. Reserve funds of Technology Christian Association. Deposited for investment purposes.

453 SOLAR ENERGY FUND, 1938, $647,700. Gift of Dr. Godfrey L. Cabot. Principal to be held for fifty years — income to be used in development of the art of converting energy of the sun to use of man by mechanical, electrical or chemical means. After fifty years, fund becomes part of general unrestricted endowment of the Institute.

559 SONS AND DAUGHTERS OF NEW ENGLAND PURITAN COLONY SCHOLARSHIP FUND, 1931, $600. Gift. Income for scholarship aid to a boy of New England ancestry.

632 ANNA SPOONER FUND, 1939–41, $10,896.14. Bequest. Income to be used in assisting meritorious students.

155 ANDREW HASTINGS SPRING FUND, 1921, $50,000. Bequest of Charlotte A. Spring in memory of nephew as a permanent fund. Income for general purposes.

CHARLES A. STONE, 1912–24, $15,000. Gift for land. 1928, $25,023.59. Gift for dormitories.

GALEN L. STONE, 1912, $10,000. Gift for land. 1916, $10,000. Gift for Mining Building.

156 GEORGE G. STONE, 1939, $4,677.35. Bequest by will of Eliza A. Stone, as memorial to brother, a graduate in Mining Engineering in 1889. Income to be used in manner most useful to Institute as well as a most fitting memorial.

593 SAMUEL W. STRATTON PRIZE FUND, 1933, $1,680. Contributed by friends of the late Dr. S. W. Stratton for competition prizes in the presentation of scientific papers.

633 SUMMER SURVEYING CAMP LOAN FUND, 1927, $500. Gift of Lammot du Pont as a revolving loan fund to help students in Civil Engineering attend summer surveying camp.

454 HENRY N. SWEET, 1936, $8,036.50. Bequest. For industrial research.

157 SETH K. SWEETSER FUND, 1915, $25,000. Bequest as a permanent fund. Income for general purposes.

495 SUSAN H. SWETT FUND, 1888, $10,000. Bequest. Income to support a graduate scholarship.

496 GERARD SWOPE FUND, 1926, $2,500. Gift for fellowships in Electrical Engineering.

634 TEACHERS' FUND, 1899–1900. Gifts of $50,000 each from Augustus Lowell and A. Lawrence Lowell to establish fund for use in case of retirement, disability or death of members of instructing staff.

635 TECHNOLOGY LOAN FUND, 1930–41, $1,450,735.18. Contributed by eighteen alumni to provide loans for students.

285 TECHNOLOGY MATRONS TEAS FUND, 1916–22–31, $8,500. Gifts of Mrs. F. Jewett Moore. Income for social activities of Technology Matrons.

456 TEXTILE RESEARCH FUND, 1937, $3,065. Gift. For research.

STURGIS H. THORNDIKE FUND, 1928, $15,000. Bequest. Appropriated for new dormitories, 1930.

NATHANIEL THAYER, 1906, $25,000. Gift. Used for educational plant.

315 NATHANIEL THAYER FUND, 1868, $25,000. Gift. Income for professorship of Physics.

286 W. B. S. THOMAS FUND, 1935–37, $2,000. Gift of parents of W. B. S. Thomas '29, the income only to be expended, one half for the benefit of the M. I. T. Crew and one half to other activities of the M. I. T. A. A.

317 ELIHU THOMSON FUND, 1933–37, $18,000. Contributed toward fund for Professorship in Electrical Engineering.

ELIHU THOMSON, 1912, $25,000; 1924, $5,000. Gift. Used for purchase of land.

497 FRANK HALL THORP FUND, 1932, $10,000. Anonymous gift. Income for fellowship in Industrial Chemistry.

560 SAMUEL E. TINKHAM FUND, 1924, $2,400. Gift of Boston Society of Civil Engineers. Income to assist worthy student in Civil Engineering.

349 JOHN HUME TOD FUND, 1913, $2,500. Gift of Mrs. F. Jewett Moore. Income for purchase of books of a humanistic character for General Library.

562 F. B. TOUGH FUND, 1924, $465. Gift to extend financial assistance to worthy students in mining or oil production.

431 EDMUND K. TURNER FUND, 1915–41, $206,814. Bequest. Income, three-quarters for Department of Civil Engineering and one-quarter to be added annually to principal.

LUCIUS TUTTLE FUND, 1916, $50,000. Bequest. Used for educational plant, 1918.

636 ALICE BROWN TYLER FUND, 1937–41, $1,559.64. Gift of Prof. and Mrs. H. W. Tyler. Income to be used for benefit of women students at the Institute.

290 UNDERGRADUATE ACTIVITIES TRUST FUND, 1935, $1,097.26. Established by 1916 Technique Board from which recognized student activities may borrow if deemed necessary and desirable, at a low rate.

292 UNDERGRADUATE PUBLICATIONS TRUST FUND, 1935, $16,018. Deposited by Alumni Advisory Council on Publications for investment purposes only.

294 UNDERGRADUATE DUES RESERVE FUND, ATHLETICS, 1924–40. Transferred from Undergraduate Dues (current operating account) to secure investment income.

296 UNDERGRADUATE DUES RESERVE FUND, CONTINGENT, 1924–40. Transferred from Undergraduate Dues (current operating account) to secure investment income.

433 WILLIAM LYMAN UNDERWOOD FUND, 1932, $16,252. Bequest. For benefit of Biological Department or otherwise for general purposes.

563 SUSAN UPHAM FUND, 1892, $1,000. Gift. Income to assist students deserving financial aid.

637 THOMAS UPHAM FUND, 1939, $392,000. Bequest of Marcella B. Upham. Principal to be held as a permanent trust fund, the income to be used in assisting poor and deserving students or graduates of the Institute.

638 SAMSON R. URBINO FUND, 1927, $1,000. Bequest. Income for students who need assistance, Germans preferred.

351 THEODORE N. VAIL FUND, 1925, $68,000. Bequest. For benefit of Vail Library.

498 LUIS FRANCISCO VERGES FUND, 1924, $10,000. Gift from Caroline A. Verges. Income for graduate students doing research work in sugar industry or if no such candidate, undergraduate student in Civil Engineering.

565 VERMONT SCHOLARSHIP FUND, 1924–37, $25,000. Gift of Redfield Proctor, '02, in memory of Vermonters who, having received their education at the Institute, served as engineers in the armies of the Allies in the World War. Income to students preferably from Vermont. Mr. Proctor reserves right to designate recipients as long as he lives.

567 ANN WHITE VOSE FUND, 1896, $60,000. Bequest. Income for free scholarships for young men of American origin.

HORACE W. WADLEIGH FUND, 1916–20, $22,143.14. Bequest. Appropriated for new buildings, 1924.

569 ARTHUR M. WAITT FUND, 1925, $9,700. Bequest. Income for deserving students in second, third and fourth year classes in Mechanical Engineering.

159 WILLIAM J. WALKER FUND, 1915–17, $23,000. Bequest. Income for general purposes.

434 WILLIAM R. WARE FUND, 1939, $15,000. Gift of Mr. and Mrs. William Emerson, the income to be at the disposal of the Dean of the Architectural School for extra budgetary purposes.

298 CHARLES D. WATERBURY, 1941, $13,407.28. Bequest. For erection of a building as a memorial to above named at such time as M. I. T. shall decide.

161 HORACE HERBERT WATSON FUND, 1930, $34,000. Bequest of Elizabeth Watson Cutter as a permanent fund. Income for general purposes.

EDWIN S. WEBSTER FUND, 1912–24, $15,000. Gift. Used toward purchase of land.

205 FRANK G. WEBSTER FUND, 1931, $25,000. Bequest. For general purposes.

571 LOUIS WEISBEIN FUND, 1915, $4,000. Bequest. Income for scholarship for student in Architectural Department, preference to be given to a Jewish boy.

163 ALBION B. K. WELCH FUND, 1871, $5,000. Bequest as a permanent fund. Income for general purposes.

CHARLES G. WELD FUND, 1907, $15,000. Gift. Used for educational plant, 1924.

165 EVERETT WESTCOTT FUND, 1935–38, $171,394. Bequest as a permanent fund. Income for general purposes.

167 MARION WESTCOTT FUND, 1938, $238,200. Bequest for endowment. Income for general purposes.

573 FRANCES ERVING WESTON FUND, 1912–31, $5,000. Bequest. Income to aid a native-born American Protestant girl of Massachusetts.

574 SAMUEL MARTIN WESTON FUND, 1912–31, $5,000. Bequest of Frances E. Weston in memory of husband. Income to aid a native-born American Protestant boy; preference to be given one from Roxbury.

ALEXANDER S. WHEELER FUND, 1907–16, $30,000. Contributed by friends. Used for new dormitories, 1924.

GEORGE R. WHITE FUND, 1912, $10,000. Gift. Used toward purchase of new site.

576 AMASA J. WHITING FUND, 1927, $4,500. Bequest of Mary W. C. Whiting. Income as scholarship to deserving students; preference to students from the Town of Hingham, Massachusetts.

EDWARD WHITNEY FUND, 1910, $37,171. Bequest as a memorial to him and his wife, Caroline. Principal and interest used (1930–38) for conduct of research in geophysics.

639 JONATHAN WHITNEY FUND, 1912, $525,000. Bequest of Mrs. Francis B. Green. Income to assist poor and deserving young men and women in obtaining an education at M. I. T.

169 GEORGE WIGGLESWORTH FUND, 1931, $25,000. Bequest. Ten (10) per cent of gross annual income to be added to principal, balance of income for general purposes of the Institute.

GEORGE WIGGLESWORTH, 1917–24, $65,000. Gift. Used for additional land purchase, 1924.

577 ELIZABETH BABCOCK WILLMANN FUND, 1935, $5,065. Bequest. Income to be used toward tuition of young women students taking Chemistry courses.

KENNETH F. WOOD FUND, 1926, $25,000. Bequest. Appropriated for new dormitory, 1930.

171 EDWIN A. WYETH FUND, 1913–35, $269,665. Balance of Trust Fund held by M. I. T. since 1913 for itself and five other beneficiary institutions subject to annuity. Distributed January 1935. Fund separately invested and still subject to annuity. Balance of net income available for general purposes of the Institute.

640 MORRILL WYMAN FUND, 1915–16, $66,000. Bequest. Income to aid deserving and promising students upon understanding that if in after life the person receiving aid shall find it possible, he shall reimburse said fund — not a legal obligation.

WRIGHT MEMORIAL WIND TUNNEL, 1937–41, $95,795. Contributed by friends toward construction of new wind tunnel.

LIST OF PERIODICAL PUBLICATIONS, BOOKS AND REVIEWS BY MEMBERS OF THE STAFF

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