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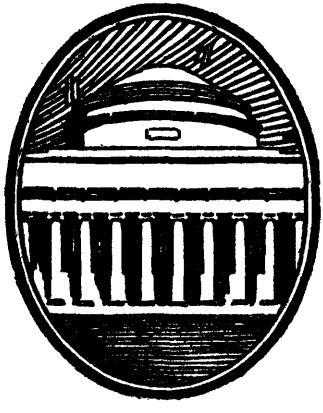

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MASSACHUSETTS INSTITUTE
OF TECHNOLOGY
BULLETIN

President's Report Issue

1945-1946

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THE ANNUAL REPORT OF THE PRESIDENT

To the Members of the Corporation:

FOURTEEN months ago the Massachusetts Institute of Technology was a scientific arsenal, with a personnel of over 6,000 working on instrumentalities of warfare and 2,000 students largely training for warfare. In the period since V-J Day we have returned to our normal and primary function of education. The 6,000 employed personnel have diminished to 3,000 and the student body has increased to 5,000, the largest number of students ever enrolled at M. I. T. Fourteen months ago we were spending at the rate of $50,000,000 a year; we have now readjusted to a more manageable but still inflated annual expenditure of $11,000,000.

These figures are but ineloquent indices of the redeployment problems which have been met and, I am happy to report, largely solved. The Radiation Laboratory has been demobilized, its staff of 3,900 reduced to 15. Its great volume of purchase commitments, for months a matter of concern as it mounted million by million, is now almost completely liquidated, with a consequent reduction in liability and risk not to zero but to a point reassuringly near. Placement of wartime personnel has been largely accomplished. In fact, the demand for technical personnel has far exceeded our supply. The equipment used in the great war laboratories, the value running into many millions of dollars, the bulk running into uncounted tons, has been taken over by the Army and Navy, thus relieving the Institute of a burden which could easily have been a great handicap to reconversion. And, finally, the Institute space occupied by the war projects has been largely recaptured, and the temporary buildings, built primarily for war work, have been retained by the Institute to aid us in handling the postwar overload of students. With these major hurdles taken, we

are in a much better position to meet the many other problems inherited from the war and inherent in the present period of readjustment.

For this rapid demobilization, credit is due many people — those who administered the projects and who planned for their liquidation with foresight and with a sense of fine responsibility to M. I. T.; those who, frequently at personal sacrifice, remained after the tumult and the shouting to assist in the liquidation; and the staff of our own Division of Industrial Coöperation, who have managed all contractual and business matters with prudence and vigilance.

The Institute Redeployed

The transition to a peacetime program has been more difficult because we are far from having returned to the scale of operations typical before the war. To use a budgetary index again, our current annual budget of $11,000,000 is three times our largest prewar budget. In 1939–1940 we had a total paid personnel, including staff and nonstaff, of 1,400. The current year finds us with 3,000, over twice as many. Total personnel at the Institute, including students, staff, and nonstaff, stands this fall at about 8,000, which is equal to our total personnel at the peak of the war program. Since the end of the war we have added 557 new persons to our instructional staff, of whom 57 have been Faculty appointments. To house the academic activities of this large group, we have found it necessary to occupy all the wartime buildings, with the result that we are using a plant — some of it temporary — greater by half a million square feet than that available before the war.

That these changes have thrown a great burden on both the administrative and teaching staff needs no comment, but one illustration will suffice. Before the war, about 1,000 new students were admitted to the Institute per year. Since July, 1945, we have been admitting approximately 1,000 students

every four months, and over 2,300 students have been admitted for the fall term just begun. Thus there has been about a fivefold expansion in admission and registration activities, and these have been carried on in circumstances of unusual pressure and complexity.

In terms of the pre-war Institute we have therefore undergone a substantial expansion of our peacetime program. Part of this increase has come from new or continuing research financed by the government, our research budget this year being of the order of $5,000,000. The most significant increase, however, has been in the size of our student body and in the resulting educational responsibility we have assumed. Our research activities are still important to the national defense and welfare, but they are now geared to industrial as well as governmental needs, and are integrated with our educational program. I wish in this report to give principal attention to this educational program and to those aspects of our operation affecting the welfare of our students generally.

The Student of 1946

If you were to introduce yourself to a student whom you chanced to meet while walking through the Institute corridors, the probability is that he would be an undergraduate, older by two to four years than a pre-war student of the same class. He would explain to you, with courtesy and poise born of military experience, that he is a veteran and that his objective here is to secure a first-class professional education as quickly as possible.

If you were to express an interest in his personal situation, you might discover that he is one of the married veterans (more than 30 per cent of the veterans are married), and that his family includes a youngster. If he is one of the hundred families living in Westgate, he will doubtless report that his family is comfortably housed; if he is living outside, he will report grimly and accurately on the desperate housing shortage, although he

has managed to find a place to live, with the assistance of the Institute's Housing Bureau.

Whether married or single, he will tell you that he is unable to keep his living expenses within the allotment he receives from the government and that he must therefore depend on savings, family assistance, Institute aid, or a part-time job.

If you inquire about his studies, you will find his attitude mature, serious, and hardheaded, and his grades high. If he had attended the Institute before going into service, his grades are higher now than when he was here before. You will find, further, that he has an articulate interest in the why and how of the educational program and environment at the Institute, and he might respectfully suggest several ways in which he thinks they can be improved.

Altogether you will gain the impression that he is able, personable, and sure of himself; that he has a well thought-out program for his education, is willing to work without stint to get ahead rapidly, and is competent and anxious to undertake larger tasks than a pre-war student of equivalent scholastic age.

In this roughly sketched profile of the 1946 undergraduate, you have observed some of the special characteristics of the students now enrolled at the Institute. Taking the student body as a whole, we find that 3,000 of the 5,000 students are veterans and 3,700 are undergraduates, the remaining 1,300 being registered for postgraduate degrees. The undergraduates are almost evenly distributed among the four classes, with the senior class running slightly smaller.

The new students, both veteran and nonveteran, represent a degree of selection quite beyond that of any group ever before admitted. The 675 new freshmen who have just entered, for example, were chosen out of some 4,500 applications and many times that number of inquiries. About 2,300, or 80 per cent,

of the undergraduates who were on leave of absence for war service are now back, and we expect ultimately to readmit nearly 100 per cent of these former students. Since the educational expenses of the veterans are financed largely by the government, applicants have not been restricted by financial considerations. The students, therefore, come from all walks of life, and for the first time we have a student body for which ability, preparation, personality, and character have been the only requirements for admission.

The postgraduate student enrollment represents an increase of about 550 over our pre-war Graduate School enrollment. The majority of these graduate students are being assisted by employment on research projects or by appointment as teaching assistants. Some of our departments, in fact, have found it necessary to increase their graduate student quotas in order to get the assistants needed to handle the undergraduate enrollment. Many of these graduate students have had extensive experience in war laboratories or in teaching and are therefore highly competent to undertake teaching or research of a high order while they study.

Of the 5,000 students, there are 267 from foreign countries. Because of the overwhelming demand of American veterans, we have had to limit severely our acceptance of foreign students, although the demand from foreign countries has steadily increased. In the later stages of the war we might easily have filled our student body with students from one or two foreign countries whose students were not restricted by the war, had not our Admissions Office planned foresightedly to conserve space for our own returning veterans and to provide space in the foreign quota for students from Allied countries.

Obviously a student body of these general characteristics and of such maturity, capacity, and determination is a challenge to our best efforts. Each department at the Institute fully realizes that the orchestra of specialists making up our

Faculty must be tuned with precision and conducted with inspiration to do justice to this audience, and for the past year they have been recruiting, re-equipping, and rehearsing in preparation.

Regaining Standards; Retesting Programs

The distinguishing hallmark of the Institute has long been the high standard of scholastic achievement it expects of its students and the teaching competence and imagination this standard of achievement requires. Are this standard and this competence as of 1946 in line with our great tradition? Are we still pioneering and advancing in educational method and in the art of teaching engineering, science, and architecture?

Time will provide the only definitive answer to these questions, but I can report that our Faculty in this period of readjustment and overload is aggressively occupied with the problems of educational policy and of teaching effectiveness. It is acutely aware that standards were forced down during the war by a decimated teaching staff and by the year-round teaching program and that a special effort must now be made to recover lost ground. It is also acutely aware of the magnitude of the problem involved in providing professional instruction of Institute grade to 5,000 students.

The recovery in standards is fortunately being expedited by the maturity and capacity of our student body. From all sides come reports from instructors that they have never had such responsive classes or seen so many students of superior ability and serious purpose. During the summer term, at a time when studying is most difficult, the students achieved a notable academic record.

Another factor that has expedited the recovery of scholastic standards has been the rapid reassembly of our staff; we have had fortunately few losses in senior personnel. Moreover, we have been exceedingly fortunate in securing outstand-

ing additions to our staff, both to fill vacancies and to provide for the larger student body. Taken either as a whole or department by department, and including the new and the old, this 1946 staff, I can say with pride and good conscience, is unexcelled anywhere in the world in professional competence, reputation, loyalty, co-operation, and industry. Given the proper facilities it can without question meet the challenge of the 5,000 students now assembled here.

Another important factor has been the foresight of our Faculty in planning for the present peak load. Three years ago, in the midst of war and in anticipation of postwar overcrowding, the Faculty both strengthened and simplified our curriculum after an extended study of our undergraduate program — one of the earliest of the now numerous studies of educational objectives and procedures undertaken by American colleges. As a result of this study, some duplications and minor offerings were eliminated, and subject sizes were standardized, so that we were able, without significant educational loss, to reduce by 20 per cent the number of subjects offered, with a consequent increase both in instructional efficiency and in schedule flexibility. We should be unable to handle 5,000 students at the present time had not the Faculty prepared for them by this simplification of our curriculum. At the same time our program in the humanities was increased and strengthened, as I described in detail in my report of two years ago.

Now that we have had a chance to observe some of the results of this experimental curriculum revision, it seems timely to prepare to review them in accordance with the stipulation made by the Faculty when these revisions were adopted for the immediate postwar period. The chairman of the Faculty has presented to the Faculty Council a proposal for a fundamental review of our present emergency program and, more importantly, a long-range study of our entire educational policies and procedures. This would be in line with past practice of period-

ically re-evaluating our educational objectives and methods. This proposal is to be submitted to the Faculty at its regular October meeting.

If the proposal is adopted, as I trust that it will be, it will be the responsibility of this committee, with Faculty directive and advice, to formulate the scope and objectives of its study, but I think we can anticipate some of the matters which it will review: Do our admission requirements need revision, and can they be better co-ordinated with programs in the secondary schools? Are we too specialized in our undergraduate program in the upper two years, and is our Course system the most effective organization? Is it now possible to give a reputable and effective engineering education in four years? What should be the relative emphasis on undergraduate and post-graduate education, and how should they be related to each other? Have we swung too far in the direction of theory as distinct from practice, or have we not gone far enough? Have we yet allotted enough time for humanistic studies? Do we require too much routine and scheduled work, leaving our students too little time for self-development? No answers are presupposed to these questions, but the questions do indicate the comprehensiveness of the committee's assignment. Whether the committee recommends few changes in our current program or makes proposal for drastic revision, it will have great importance in verifying and stimulating our undergraduate teaching.

The Faculty is likewise giving attention to the problems of student counseling, and there is much of value to be done here. Our system of registration officers, whereby each class in each Course has assigned to it every year a staff member who is available for consultation on programs, occupies a fundamental place in our student counseling system. For many unavoidable reasons this system deteriorated during the war. With the present heavy student enrollment to handle, plus

the extended counseling needed by veterans, registration officers need more time and assistance. We are trying to provide both. Each department in its own way is developing a better means of personal contact with students, and assigning special student liaison duties to carefully selected staff members. This whole program is closely tied in with the counseling service of the Office of the Dean of Students.

The recommendation which I made two years ago that we provide a more centralized supervision of our instructional organization in the first two years is being carried through by the Dean of Science, Dr. George R. Harrison, under whose jurisdiction come a majority of the departments concerned with instruction of freshmen and sophomores. Under his chairmanship a committee representative of these departments is facilitating co-ordination of subjects in the first two years and providing the mechanism for constant appraisal of teaching methods and quality of instruction.

As the Faculty adjusts and tunes the delicate and complex organization of our undergraduate school, it is also looking out in new directions. The new Department of Food Technology launched its program during the year with financial assistance from six industrial companies, and the Department of Economics and Social Science organized a new undergraduate program in Economics and Engineering. The Department of Metallurgy, jointly with Chemical Engineering, undertook a new program in corrosion, and the Department of Mechanical Engineering transferred to Metallurgy its personnel and facilities in metal processing, where they are to provide the nucleus for a new program in mechanical metallurgy. As a result of opportunities developed during the war, we are organizing a new educational program in the field of gas turbines and jet propulsion, and are giving much greater emphasis to electronics and to nuclear science and engineering, all of which are certainly destined to occupy an important place in the technology of the

future. Notable was the establishment of our first adequately endowed chair, the Sloan Professorship of Industrial Management. Under the generous endowment provided by Alfred P. Sloan, Jr., '95, this professorship will be supplemented by lectureships held by distinguished visiting lecturers from industry.

In the administration of our educational program, we had one major change during the year. Dr. Edward L. Moreland, Dean of Engineering since 1938, asked to be relieved of this post as of July 1, 1946. Fortunately he agreed to continue to give part time to the Institute, and accepted appointment as Executive Vice President to act as consultant to the President and Vice President and to assume major responsibility in certain specified areas. To succeed him as Dean, we are happy in the appointment of Professor Thomas K. Sherwood of the Department of Chemical Engineering, who brings to the administration of the School of Engineering wide experience as an engineer and educator and intimate knowledge of the Institute.

Behind all these many moves designed to maintain and extend our educational effectiveness is a reaffirmation of our faith in the Institute's system of undergraduate education and of our conviction that in science, engineering, architecture, and related fields a flourishing undergraduate school, joined with a powerful graduate school, best insures high educational standards and creative scholarship.

Improvement in Educational Facilities

I have spoken of the increase in our educational plant through additions made during the war. This added space has not only enabled us to take care of the great increase in the student body, but at the same time has both permitted and required a wholesale reallocation of space and renovation of equipment throughout the entire Institute plant. This general redistribution of space — the greatest since the Institute moved

from Boston to Cambridge — together with the acquirement of the new buildings, is requiring an expenditure of $1,750,000. While this has been a very severe drain on the Institute's limited unrestricted capital resources, the Executive Committee has felt the expenditure warranted by the gain in educational efficiency thus made possible. For example, had we not modernized and enlarged our Chemistry laboratories, at a cost of $400,000, we would not be able to handle 900 students in each of the first two undergraduate years, compared with the 600 accommodated prior to the war. New laboratories for Physics, Mechanical Engineering, Electrical Engineering, Aeronautical Engineering, and other departments similarly have enlarged our capacity and provided better instructional facilities.

The Charles Hayden Memorial Library. Every President's Report must review the past year and preview plans for the immediate future. It is fortunate when the report can also include an exciting announcement of a great step forward.

For years a library building fully adequate to the needs of the Institute has had top priority in our estimate of the desirability of new buildings. Plans have now been completed for a building facing the river front between the main educational buildings and Walker Memorial which will admirably fill this need and take the form of a memorial to a distinguished Alumnus, the late Charles Hayden, '90.

Construction of this library building has been assured, I am happy to announce, by a gift of $2,200,000 received from the Charles Hayden Foundation through the generosity of Mr. Hayden's brother, J. Willard Hayden, and the cotrustees of the foundation. This princely gift, the largest single gift received by the Institute since the Eastman benefactions, will cover a very large portion of the total cost of the building.

In planning this new library building we have conceived of it as serving a dual but consistent purpose. As the nucleus of

our departmental library system and itself a great repository, it will provide the most serviceable collection possible of advanced research and teaching material in the scientific, engineering, and architectural disciplines to which the Institute is primarily devoted. In addition, however, it must serve the humanities program and the nonprofessional development of our students by offering them the maximum invitation to the many important fields of thought and inspiration outside our required curriculum. This concept recognizes that the humanistic responsibility of the Institute's Library is in some ways even more far reaching than that of the libraries of the great liberal arts institutions.

The Charles Hayden Memorial Library, then, will be a great deal more than a conventional library. It will house, for example, our departments in the social sciences and the humanities so that they will be contiguous to their libraries, which are in effect their laboratories. In addition to this formal implementation of the Institute's humanistic program, the new library will seek to facilitate the student's examination of various cultural heritages which cannot find a place in the formal curriculum. The already large collection of recorded music possessed by the Institute will be housed in carefully designed quarters in the new building as part of an audio-visual center which will make available all sorts of recorded sound as well as visual tools such as motion picture film. This center will be as modern as we know how to make it, will provide a variety of sizes of listening and viewing facilities, and, on the formal side, will increase the facilities for instruction in modern languages and public speaking.

The library will also house some of the Institute's special museum collections, will serve as a graphic arts center, will have adequate exhibition space for arts and crafts, and will have a special map room for our growing collection of maps — a group of Technology Alumni, under the aegis of the Boston Stein

Club, having already provided funds for the development and embellishment of this map area. And, finally, the library will undertake a program of research in improved methods of storing and organizing knowledge and in other aspects of library service.

I could with enthusiasm give many more details of this great new addition to our plant, but I hope that I have suggested enough of its function and the program which is being conceived for it to indicate how important it will be in servicing and enriching our educational program. The concept of the building and of the enlarged library program was the result of intensive studies initiated by the Corporation's Visiting Committee on the Library and carried through under the direction of the Director of Libraries, Professor John E. Burchard, by the Librarian, Professor William N. Seaver, and his staff, by the Faculty Committee on the Library, by the architects of the building — Voorhees, Walker, Foley and Smith — and by many outside consultants. The Institute, in fact, has participated in an interuniversity study of library construction, carried on under a grant received from the Rockefeller Foundation. We have good reason to believe that in this projected library we are setting a new standard in university library housing and that the entire program reflects the judgment and foresight of the most experienced and forward-looking people in the library field.

We are ready to proceed promptly with the construction of the Charles Hayden Memorial Library just as soon as government permission can be secured. Thus far, this permission has been refused because of the priority given to the needs of veterans. We shall also announce in the near future a very distinguished appointment as Librarian to succeed Professor William N. Seaver, who retires on July 1, 1947, after long and effective service. It is most fortunate that our new library comes at a time when it can be considered as a crowning

achievement of the hopes of our retiring Librarian and at the same time can offer a new opportunity for development by his successor.

Other Building Projects. While the Charles Hayden Memorial Library is the principal addition to our educational plant which has been planned and financed, there are other projects of great importance. The new Gas Turbine Laboratory, made possible through grants from five industrial companies, is now under construction concurrently with the modernization and enlargement of the Sloan Automotive and Aircraft Engine Laboratories, made possible through a generous additional gift from Alfred P. Sloan, Jr. Other new additions which are urgently needed and for which we are now seeking ways and means include a hydrodynamics laboratory and towing tank for our Department of Civil and Sanitary Engineering and our Department of Naval Architecture and Marine Engineering; an addition to our Metals Processing Laboratory to house a modernized and enlarged machine tool laboratory for our Department of Mechanical Engineering; a laboratory for the growing program in nuclear science and engineering; and a new building to house the Departments of Biology and Food Technology.

Student Life

In a professional school such as the Massachusetts Institute of Technology, first consideration must be given to the excellence of its education and research.

Concentration on this prime objective does not, however, diminish the importance of providing an extracurricular environment conducive to the development of those student attitudes and traits of personality which are so important to a well-rounded, successful, and happy member of society. Our institution needs very much to give increased attention to these matters.

The decision of the Corporation Executive and Finance committees to build a new dormitory is an important move in this direction. Designed by the distinguished Finnish architect and professor at the Institute, Alvar Aalto, the new dormitory will be a senior house and will have novel features for efficient living and for cultural and social intercourse among students. As in the library, which will in itself multiply our opportunities for student extracurricular development, we seek in this new housing unit not to repeat old forms but to move forward with new and more efficient concepts of student housing.

Under the active chairmanship of Donald F. Carpenter, '22, the Corporation Committee on Student Activity has considered ways in which wholesome recreational opportunities may be increased in the immediate future and plans for our long-term objectives. In line with the committee's recommendations we have plans ready for the construction of adequate athletic units, the most acutely needed of which is a gymnasium. I submit again that an institution such as M. I. T. needs this type of facility even more than does the liberal arts college and that our present facilities are woefully inadequate in spite of several "bright spots," and I believe that donors interested in the development of youth could find no better opportunity to invest funds.

In addition to better physical facilities, we need extra personnel to deal with student life. Dean Lobdell has called attention with increasing frequency to the mounting demands on the Office of the Dean of Students and the opportunities it has for extending its counseling and guidance functions. Student activities and student government were badly disrupted by the war and need a helping hand in their re-establishment; the fraternities have many problems on which the Institute might be helpful; the veterans have problems requiring special attention; and opportunities on the part of the staff for closer liaison with students need to be fully exploited.

The Secretary of the Advisory Council on Athletics, Ralph T. Jope, '28, has likewise called attention to the need for additional personnel to aid in the conduct of our athletic system and to help in meeting the council's objective of an expanded intramural program.

The great increase in student enrollment makes these long-term proposals matters of immediate urgency.

In our organization for student welfare, our Medical Department occupies a place of great importance, and I can report that it is admirably equipped and staffed to meet the demands of 5,000 students. The infirmary has been substantially enlarged, the outpatient department has been modernized, and to the psychiatric and dental clinics we have just added a fine eye clinic, established and endowed as a memorial to the late William R. Kales, '92, by his family. The opening of this new clinic marks the latest in a long series of improvements achieved by Dr. George W. Morse, who retires on January 31, 1947, after a quarter century of effective service to staff and students. He is succeeded by Dr. Dana L. Farnsworth, who becomes the Institute's first full-time Medical Director and whose broad training and experience in internal medicine and psychiatry have admirably equipped him to contribute comprehensively to student welfare through the techniques of the wise physician.

Emergency Housing. In handling the influx of veterans, educational institutions have found the housing problem the most vexing and the most difficult to surmount. The Institute is no exception; we are desperately short of adequate housing for both students and staff. For married students the Institute has built with its own funds the village known as "Westgate," which provides a hundred houses. This project, which I believe was the first veterans' project undertaken by an American college and which was designed and built under the direction of our School of Architecture and Planning, is fully occupied.

Its fine accommodations are prized by those fortunate enough to be living there and are eagerly sought by a steadily lengthening waiting list.

But a hundred houses are far from enough and we have availed ourselves of FPHA housing. Immediately west of Westgate, two-story naval barracks brought from Rhode Island are being rebuilt into apartments with accommodations for 180 families. As provided by Congress, the government erects the building on land provided at the institution's expense with necessary services, roads, landscaping, and so on. This project is costing the Institute $100,000, which cannot be recovered, while Westgate represents a capital investment of $500,000, which is largely but not wholly recoverable if the project is occupied ten years.

Our demands are quite beyond the capacity of both these projects, and to care for the overflow our Housing Bureau, established in October a year ago, is daily achieving the impossible in finding accommodations.

Rooms for single students are easier to come by, but there still is a shortage. We have purchased from the government one of the temporary war buildings used by the Radiation Laboratory and have converted it into barracks by an expenditure of $120,000. This will house 600 single students, at a cost to the students of $3.15 a week. By careful doubling up, the capacity of our permanent dormitories has been increased. When all of these facilities are in full use, we shall house on campus and in fraternity houses about 2,900 students. To this number should be added, of course, the wives and children who are living in Westgate and will be living in Westgate West. On the basis of Westgate's birthrate, the number may be expected steadily to increase.

The Graduate School and Research

The major attention given in this report to undergraduate instruction and student problems does not imply any lack of

attention this past year to the Institute's Graduate School. With 1,300 students studying for advanced degrees and with vigorous research under way in all professional departments, the Graduate School is flourishing as never before. Its standards have never been higher or the quality and variety of research greater.

In relation to the Graduate School, let me direct attention briefly to three major trends which are beginning to play a very large role in our advanced program.

The first of these is the development of interdepartmental Centers of Research which co-ordinate the co-operative activities of various departments in certain very important fields of overlapping interest. While we call them "Centers of Research" because research is their predominant role, they are nevertheless destined to play a very important role in our educational program, especially at the senior and graduate student thesis levels. Their influence will also filter back into the co-operating departments to enliven and modernize their programs in the direction of the very latest technological developments.

These Centers of Research appear to be a highly satisfactory answer to a problem which has long confronted us and other institutions, namely, that of handling those interests which reach outside the traditional departmental boundary lines and require the co-operation of the specialists and points of view of various departments. Certain institutions have tried to meet this problem by setting up special institutes; others have set up new departments. Both of these solutions seem to us to be lacking in two desiderata, namely, the mobilizing of the interested personnel in various departments into a co-operative effort, while still recognizing each department's special interest in various aspects of the program, and the full co-ordination of the research with the educational program.

I can best portray a Center of Research by describing the two largest and newest of such centers which have been estab-

lished during the past year. One of these is the Research Laboratory of Electronics, operated jointly by the Departments of Physics and Electrical Engineering, with the collaboration of other interested departments. The other is the Laboratory for Nuclear Science and Engineering, representing an even wider distribution of interest, since it involves the Departments of Physics, Chemistry, Electrical Engineering, Metallurgy, Mechanical Engineering, Chemical Engineering, Biology, and others to a lesser degree. Each has a director who administers the affairs of the laboratory in such manner as (1) to weld together the co-operating members of the various departments into a working unit, and (2) to provide the special facilities for research which may be desired by staff or students in any of these departments.

Both of these Research Centers are outgrowths of the great interest in and increased tempo of research resulting from the war. Both are mainly supported by very large funds provided by government and industry. Both likewise provide facilities for members of the staff of the Institute who have problems in these fields. Both have, in addition, a staff of administrative officers, research associates, and assistants, and the necessary shop services. Both will offer very great opportunities to advanced students and staff.

The Center of Analysis for the development and use of a wide variety of automatic computing machines is the oldest of our Centers of Research. In a somewhat similar category, and more recent, are the Spectroscopy Laboratory, the Acoustics Laboratory, the Instrumentation Laboratory, the Servomechanisms Laboratory, the Applied Mathematics Program, the Laboratory for Insulation Research, the Industrial Relations Section, and the Research Center for Group Dynamics.

A second major new development in our programs of education and research is the greatly increased degree of interest and co-operation on the part of industry and the War and

Navy departments. The work sponsored here by these outside agencies during the coming year involves a sum greater than the largest pre-war operating budget of the entire institution. From industry have come an increasing number of fellowships and substantial support of new teaching and research programs, several of which I have described earlier in this report.

The third feature of our educational program which I shall mention has to do with the greatly increased number of postgraduate students coming from the Army and Navy for training in certain specialties. For many years we have co-operated with the Navy to provide the postgraduate education of the naval constructors and, more recently, the combined program for naval constructors and naval engineers under the Bureau of Ships through an arrangement with the Postgraduate School at Annapolis. In addition to this, before the war we had a few special military students coming to study such subjects as torpedo design or fire control. Now, however, and again as a result of the recent war experience, both services are sending greatly increased numbers of selected young officers for postgraduate study in educational institutions. The demands on us for such educational assistance to Army and Navy have been heavy and well reasoned, and we have had to limit the number admitted only because of the importance of retaining an appropriate share of opportunity for civilian graduate students to be trained for professional careers in industry or education.

The Financial Outlook

In August, I announced the Corporation's decision to increase the Institute's tuition from $600 per academic year to $700, the increase to take effect with the opening of the summer term in 1947. This decision to raise tuition, as you well know, was made reluctantly and only after rising costs made it unmistakably necessary. At the time the tuition was announced, we estimated that our unit expenses had risen 28 per

cent since 1939–1940. They are still rising, and we must expect this year, before the higher tuition takes effect, to run a large deficit, amounting to several hundred thousand dollars.

Aside from the difficulties arising from this present period of inflation, the Institute has long-term financial problems which must be squarely faced. Our primary need is for capital funds, both to provide necessary and forward-looking new facilities, and to increase our endowment. This past year endowment income was only 24 per cent of our total income; in 1939–1940 it was 37 per cent. A large increase in the Institute's capital resources must be a major objective of the administration and Corporation during the period just ahead.

Conclusion

In my remarks at the annual Alumni Dinner last June, I expressed the feeling that our attention from then on must be effectively focused on the new era before us, and in this report I have sought to review the progress of the past year in terms of the future.

In building for the future we have the firm foundation of the past. The basic objectives of the Institute are as important today as when this institution was founded eighty-five years ago. These objectives of education, research, and co-operation with government and industry have not only stood the test of time, but the development of our civilization has made them ever more important.

Internally the institution is sound and vigorous; externally its reputation is high. We should therefore face the future with confidence and a virile ambition for still further improvement and achievement.

Respectfully submitted,

Karl T. Compton
President

October 7, 1946

The following pages present statistical summaries of the past year's operations and a list of personnel changes.

Statistics of the Year

Finances. The Institute's endowment and other funds now have a total book value of $46,000,000, compared to $36,000,000 six years ago. The increase of $10,000,000 is largely the result of capital gifts and of profits on the sale of securities. Plant assets now stand at $17,310,000 (exclusive of government-financed war buildings), compared to $16,328,000 in 1940. The yield on investments based on market values has generally decreased during the last five years, largely because of deliberate increase in holdings of government securities and partly because of increased market values. In the past year, however, the yield increased slightly and the allocation to Funds was at the rate of 3.50 per cent.

The Institute's cumulative deficit for its entire history now stands at $70,880. The year 1945–1946 ended with a deficiency of income of $109,000 on operations totaling over $30,000,000.

The trend of operations of the Division of Industrial Coöperation for the past four fiscal years is shown by the following summary:

D. I. C. Operations

	1943	*1944*	*1945*	*1946*
Total Volume (including Governmental and Industrial Research)	$14,951,800	$25,461,300	$39,970,900	$24,294,500
Dollar Increase over Previous Year	7,129,000	10,509,500	14,509,600	15,676,400*
Percentage Increase over Previous Year	91%	70%	57%	39%*
Overhead Allowances	851,000	1,142,500	1,312,300	1,547,100
Percentage of Salaries and Wages	13.6%	12.2%	10.5%	18%
Percentage of Revenues	5.7%	4.5%	3.3%	6.3%

* Decrease

As pointed out earlier, the total volume of sponsored research is expected to diminish during 1946–1947 to about $5,000,000.

The following table reflects the influence of the war on the distribution of income and expense. The past year was still not a normal year, as may be seen by a comparison with 1941–1942, but it does reflect the growth of the educational program and the decline of sponsored research activities.

PERCENTAGE DISTRIBUTION

		1941–1942	1942–1943	1943–1944	1944–1945	1945–1946
EXPENSE	Academic (Teaching and Research)	61	61	55	49	51
	Plant and Administration	35	35	41	46	44
	Miscellaneous	4	4	4	5	5
INCOME	Tuition — Civilian	42	34	22	27	32
	Tuition — Government	..	6	20	13	15
	Investments	29	24	22	28	24
	Loans and Scholarships	8	6	4	3	3
	Other (including Overhead from Research Contracts)	21	30	32	29	26

The total of gifts each year has increased at a most encouraging rate, as shown in the following table:

	Capital Additions	*Total Gifts*
1940–1941	$ 511,949	$ 888,180
1941–1942	534,316	926,897
1942–1943	616,702	884,268
1943–1944	1,132,835	1,367,507
1944–1945	1,245,911	1,736,892
1945–1946	2,042,533	2,549,969

Of the $2,549,969 of total gifts, approximately $1,500,000 comes as grants from industrial companies, $180,000 from foundations, and $780,000 from individuals.

For the second time in its six-year life, the Alumni Fund exceeded its stated annual goal of $150,000 when it reached the record total of $165,274. Contributions from 10,009 Alumni made up this total. Following out a suggestion originally made by Gerard Swope, '95, the Technology Club of Chicago has advocated to its members a contribution of one-half of one per cent of annual income. The plan is spreading to other clubs and, if intensively accepted by Alumni, could result in a very great increase in the important sources of Institute support.

Enrollment. In June, 1945, our civilian enrollment stood at 1,100; this fall sees it exceed 5,000. The official count for 1945–1946, taken on July 30, 1945, was 1,538. This compares with 1,198 in 1944–1945; 1,579 in 1943–1944; and 3,048 in 1942–1943. Of the total for 1945–1946, 69 were women, of whom 23 were in Chemistry. A total of 121 American colleges and universities and 59 foreign institutions were represented by graduates studying at Technology. Thirty-four foreign countries were represented.

Student Aid. The demands on the scholarship and loan funds continued below normal. For 1945–1946, the totals were as follows: undergraduate scholarships, $56,481, only $1,000 greater than the year before; graduate scholarships and fellowships, $82,412; loans to all students, $16,317, a figure far below the $163,000 loaned in 1939–1940. The Student Employment Bureau of the Technology Christian Association placed 275 students in part-time jobs, and they earned a total of $47,277, compared with $59,600 in 1940–1941.

Changes in Personnel. John E. Aldred, Life Member of the Corporation since 1927, died on November 21, 1945, after a long illness. Although he was much interested in nearly every phase of Institute activity, he will be remembered with particular appreciation for the Aldred Lectures which he established at the Institute.

The Special Term Membership of Charles E. Spencer, Jr., on the Corporation expired in January, 1946, and he was elected in February to Life Membership. Robert E. Wilson was elected to Life Membership last June. Thomas D. Cabot, son of Life Member Godfrey L. Cabot, is the new Special Term Member to serve for five years from January, 1946. James R. Killian, Jr., joined the Corporation in December, 1945, upon his election as Vice President of the Institute. The Alumni Term Memberships of Edward P. Brooks, George J. Mead, and Robert E. Wilson expired in June. New Alumni Term Members

include A. Warren Norton, who concluded a year of membership on the Corporation as President of the Alumni Association, Frederick S. Blackall, Jr., and Albert J. Browning. Harold Bugbee is the new President of the Alumni Association, who will serve concurrently as a member of the Corporation. On the part of the Commonwealth, John J. Desmond replaces Julius E. Warren as Commissioner of Education.

I have already spoken of the appointment of Professor Thomas K. Sherwood to the post of Dean of Engineering, vice Edward L. Moreland, who asked to be relieved so that he might give part time to his engineering firm. Dr. Moreland continues, part time, as Executive Vice President. I have also mentioned the appointment of Dr. Dana L. Farnsworth as Medical Director, to succeed Dr. George W. Morse, who will retire on January 31, 1947, after serving for 26 years as Medical Director. The appointment of Joseph J. Snyder as Assistant Treasurer added an additional financial officer to the Institute's administration. Professor John Chipman was appointed head of the Department of Metallurgy to succeed Dr. Robert S. Williams, who retired; and Professor John B. Wilbur was appointed head of the Department of Civil and Sanitary Engineering after two years as acting head of that Department.

Heading the list of major new Faculty appointments during the year are the following full Professors: Captain William H. Buracker, Professor of Naval Science and Senior Naval Officer; Charles D. Coryell, Professor of Chemistry; Colonel Harold R. Jackson, Professor of Military Science and Tactics and head of the Department; William T. Martin, Professor of Mathematics; Bruno B. Rossi, Professor of Physics; Victor F. Weisskopf, Professor of Physics; and Captain Charles D. Wheelock, Professor of Naval Construction, in charge of the Course in Naval Construction and Engineering.

New Associate Professors include Walter H. Gale and Hsue-Shen Tsien in Aeronautical Engineering; Gyorgy Kepes

in Architecture and Planning; Witold Hurewicz in Mathematics; William R. Hawthorne in Mechanical Engineering; Albert R. Kaufmann, Howard F. Taylor, and Herbert H. Uhlig in Metallurgy; Colonel William C. D. Bridges in Military Science and Tactics; and Albert G. Hill in Physics.

New Assistant Professors are as follows: Frank K. Bentley, Raymond L. Bisplinghoff, James E. Forbes, Robert K. Mueller, H. Guyford Stever, and William R. Weems in Aeronautical Engineering; Carl Koch, Arthur McVoy, and Ralph Rapson in Architecture and Planning; H. Stanley Bennett and George T. Johnson in Biology; Thomas M. Hill in Business and Engineering Administration; William C. Bauer, Donald B. Broughton, John C. Quinn, and Alexander M. Smith, 2d, in Chemical Engineering; Richard C. Lord, Jr., and John C. Sheehan in Chemistry; James W. Daily in Civil and Sanitary Engineerng; Mason Haire in Economics and Social Science; Robert G. Breckenridge, Willard F. Gray, Yuk Wing Lee (visiting), Stuart T. Martin, Marvin B. Sledd, and Henry J. Zimmermann in Electrical Engineering; Elting E. Morison and Robert S. Woodbury in English and History; John N. Adkins in Geology; William A. Leary, David A. Mooney, F. Everett Reed, Jr., Warren M. Rohsenow, and Milton C. Shaw in Mechanical Engineering; Francis E. Vinal in Metallurgy; Lieutenant Colonel Thomas M. Larner in Military Science and Tactics; and George E. Valley, Jr., and William M. Woodward in Physics.

Promotions effective with the present academic year are as follows: to *Professor* — Richard S. Bear, Gordon S. Brown, Morris Cohen, Robert S. Harris, and John Wulff; to *Associate Professor* — Joseph Bicknell, Richard H. Bolt, Lynwood S. Bryant, Paul M. Chalmers, Albert G. H. Dietz, Allan T. Gifford, Albert C. Hall, Lawrence J. Heidt, Charles Kingsley, Jr., Kurt S. Lion, Charles A. Myers, Charles H. Norris, Roland D. Parks, Eric Reissner, Raphael Salem,

Howard R. Staley, Walter H. Stockmayer, Gerald B. Tallman, J. Edward Vivian, Henry Wallman, Glenn C. Williams, and Samuel D. Zeldin; to *Assistant Professor* — Wayland S. Bailey, Robert L. Bishop, Donald P. Campbell, Louis F. Coffin, Jr., Stuart Edgerly, Robert W. Kennedy, Thomas H. D. Mahoney, Harry Majors, Jr., Frank J. Mehringer, Harold S. Mickley, Rodney H. Smith, H. Rush Spedden, Jr., Richard Taylor, Lucien R. Vianey, Albert E. Whittaker, and George A. Znamensky.

The Institute community was greatly saddened by the death on January 18, 1946, in an airplane accident, of John Donald Mitsch, Associate Professor of Structural Engineering, who had been a member of the staff of the Department of Civil and Sanitary Engineering almost continuously since he received his S.B. degree from the Institute in 1920. Captain Charles S. Joyce, Emeritus Professor of Naval Engineering, died on July 5.

Retirements from Faculty ranks include the following: Charles B. Breed, Carle R. Hayward, Henry E. Rossell, George W. Swett, George B. Waterhouse, and Robert S. Williams, all of whom retired with the rank of Professor Emeritus; Matthew R. Copithorne and Robert C. Eddy, who retired with the rank of Associate Professor Emeritus. Professors Hayward, Swett, and Williams will continue as Lecturers in their respective departments during the current year.

Resignations accounted for the following Faculty losses: *Professors* — Captain Roswell H. Blair, Lieutenant Colonel John C. Dunbar, Karl D. Fernstrom, Walter H. Newhouse, Louis B. Slichter, and Richard H. Smith; *Associate Professors* — Peter E. Kyle, Clifford E. Lansil, John L. Reid, and Theodore Smith; *Assistant Professors* — Walter E. Albertson, Edward M. Bridge, Malcolm S. Burton, Alfred H. Clifford, William M. Hall, Andrew L. Johnson, James E. Mulligan, Richard Muther, John C. Sluder, Alberto F. Thompson, Jr., Scott W. Walker, Philip R. Wallace, Roy P. Whitney, and J. Albert Wood, Jr.

ADMINISTRATIVE OFFICERS

Dean of Students

The total undergraduate registration rose to two-thirds of the pre-war average in the fall term of 1945, and to 80 per cent thereof in the spring term of 1946. This rise took place because of the return of veterans of World War II, enrolling under the benefits of Public Laws 16 and 346, and despite the reduction in the assigned complement of the Navy V-12 unit, which was decommissioned in June, 1946. These initial stages in the transformation from the wartime basis of operations to the immediate postwar basis are dealt with in the data which follow.

The gross number of applicants seeking admission as freshmen for the academic year 1945-1946 was 3,257: 1,605 for the class entering in July, 1945; 761 and 891 for the smaller groups entering, respectively, in November, 1945, and March, 1946. The comparable figures for 1944-1945 were: total, 1,775; July, 1944, 1,356; and March, 1945, 419.

For 1945-1946, the number matriculating as freshmen was 1,039: 703 in July, 1945; 216 in November, 1945; and 120 in March, 1946. For 1944-1945, the comparable figures were: total, 631; July, 1944, 478; and March, 1945, 153.

The geographical distribution of the 703 freshmen admitted in July, 1945, compared with the corresponding groups of the previous four years, is shown in Tabulation 1.

Tabulation 1	*Percentage of First-Year Class*				
	1945–1946	*1944–1945*	*1943–1944*	*1942–1943*	*1941–1942*
From outside New England	59.9	62.9	62.0	59.5	61.0
From outside Massachusetts	66.6	71.4	69.0	68.1	69.3

The fluctuations in undergraduate registration, other than of members of the V-12 unit receiving instruction under a government training contract, are illustrated in Tabulations 2 and 3 (page 33); and the extent to which the reduced registration figures were offset by the V-12 unit is shown in Tabulation 4 (page 33).

[Tabulations 2 and 3 show CIVILIAN REGISTRATION including military and naval personnel registered as individuals and not as members of groups receiving instruction under government training contracts; Tabulation 4 shows TOTAL UNDERGRADUATES.]

Tabulation 2	*Seniors*	*Juniors*	*Sophomores*	*Freshmen*	*Totals*
Five-Year Official Count (Average 1938–1943) . . .	584	592	575	646	2,397*
Official 1945–1946 Count (July 30, 1945)	207	68	182	703†	1,160
Opening of Fall Term (November 10, 1945) . . .	234	290	295	744	1,563
Opening of Spring Term (March 19, 1946)	298	483	763	410‡	1,954
Opening of Summer Term (July 9, 1946)	323	556	438	259§	1,576

* The maximum deviation from this figure in any one year was 2.3 per cent.
† Including 583 members of the "Class of 2–48" matriculating July 9, 1945.
‡ Including 120 members of the "Class of 1949" matriculating March 4, 1946.
§ Including 84 members of the "Class of 1949" matriculating June 17, 1946.

Tabulation 3	*Seniors*	*Juniors*	*Sophomores*	*Freshmen*	*Totals*
Five-Year Official Count (Average 1938–1939) . . .	100%	100%	100%	100%	100%
Official 1945–1946 Count (July 30, 1945)	35.5	11.5	31.7	109.0	48.5
Opening of Fall Term (November 10, 1945) . . .	40.0	48.9	51.3	115.0	65.4
Opening of Spring Term (March 19, 1946)	51.0	81.6	132.7	63.5	81.5
Opening of Summer Term (July 9, 1946)	55.4	94.0	76.1	40.0	65.6

Tabulation 4	*Civilians* and Their Percentage of the Undergraduate Body*	*Navy V-12*	*Totals (and Their Percentage Comparisons with the Average Pre-War)*
Five-Year Official Count (Average 1938–1943) .	2,397 (100%)	. . .	2,397 (100%)
Official 1945–1946 Count (July 30, 1945)	1,160 (73.0)	430	1,590 (66.2)
Opening of Fall Term (November 10, 1945) .	1,563 (87.0)	236	1,799 (75.0)
Opening of Spring Term (March 19, 1946)	1,931 (98.3)	34	1,965 (82.0)
Opening of Summer Term (July 9, 1946)	1,576 (100)	. . .	1,576 (65.6)

* Including military and naval personnel registered as individuals and not as members of groups receiving instruction under government training contracts.

NAVY V-12: CONTRACT NOp73

After three calendar years' operation, instruction of Navy V-12 trainees was concluded in June, 1946, the unit's complement in its nine terms of operation being as follows:

Term	*1943–1944*	*1944–1945*	*1945–1946*
July-October.....	910	887	431
November-March..	857	812	236
April-June.....	853	699	34
Averages per term..	873	799	233

Between July, 1943, and November, 1944 (after which no new trainees were sent), a total of 1,751 individuals was assigned by the Navy to the V-12 unit at M.I.T. Of these, 38 were subsequently found medically unqualified, 38 were discharged from the naval service by reason of their accumulation of sufficient points, and 731 were transferred from the V-12 program to recruit training or back to general duty. Most of the last-mentioned group of 731 were separated for failure to meet the academic standards set by the Navy; the disciplinary troubles of the unit were comparatively minor.

The remaining 942 trainees, of whom 482 completed the Institute's degree requirements as members of the V-12 unit, were disposed as follows for further duty or training:

Commissioned in the Naval Reserve directly upon completion of V-12 training (226 at M. I. T., and 23 elsewhere)..... 249

Sent to Midshipman's schools (at Columbia, Cornell, Fort Schuyler, Notre Dame, or Northwestern), or to Pre-Midshipman's schools (at Asbury Park or Princeton)..... 353

Transferred to Naval R.O.T.C. units (at California, Harvard, Illinois, Michigan, Rensselaer, or Tufts)..... 177

Transferred to other V-12 units (at Bates, Brown, Columbia, Dartmouth, Harvard, Louisville, or Williams)..... 94

Transferred for "other indoctrination" (at the United States Naval Hospital, Chelsea, Mass.; Camp Endicott, Davisville, R. I.; or Camp McDonough, Plattsburg, N. Y.); or for "aviation duty" (at "Tarmac," Brooklyn, N. Y.)..... 58

Transferred to service academies (at Annapolis, Md., West Point, N. Y., or New London, Conn.)..... 11

From July, 1943, until the end of the November-March term of 1945-1946, the unit was housed and messed in the M.I.T. Graduate House, the 34 trainees remaining for instruc-

tion during the final term (April-June of 1946) being accommodated as to their living at Harvard.

The Institute's total reimbursement under the contract was $2,222,494, distributed as shown in Tabulation 5.

Tabulation 5	*1943–1944*	*1944–1945*	*1945–1946*	*Totals*
Commissioning Expense...	$ 7,025	$ 295	.....	$ 7,320
Decommissioning Expense.	.....	.....	$ 165	165
Instruction.....	446,177*	443,630†	129,315†	1,019,122
Textbooks and Instructional Supplies.....	34,325	13,609	399‡	48,333‡
Messing.....	360,397	357,552	127,799	845,748
Housing.....	109,576	119,513	64,768	293,857
Medical Supplies.....	3,446	3,391	1,112	7,949
TOTALS.....	$960,946	$937,990	$323,558	$2,222,494

*A payment of approximately $170.68 per trainee per term, which compares with the Institute's regular tuition fee of $300 per student per term.

† At a contract rate of $185 per trainee per term, based on the number "aboard" at the 20th day of each term.

‡Net reimbursement, deducting payments made to the Navy for "surplus" used material.

Captain Charles S. Joyce, United States Navy (retired), as senior naval officer at M.I.T., served as commanding officer of the V-12 unit from July 1, 1943, to February 1, 1945, upon which latter date he was relieved by Captain Roswell H. Blair, United States Navy (retired). Captain Blair was, in turn, relieved on December 4, 1945, by Captain William H. Buracker, United States Navy.

ENROLLMENT OF VETERANS

During the summer term of 1945-1946, the student body included 91 veterans of World War II enrolled under Public Laws 16 and 346, the former law providing greater benefits for men having a certain disability rating; during the fall and spring terms, the numbers of veterans in this category rose to 472 and 1,194, respectively. There were also, however, other veterans enrolled — commissioned personnel of the Army, Navy, and Coast Guard assigned by these services to M.I.T. as student officers on active duty. The increasing proportion of our *total registration* classifiable as veterans of World War II is, therefore, illustrated in Tabulation 6.

Tabulation 6	*Veterans Enrolled under P.L. 16 or 346 and Their Percentage of Total Registration*	*Student Officers of Army, Navy, and Coast Guard and Their Percentage of Total Registration*	*Total Veterans and Their Percentage of Total Registration*
Summer Term...	91 (4.6%)	132 (6.7%)	223 (11.3%)
Fall Term.....	472 (19.4%)	152 (6.2%)	624 (25.6%)
Spring Term.....	1,194 (41.3%)	183 (6.3%)	1,377 (47.7%)

Student Life

Housing. Contracts were let in September, 1945, for the Westgate project — 100 small houses on a 10-acre plot of land west of Massachusetts Avenue — built by the Institute for occupancy by married veterans attending as full-time students under the benefits of Public Laws 16 and 346. The hope was to have these houses ready by the beginning of the fall term in November, but unforeseen difficulties arising from circumstances beyond the Institute's control delayed matters. The first tenant moved in on February 11, 1946, and the 100th house was occupied on June 22.

A Housing Bureau was formally opened on October 22, 1945; its responsibility, besides that of receiving applications for Westgate, is to render assistance to married students and staff in finding outside accommodations, furnished or unfurnished, including temporary quarters where necessary. Despite the discouragements inherent in the acute postwar housing shortages, this bureau has discharged its responsibilities in a fashion which has evoked general admiration for its accomplishment.

Occupancy of the Graduate House by trainees of the V-12 unit ceased on February 22, and with the opening of the March term, 358 civilian students were accommodated there.

Athletics. Competition was carried on during 1945–1946 in 11 sports: basketball, crew, cross country, golf, lacrosse, rifle, soccer (inactive during 1944–1945), squash, swimming, tennis, and track. Fencing was also conducted on an informal basis, but five pre-war sports were not yet re-established: boxing, gymnastics, hockey, pistol, and wrestling. A freshman-sophomore field day was held on August 25.

Freshman Camps. Under the auspices of the Technology Christian Association, this feature of the pre-war Institute calendar, arranged to acquaint the incoming freshmen with extracurricular activities to be found in the student activity system, took place thrice during 1945–1946: on July 6–7, November 3, and March 4. In each instance the "camp" was held on the Institute grounds rather than at Camp Massapoag, the scene of pre-war freshman camps.

Student Aid

Distribution of student aid to undergraduates during 1945–1946 compared with 1944–1945 is set forth in Tabulation 7.

Tabulation 7	*1945–1946* Number	*Award*	*1944–1945* Number	*Award*
Freshman Scholarships	223	$37,231.25	186	$36,225
Other Undergraduate Scholarships	166	19,250.25	110	19,168
Total Scholarships	389	$56,481.50	296	$55,393
Undergraduate Loans	34	13,267.00	36	11,465
Total Aid to Undergraduates	359*	$69,748.50	298*	$66,858

* Allowing for individuals receiving both scholarship and loan.

Tabulation 7, however, does not include grants totaling $5,750 to 21 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 14 men to the extent of $3,780 during 1944–1945.

From both graduate and undergraduate students, the Loan Fund Board received 49 applications during 1945–1946 and acted favorably upon 45, or 92 per cent, $16,317 being loaned. For 1944–1945 the corresponding figures were: 47, 39, 83 per cent, and $12,215. Repayments to the Fund during 1945–1946 were $121,317 on principal account and $10,048 for interest, or a total of $131,365. Thus, for the fifth year in the history of

the fund, repayments on principal account exceeded the total of loans made, the excess being $105,000.

Tabulation 8	*At June 29, 1946*	*At June 30, 1945*	*Net Changes During 1945–1946*	
Items of Outgo				
Number of Men Receiving Loans...	2,626	2,594	up	32
Total Amount Loaned.....	$1,902,833	$1,889,313	up	$13,520*
Average Per Capita Loan.....	$724	$725	down	$1
Items of Income				
Number of Men Whose Indebtedness Has Been Completely Discharged.	1,850	1,678	up	172
Principal Repayments *in Advance*...	$521,636	$464,108	up	$57,528
Other Principal Repayments.....	$953,021	$892,028	up	$60,993
Total Principal Repayments.....	$1,474,657	$1,356,136	up	$118,521*
Total Principal Matured, Considering "Advance Repayments" as Matured When Paid.....	$1,510,521	$1,396,082	up	$114,439
Collection Ratio, i.e., Percentage of Maturities Paid.....	97.7	97.1	up	0.6
Matured Principal in Arrears.....	$30,252	$34,752	down	$4,500
Actual "Written off" Accounts.....	$5,611	$ 5,194	up	$417
Total Maturities Unpaid.....	$35,863	$39,946	down	$4,083
Interest Received.....	$203,935	$193,887	up	$10,048
Notes Outstanding.....	$422,564	$527,982	down	$105,418

*The actual amounts loaned and of principal repaid during 1945–1946 were $16,317 and $121,317 respectively. The figures of $13,520 and $118,521 do not include $2,797 of losses received in "legal settlements" effected during 1930–1945 which were previously debited against administrative operating expenses of M. I. T.

The cumulative record of the Fund from its establishment in 1930 up to June 29, 1946, appears in Tabulation 8, above. It is notable that the $203,935 received for interest up to June 29, 1946, was nearly six times the amount of matured principal then unpaid, $35,863.

The Student Employment Bureau of the Technology Christian Association placed a total of 275 individuals compared with 256 in 1944–1945, and those placed in 1945–1946 earned $47,277 compared with $56,101 the year before.

H. E. LOBDELL

DEAN OF THE GRADUATE SCHOOL

During the year it became evident that the colleges and universities would be unable to accommodate all applicants

who were qualified for graduate work, and the congestion in fields of science and engineering became particularly acute. The enrollment in our Graduate School during the fiscal year covered in this report — July 1, 1945, through June 30, 1946 — showed the greatest increase of any 12 months in the history of the Institute. On March 19, 1946, the graduate students numbered 925, and by June 30 it was apparent that registration in the fall term of 1946–1947 would exceed 1,100, as compared with 349 for the previous year in the fall term. In contrast to 1944–1945, the last war years, the preponderance of admissions has shifted from citizens of foreign countries to our own nationals.

The tentative limit of 850 graduate students recommended by the Faculty Committee on Stabilization of Enrollment was found to be inadequate in view of added facilities and staff, and the need to accept as many well-qualified students as we could possibly take and still offer full value of training and education to each student. Although fully aware of the needs of foreign countries for men trained at advanced levels in science and engineering, we nevertheless deemed it equitable to reduce the number of foreign students accepted in our increased Graduate School enrollment from 170 to about 100 by refusing further admissions until the lower number was reached through graduations and withdrawals.

During the year various new centers of research have been activated at the Institute, as set forth elsewhere, thus increasing facilities for thesis work of graduate students. Since supervision of thesis work has always been a factor in limitation of enrollment, these facilities are largely responsible for the several increases in numbers of admissions.

A general interest, generated no doubt by the war, has been shown for advanced work in Physics and Electronics. All fields have been the objective of so many applicants that standards of qualifications for admission have inevitably been raised. Many applicants whose academic qualifications were entirely acceptable in pre-war years have found this heightened competition has resulted in their being refused admission.

During the year the following Graduate Fellowships and Scholarships were established: Cabot Pigment Research and

National Lime Association Scholarships in Building Engineering and Construction, Clark Thread Company Fellowships in Textile Technology, Du Pont Postdoctoral Fellowship in Chemistry, Du Pont Fellowship in Mechanical Engineering, Eastman Kodak Company Fellowship in Electrical Engineering, Clarence J. Hicks Memorial Fellowship in Industrial Relations, Arthur D. Little Postdoctoral Fellowship in any department, Joe Lowe Corporation Fellowship in Food Technology, Owens-Illinois Glass Company Fellowship in Geology, Pan American Refining Corporation Fellowship in Chemical Engineering, Theodore B. Parker Memorial Fellowship in any department, Quaker Oats Company Scholarship in Food Technology, Republic Steel Corporation Fellowships in any field approved by the Department of Metallurgy, Standard Brands Fellowship in Food Technology, Chemical Engineering, or Biology, Standard Oil Company of Indiana Fellowship in Chemical Engineering, United Fruit Company Fellowship in Food Technology, and Westinghouse Educational Foundation Fellowships in Industrial Relations.

The mutual exchange fellowships have been inaugurated with the Imperial College of Science and Technology, London, and exchanges have been resumed with Switzerland and Scandinavia. Exchanges of graduate students with other European countries are in process of resumption.

One problem which has had to be faced by the Graduate School administration has been the unusually large numbers of active Army and Navy officers whom the services desired to have accepted for graduate study in various branches of science and engineering deemed essential for national security. While still recognizing the compelling needs of national necessity, the Institute has deemed it needful to request the armed services to restrict their applications to fields in which the Institute is considered to be uniquely fitted, and to curtail the numbers so as not to pre-empt an undue proportion of available places in the Graduate School in view of the flood of requests for admission from exservicemen. In this necessary restriction, the representatives of the various branches of the Army and Navy have been extremely understanding and co-operative.

As one aid to the recruitment and retention of essential civilian personnel on the staffs of the Naval Research Laboratory of Washington, D. C., several of its administrative scientific personnel have been appointed nonresident Faculty members of the Institute, and conditions have been agreed upon whereby graduate students of the Institute while in the employ of this laboratory in Washington proceed toward fulfillment of thesis requirements for advanced degrees of the Institute, in so far as supervised research is concerned, with no relaxation of requirements of doctoral examinations at the Institute conducted by Institute Faculty members, or other academic and residence requirements. This is an arrangement of a temporary nature to assist a Federal laboratory in meeting a critical need in respect to trained personnel in areas of admitted undersupply, and is made in the belief that national interests will be served thereby.

Graduate scholarship aid in the sum of $82,412 was extended to 271 applicants between July 1, 1945, and June 30, 1946.

A total of 243 advanced degrees was conferred in the same period, as follows: Doctor of Philosophy, 15; Doctor of Science, 15; Master of Science, 208; Master in City Planning, 5.

JOHN W. M. BUNKER

REGISTRAR

The fall term registration of September, 1946, showed a total enrollment of 5,100. This is an increase of 2,100, or 70 per cent, over the normal pre-war student body of 3,000.

The problem now facing the colleges is usually interpreted numerically as a need for 60 per cent more staff and a lesser percentage increase in facilities. This figure fails to measure the real magnitude of the educational problem and the personal contacts necessary in individually adjusting each new or former student to his program of studies and changed environment. This burden must be carried by the registration officers and the offices of the Director of Admissions, the Registrar, and the Dean of Students.

The registration of 5,100 this fall was an increase of 400 per cent over the civilian registration of approximately 1,100 in June, 1945. The normal number of new students admitted

before the war was 1,000 per year. Table A (opposite) shows that beginning in July, 1945, we have been admitting approximately 1,000 students every four months and over 2,300 this fall term, making a total of nearly 6,000 in 15 months. Moreover, the problems of adjusting the former undergraduates are much more complicated than those of any previous group experienced by the colleges. The strain on the academic personnel having the intimate contacts with the students has been most severe, and the registration officers and administrative staff carrying this burden are to be complimented on their patience and co-operation during this trying period of more than a year which has immediately followed the war period.

The statistics for the year 1945–1946 and summary statistics for preceding years follow (pages 44–62).

JOSEPH C. MACKINNON

TABLE A

New and Former Students Entering Each Term

July, 1945–September, 1946

Term Beginning	Undergraduates			Total Undergraduates	Graduates			Total Undergraduates and Graduates
	Entering Freshmen	College Transfers	Formers Returning		New	Formers Returning	Total Graduates	
July, 1945.....	558	109	43	710	65	19	84	794
November, 1945...	130	216	256	602	245	155	400	1,002
March, 1946.....	55	126	494	675	177	125	302	977
June, 1946.....	61	139	384	584	143	105	248	832
September, 1946... (Estimate)	660	75	1,100	1,835	350	170	520	2,355
Total.....	1,464	665	2,277	4,406	980	574	1,554	5,960

REPORT OF THE REGISTRAR FOR THE YEAR 1945–1946

All statistics on registration and staff for this year are as of July 30, 1945.

Statistics on registration and staff for previous years are as of November 1, with the following exceptions: 1943–1944 as of August 2, 1943; 1944–1945 as of November 27, 1944.

TABLE 1. REGISTRATION OF CIVILIAN STUDENTS SINCE THE FOUNDATION OF THE INSTITUTE

Year	Number of Students	Year	Number of Students	Year	Number of Students
1865–66	72	1892–93	1,060	1919–20	3,078
1866–67	137	1893–94	1,157	1920–21	3,436
1867–68	167	1894–95	1,183	1921–22	3,505
1868–69	172	1895–96	1,187	1922–23	3,180
1869–70	206	1896–97	1,198	1923–24	2,949
1870–71	224	1897–98	1,198	1924–25	2,938
1871–72	261	1898–99	1,171	1925–26	2,813
1872–73	348	1899–00	1,178	1926–27	2,671
1873–74	276	1900–01	1,277	1927–28	2,712
1874–75	248	1901–02	1,415	1928–29	2,868
1875–76	255	1902–03	1,608	1929–30	3,066
1876–77	215	1903–04	1,528	1930–31	3,209
1877–78	194	1904–05	1,561	1931–32	3,188
1878–79	188	1905–06	1,466	1932–33	2,831
1879–80	203	1906–07	1,397	1933–34	2,606
1880–81	253	1907–08	1,415	1934–35	2,507
1881–82	302	1908–09	1,461	1935–36	2,540
1882–83	368	1909–10	1,479	1936–37	2,793
1883–84	443	1910–11	1,506	1937–38	2,966
1884–85	579	1911–12	1,559	1938–39	3,093
1885–86	609	1912–13	1,611	1939–40	3,100
1886–87	637	1913–14	1,685	1940–41	3,138
1887–88	720	1914–15	1,816	1941–42	3,055
1888–89	827	1915–16	1,900	1942–43	3,048
1889–90	909	1916–17	1,957	1943–44	1,579
1890–91	937	1917–18	1,698	1944–45	1,198
1891–92	1,011	1918–19	1,819	1945–46	1,538

TABLE 2. THE CORPS OF INSTRUCTORS

	'33	'34	'35	'36	'37	'38	'39	'40	'41	'42	'43	'44	'45
Faculty Members of the Staff	235	245	245	244	267	273	282	285	292	313	319	317	330
Professors	88	83	87	78	87	90	98	99	95	97	97	107	113
Associate Professors	57	69	81	87	89	98	89	92	99	104	108	105	103
Assistant Professors	80	82	68	70	76	72	83	83	86	98	99	92	101
Ex-Officio	5	6	6	6	5	6	7	7	7	8	9	10	10
Instructors	5	5	3	3	3	3	3	3	2	3	3	—	—
Technical Instructors	—	—	—	—	—	—	—	—	1	1	1	1	1
Research Associates	—	—	—	—	7	4	2	1	2	2	2	2	2
Other Members of the Staff	263	272	284	291	331	368	401	396	395	370	306	222	252
Instructors	90	86	90	97	101	97	99	91	101	100	97	70	82
Technical Instructors	—	—	—	—	—	—	—	—	6	7	8	6	8
Teaching Assistants	—	—	—	—	—	—	—	—	—	—	1	—	—
Teaching Fellows	22	20	24	51	52	52	52	55	52	60	52	8	18
Assistants	43	70	76	64	69	79	78	85	87	75	49	44	47
Technical Assistants	31	28	—	—	—	—	—	—	—	—	—	—	—
Lecturers	25	25	24	19	29	28	31	31	17	18	16	7	7
Research Consultant	—	—	—	—	—	—	—	—	—	—	1	—	—
Research Associates	25	22	27	31	22	25	36	35	47	34	23	33	39
Research Assistants	21	18	30	24	42	72	90	91	84	64	59	54	51
Research Fellows (D. I. C.)	3	2	1	—	—	—	—	—	—	—	—	—	—
Research Fellows	3	1	12	5	16	15	15	8	—	—	—	—	—
National Research Council Fellows	—	—	—	—	—	—	—	—	1	—	—	—	—
Special Investigator	—	—	—	—	—	—	—	—	—	—	—	—	—
Staff Members (D. I. C.)	—	—	—	—	—	—	—	—	—	12	—	—	—
Total	498	517	529	535	598	641	683	681	687	683	625	539	582
Other Members of the Faculty	25	26	27	31	28	28	28	32	37	40	39	44	52
Professors: Emeriti	21	23	24	29	27	27	27	31	36	39	38	43	51
Retired	—	—	—	—	—	—	—	—	—	—	—	—	—
Non-Resident	4	3	3	2	1	1	1	1	1	1	1	1	1

TABLE 3-A. Classification of Civilian Students by Courses and Years

COURSE NAME AND NUMBER	1943–44 YEAR						1944–45 YEAR						1945–46 YEAR					
	1	2	3	4	G	Total	1	2	3	4	G	Total	1	2	3	4	G	Total
Aeronautical Engineering XVI	106	26	15	34	18	199	65	10	21	12	28	136	103	21	6	47	31	208
Architecture IV, IV-B	2	3	3	3	11	22	5	3	2	5	10	25	12	5	—	6	12	35
Architecture (IV) Fifth Year	—	—	—	8	—	8	—	—	—	5	—	5	—	—	—	5	—	5
Biology																		
†Quantitative VII	—	10	—	2	22	34	1	2	—	1	7	11	11	4	—	—	6	21
Physical VII-A	2	—	1	1	1	5	2	—	—	—	—	2	—	—	—	—	—	—
Building Engineering and Construction XVII	3	3	2	1	—	9	4	4	1	2	—	11	7	5	2	1	—	15
Business and Engineering Administration XV	27	8	8	16	9	68	30	7	12	8	4	61	38	17	8	6	4	73
Chemical Engineering X	127	49	16	14	33	239	79	9	35	21	41	185	132	28	3	25	32	220
Chemical Engineering Prac. X-A, X-B, X-C	—	—	—	21	18	39	—	—	—	—	—	—	—	—	—	—	—	—
Chemistry V	30	10	7	6	42	95	22	10	6	5	34	77	44	6	3	10	45	108
Civil Engineering I	27	12	7	11	15	72	19	9	8	4	22	62	17	7	4	8	27	63
Electrical Engineering VI	95	38	11	18	34	196	80	16	21	7	60	184	158	38	11	13	51	271
Electrical Engineering (Coöperative) VI-A	—	8	10	16	7	41	—	—	18	14	2	34	—	—	2	24	6	32
Food Technology VII-B	—	—	—	3	—	3	—	—	—	—	—	—	—	—	1	—	3	4
General Engineering IX-B	9	—	1	10	—	20	3	2	5	—	—	10	8	—	2	2	—	12
General Science IX-A	—	1	1	1	—	3	—	—	1	—	—	1	1	—	1	1	—	3
Geology XII	1	—	—	—	5	6	—	—	—	—	3	3	2	—	—	—	2	4
Industrial Economics	—	—	—	—	8	8	—	—	—	—	5	5	—	—	—	—	4	4
Marine Transportation XIII-C	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Mathematics XVIII	4	5	1	2	7	19	5	2	1	2	10	20	10	10	4	—	12	36
Mechanical Engineering II	71	28	13	53	29	194	49	9	32	12	35	137	97	23	10	16	30	176
Torpedo Engineering (in Mech. Eng. Dept.)	—	—	—	—	6	6	—	—	—	—	2	2	—	—	—	—	2	2
Metallurgy III	6	2	5	11	14	38	4	1	4	2	24	35	6	2	2	3	18	31
Ceramics (in Metallurgy Department)	—	—	—	—	2	2	—	—	—	—	1	1	—	—	—	—	—	—
Meteorology XIV	—	—	—	—	19	19	1	—	—	3	11	15	2	—	3	—	7	12
Naval Architecture and Marine Eng. XIII	21	8	8	13	1	51	16	3	2	4	—	25	14	6	2	4	—	26
Naval Construction and Engineering XIII-A	—	—	21	41	17	79	—	—	51	—	24	75	—	—	—	28	53	81
Physics VIII	25	16	9	13	37	100	22	6	11	11	23	73	41	10	4	8	30	93
Sanitary Engineering XI	—	—	—	1	2	3	—	—	—	—	3	3	—	—	—	—	3	3
Total	557	227	139	299*	357	1,579	407	93	231	118*	349	1,198	703	182	68	207*	378	1,538

* These totals include fifth year in Architecture IV.
† Includes Public Health, Course VII-T, through June 1944.

TABLE 3-B. Classification of All Students by Courses and Years

Civilian and Navy V-12

Course Name and Number	July 30, 1945										November 10, 1945									March 19, 1946					
	Year										Year									Year					
	1	2		3		4		G	Total		1	2	3		4		G	Total		1	2	3	4	G	Total
	C	C	N	C	N	C	N	C	C	N	C	C	C	N	C	N	C	C	N	C	C	C	C	C	C
Aeronautical Engineering XVI	103	21	1	6	50	47	50	31	208	101	111	34	36	8	44	52	56	281	60	65	58	33	56	66	278
Architecture IV, IV-B	12	5	—	—	—	6	—	12	35	—	8	10	4	—	6	—	15	43	—	11	17	16	5	25	74
Architecture (IV) Fifth Year	—	—	—	—	—	5	—	—	5	—	—	—	—	—	7	—	—	7	—	—	—	—	10	—	10
Biology VII	11	4	—	—	12	—	—	6	21	12	5	5	10	—	—	—	13	33	—	2	17	11	2	15	47
Building Engineering and Const. XVII	7	5	—	2	—	1	2	—	15	2	9	7	10	—	2	1	—	28	1	3	23	9	5	—	40
Business and Engineering Admin. XV	38	17	—	8	2	6	3	4	73	5	51	44	34	—	11	4	8	148	4	34	94	59	32	19	238
Chemical Engineering X	132	28	—	3	2	25	16	32	220	18	134	38	39	—	27	15	77	315	15	58	117	69	28	115	387
Chemistry V	44	6	—	3	—	10	—	45	108	—	46	5	12	—	8	—	58	129	—	16	39	13	10	92	170
Civil Engineering I	17	7	—	4	2	8	8	27	63	10	24	8	12	3	8	6	35	87	9	13	20	21	18	31	103
Electrical Engineering VI	158	38	14	11	23	13	54	51	271	91	161	67	40	6	21	40	99	388	46	91	154	87	46	127	505
Electrical Engineering (Coöp.) VI-A	—	—	—	2	—	24	—	6	32	—	—	—	14	—	17	—	8	39	—	—	—	33	11	13	57
Food Technology VII-B	—	—	—	1	—	—	—	3	4	—	—	—	1	—	1	—	3	5	—	1	1	3	4	13	22
General Engineering IX-B	8	—	—	2	—	2	—	—	12	—	5	—	6	—	4	—	—	15	—	—	—	4	11	—	15
General Science IX-A	1	—	—	1	—	1	—	—	3	—	2	—	1	—	1	—	—	4	—	—	—	—	3	—	3
Geology XII	2	—	—	—	—	—	—	2	4	—	2	—	—	—	—	—	8	10	—	1	1	—	1	12	15
Group Psychology	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	—	—	—	—	3	3
Industrial Economics	—	—	—	—	—	—	—	4	4	—	—	—	—	—	—	—	7	7	—	—	—	—	—	13	13
Marine Transportation XIII-C	—	—	—	—	—	—	—	—	—	—	1	1	—	—	1	—	—	3	—	1	4	1	1	—	7
Mathematics XVIII	10	10	—	4	—	—	—	12	36	—	5	6	8	—	2	—	22	43	—	5	7	9	4	25	50
Mechanical Engineering II	97	23	36	10	4	16	60	30	176	100	120	44	32	1	28	47	65	289	48	79	122	65	33	76	375
Torpedo Eng. (In Mech. Eng. Dept.)	—	—	—	—	—	—	—	2	2	—	—	—	—	—	—	—	13	13	—	—	—	—	—	11	11
Metallurgy III	6	2	—	2	—	3	1	18	31	1	4	4	—	—	4	1	29	41	1	5	14	10	8	42	79
Ceramics (in Metallurgy Department)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	2	2
Meteorology XIV	2	—	—	3	17	—	24	7	12	41	3	1	2	1	—	23	10	16	24	—	1	2	2	12	17
Naval Arch. and Marine Eng. XIII	14	6	—	2	20	4	21	—	26	41	13	5	8	—	4	23	—	30	23	7	14	9	14	2	46
Naval Construction and Eng. XIII-A	—	—	—	—	—	28	—	53	81	—	—	—	—	—	27	—	54	81	—	—	—	—	—	79	79
Physical Biology VII-A	—	—	—	—	—	—	—	—	—	—	2	3	—	—	1	—	—	6	—	—	—	1	1	—	2
Physics VIII	41	10	—	4	3	—	5	30	93	8	38	13	21	1	10	4	98	180	5	17	60	28	4	124	233
Sanitary Engineering XI	—	—	—	—	—	—	—	3	3	—	—	—	—	—	—	—	3	3	—	1	—	—	—	8	9
Total	703	182	51	68	135	207*	244	378	1,538	430	744	295	290	20	234*	216	684	2,247	236	410	763	483	309*	925	2,890

*This total includes fifth year in Architecture.

C=Civilian. N=Navy.

TABLE 4-A

Classification of Civilian Students by Courses, Options, and Years

COURSE No.	Name	Option	Opt.	YEAR 1 Opt.	1 Tot.	2 Opt.	2 Tot.	3 Opt.	3 Tot.	4 Opt.	4 Tot.	G Opt.	G Tot.	Total	Course Number
I	Civil Engineering			—	17	—	7	—	4	—	8	—	27	63	I
II	Mechanical Engineering			97		23		10		—		28			II
		1. General Mechanical Eng.	1	—		—		—		6		—			
		2. Engineering Science	2	—	97	—	23	—	10	2	16	—	32	178	
		3. Automotive Engineering	3	—		—		—		8		—			
	Textile Technology			—		—		—		—		2			
	Torpedo Engineering			—		—		—		—		2			
III	Metallurgy			6		2		2		—		—			III
		1. Metallurgy	1	—	6	—	2	—	2	3	3	16	18	31	
		2. Mineral Dressing	2	—		—		—		—		2			
IV	Architecture			—	10	—	4	—	—	—	6	—	1	26	IV
	Fifth Year			—	—	—	—	—	—	—	5	—	—		
IV-B	City Planning			—	2	—	1	—	—	—	—	—	11	14	IV-B
V	Chemistry			—	44	—	6	—	3	—	10	—	45	108	V
VI	Electrical Engineering			158		—		—		—					VI
		1. Electric Power	1	—		12		3		1					
		3. Electrical Communications	3	—	158	13	38	4	11	9	13	—	51	271	
		4. Electronic Applications	4	—		13		4		3					
VI-A	Electrical Engineering — Coöperative			—	—	—	—	—	2	—	24	—	6	32	VI-A
VII	Quantitative Biology			—	11	—	4	—	—	—	—	—	6	21	VII
VII-B	Food Technology			—	—	—	—	—	1	—	—	—	3	4	VII-B
VIII	Physics			—	41	—	10	—	4	—	8	—	30	93	VIII
IX-A	General Science			—	1	—	—	—	1	—	1	—	—	3	IX-A
IX-B	General Engineering			—	8	—	—	—	2	—	2	—	—	12	IX-B
X	Chemical Engineering			—	132	—	28	—	3	—	25	—	32	220	X
XI	Sanitary Engineering			—	—	—	—	—	—	—	—	—	3	3	XI
XII	Geology			—	2	—	—	—	—	—	—	—	2	4	XII
XIII	Naval Architecture and Marine Engineering			—	14	—	6	—	2	—	4	—	—	26	XIII
XIII-A	Naval Construction and Engineering			—	—	—	—	—	—	—	28	—	53	81	XIII-A
XIV	Meteorology			—	2	—	—	—	3	—	—	—	7	12	XIV
XV	Business and Engineering Administration														XV
		A. Physical Sciences	A	31	38	15	17	5	8	5	6	—	4	73	
		B. Chemical Sciences	B	7		2		3		1					
XVI	Aeronautical Engineering			103	103	21	21	6	6	21	47	—	31	208	XVI
	Special Navy			—		—		—		26					
XVII	Building Engineering and Construction			—	7	—	5	—	2	—	1	—	—	15	XVII
XVIII	Mathematics			—	10	—	10	—	4	—	—	—	12	36	XVIII
	Industrial Economics			—	—	—	—	—	—	—	—	—	4	4	Ind. Econ.
	Total			703		182		68		207*		378		1,538	Total

*This total includes fifth year in Architecture.

TABLE 4-B

Classification of Special Civilian Students by Courses and Years

(Included in Table 4-A)

COURSE	YEAR					TOTAL	COURSE
	1	2	3	4	G		
I Civil Engineering	—	—	—	—	1	1	I
II Mechanical Engineering	—	—	2	—	4	6	II
Textile Technology	—	—	—	—	1	1	
III Metallurgy	—	—	—	2	3	5	III
IV Architecture	—	—	—	1	—	1	IV
IV-B City Planning	—	1	—	—	2	3	IV-B
V Chemistry	—	—	—	3	7	10	V
VI Electrical Engineering	—	—	—	—	4	4	VI
VII Quantitative Biology	—	—	—	—	2	2	VII
VIII Physics	—	1	1	—	6	8	VIII
IX-B General Engineering	—	—	1	—	—	1	IX-B
X Chemical Engineering	—	—	—	—	2	2	X
XIII Naval Architecture and Marine Engineering	—	—	—	1	—	1	XIII
XIII-A Naval Construction and Engineering	—	—	—	—	10	10	XIII-A
XIV Meteorology	—	—	2	—	1	3	XIV
XV-A Business and Engineering Administration	—	1	—	1	2	4	XV-A
XV-B Business and Engineering Administration	—	—	—	1	—	1	XV-B
XVI Aeronautical Engineering	—	—	1	—	—	1	XVI
XVIsp.	—	—	—	26	—	26	XVIsp.
XVIII Mathematics	—	2	1	—	8	11	XVIII
First Year	10	—	—	—	—	10	First Year
Total	10	5	8	35	53	111	Total

TABLE 4-C

Classification of Former Civilian Students Who Returned This Year*

(Included in Table 4-A)

COURSE	YEAR					TOTAL	COURSE
	1	2	3	4	G		
I Civil Engineering	—	2	1	—	1	4	I
II Mechanical Engineering	—	3	1	—	—	4	II
III Metallurgy	—	—	—	—	—	—	III
IV Architecture	—	2	—	1	1	4	IV
V Chemistry	—	—	—	1	1	2	V
VI Electrical Engineering	—	3	—	—	1	4	VI
VI-A Electrical Engineering, Coöperative	—	—	2	—	—	2	VI-A
VII-B Food Technology	—	—	1	—	1	2	VII-B
VIII Physics	—	—	1	—	2	3	VIII
IX-A General Science	—	—	1	—	—	1	IX-A
IX-B General Engineering	—	—	—	—	—	—	IX-B
X Chemical Engineering	—	—	1	2	4	7	X
XIII Naval Architecture and Marine Engineering	—	—	—	—	—	—	XIII
XIV Meteorology	—	—	—	—	3	3	XIV
XV Business and Engineering Administration	—	—	2	1	1	4	XV
XVI Aeronautical Engineering	—	2	2	1	—	5	XVI
XVIII Mathematics	—	2	—	—	—	2	XVIII
First Year	3	—	—	—	—	3	First Year
Total	3	14	12	6	15	50	Total

* Excludes 12 special students.

TABLE 5. CLASSIFICATION OF CIVILIAN STUDENTS BY COURSES SINCE 1938

	1938–39	1939–40	1940–41	1941–42	1942–43	1943–44	1944–45	1945–46
Engineering Courses . . . . . *Total*	2,379	2,418	1,922	1,836	1,861	1,276	976	1,225
Aeronautical Engineering XVI	230	245	237	147	169	199	136	208
Architectural Engineering IV-A	2	—	—	—	—	—	—	—
Building Engineering and Construction XVII . . .	29	26	17	14	16	9	11	15
Business and Engineering Administration XV . . .	265	251	223	205	177	68	61	73
Chemical Engineering X, X-A, X-B, X-C	524	497	338	348	360	278	185	220
Civil Engineering I	114	104	80	71	72	72	62	63
Army Engineer (in Civil Engineering Dept.) . . .	17	13	—	—	—	—	—	—
Electrical Engineering VI, VI-A	448	432	325	256	287	237	218	303
‡Electrochemical Engineering XIV	9	2	—	—	—	—	—	—
General Engineering IX-B	73	68	42	36	38	20	10	12
Mechanical Engineering II, II-A	401	433	353	345	330	200	139	178
Army Ordnance (in Mechanical Engineering Dept.)	10	22	4	—	—	—	—	—
*Metallurgy III	108	124	129	125	88	40	36	31
‡Meteorology XIV	—	—	—	110	141	19	15	12
*Mining Engineering III	25	10	—	—	—	—	—	—
Naval Architecture and Marine Eng. XIII, XIII-C	89	139	121	125	115	52	25	26
Naval Construction and Engineering XIII-A . . .	28	42	49	46	62	79	75	81
Sanitary Engineering XI	7	10	4	8	6	3	3	3
Science Courses . . . . . *Total*	555	543	453	427	341	265	187	269
§Biology and Public Health VII, VII-A, VII-B, VII-T	86	91	82	81	79	42	13	21
**Food Technology VII-B	—	—	—	—	—	—	—	4
Chemistry V	203	194	162	151	112	95	77	108
General Science IX-A	33	30	22	21	12	3	1	3
Geology XII	45	36	34	27	13	6	3	4
Mathematics XVIII	28	40	30	27	22	19	20	36
Physics VIII	160	152	123	120	103	100	73	93
Architecture IV, IV-B, IV-C . . . . . *Total*	100	108	112	92	77	30	30	40
Economics and Eng. or Sci., and Industrial Eng. *Total*	4	1	3	13	15	8	5	4
Unclassified . . . . . *Total*	55	30	64	60	39	—	—	—
†*First Year (not including Course IV)* . . . . . *Total*	—	—	584	627	715	—	—	—
Grand Total	3,093	3,100	3,138	3,055	3,048	1,579	1,198	1,538

* June 1940, Mining Engineering discontinued. Metallurgy, formerly Course XIX, changed to Course III.
† From September 1940 to November 1942, First Year Students not required to designate choice of course except for Course IV.
‡ June 1940, Electrochemical Engineering discontinued. June 1941, Meteorology, formerly included in Aeronautical Engineering, changed to Course XIV.
§ June 1944, Public Health discontinued. ** Prior to July 1945, included in Biology and Public Health.

TABLE 6

GEOGRAPHICAL CLASSIFICATION OF CIVILIAN STUDENTS SINCE 1941

UNITED STATES	1941	1942	1943	1944	1945
North Atlantic . . . . . Total	2,056	2,068	1,002	694	951
Connecticut	116	142	61	48	53
Maine	28	30	12	6	8
Massachusetts	896	906	445	319	450
New Hampshire	28	32	12	10	8
New Jersey	178	168	73	47	72
New York	586	566	303	198	276
Pennsylvania	177	170	76	46	62
Rhode Island	35	41	12	16	21
Vermont	12	13	8	4	1
South Atlantic . . . . . Total	167	192	104	63	92
Delaware	10	12	7	4	4
District of Columbia	42	41	32	21	26
Florida	25	32	14	7	11
Georgia	13	11	1	2	4
Maryland	29	36	14	14	18
North Carolina	16	12	9	1	3
South Carolina	1	6	4	5	3
Virginia	20	30	11	4	17
West Virginia	11	12	12	5	6
South Central . . . . . Total	103	98	45	35	44
Alabama	9	10	5	2	6
Arkansas	8	8	2	3	2
Kentucky	18	14	4	3	3
Louisiana	9	5	5	4	7
Mississippi	8	6	2	5	5
Tennessee	18	20	12	3	7
Texas	33	35	15	15	14
North Central . . . . . Total	377	363	169	123	151
Illinois	103	106	51	31	45
Indiana	23	19	8	6	7
Iowa	5	5	2	2	2
Kansas	7	13	4	4	7
Michigan	47	39	26	13	16
Minnesota	10	20	6	11	10
Missouri	44	39	18	19	23
Nebraska	9	10	7	3	3
North Dakota	4	5	2	2	2
Ohio	99	90	35	26	24
South Dakota	3	3	—	—	—
Wisconsin	23	14	10	6	12
Western . . . . . Total	145	136	72	41	56
Arizona	—	3	2	—	2
California	45	42	26	14	21
Colorado	22	19	8	2	1
Idaho	1	1	—	—	—
Montana	8	7	4	2	1
Nevada	—	1	1	—	1
New Mexico	3	4	2	—	1
Oklahoma	19	11	8	8	7
Oregon	15	16	10	3	4
Utah	7	4	4	4	2
Washington	23	27	7	7	12
Wyoming	2	1	—	1	4
Territories and Dependencies . . . . Total	12	13	12	10	7
Alaska	1	—	—	—	1
Canal Zone	1	1	—	—	—
Hawaii	4	5	2	2	1
Puerto Rico	6	7	10	8	5
Total for United States	2,860	2,870	1,404	966	1,301

(Continued on page 51)

TABLE 6 — (*Continued*)

Foreign Countries	1941	1942	1943	1944	1945
Total	195	178	175	232	237
Argentina	4	7	9	12	5
Australia	1	—	—	—	—
Bahamas	—	1	—	—	—
Barbados	—	—	—	—	—
Belgium	—	—	—	—	—
Belgian Congo	—	—	—	—	1
Bolivia	—	2	1	1	1
Brazil	14	13	11	15	11
British West Indies	2	1	1	1	2
Canada	24	21	12	9	10
Chile	—	3	2	3	3
China	37	31	34	82	69
Colombia	6	4	3	5	3
Costa Rica	—	—	—	—	1
Cuba	15	15	14	10	12
Czechoslovakia	—	—	—	1	—
Denmark	1	—	—	—	—
Dominican Republic	1	1	2	1	—
Ecuador	1	1	—	1	1
Egypt	—	—	—	1	1
England	1	—	—	—	—
Finland	1	1	—	—	—
France	2	—	—	—	2
Germany	1	—	—	—	—
Greece	1	1	—	—	—
Guatemala	2	4	3	3	4
Haiti	—	—	1	—	—
Honduras	2	1	—	—	2
Iceland	—	1	1	2	5
India	11	7	7	21	27
Iran	1	1	1	2	4
Iraq	—	—	—	1	9
Italy	1	—	—	—	—
Japan	—	—	—	—	—
Lebanon	—	—	—	1	1
Mexico	9	12	10	10	9
Netherlands	1	—	—	1	1
New Zealand	—	—	—	—	—
Nicaragua	—	1	—	—	—
Norway	4	—	—	—	1
Palestine	—	—	—	—	1
Panama	—	—	—	4	5
Peru	6	7	10	10	13
Philippines	11	5	2	—	—
Poland	—	—	—	—	2
Portugal	2	1	—	—	—
Rhodesia	—	—	—	—	—
Roumania	2	—	—	—	—
Salvador	1	1	1	1	—
South Africa	—	1	—	2	3
Spain	—	—	—	—	—
Straits Settlements	1	1	1	—	1
Sweden	—	—	—	—	—
Switzerland	1	2	—	—	—
Syria	1	—	—	—	—
Thailand	4	—	—	—	—
Turkey	16	17	35	18	15
Union of South Africa	1	1	1	—	2
Uruguay	2	5	3	1	2
Venezuela	4	8	9	13	8
Grand Total, United States and Foreign	3,055	3,048	1,579	1,198	1,538

TABLE 7. New Civilian 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	22	8	8	3	41
Second Year	4	4	—	3	11
Third Year	—	3	3	4	10
Fourth Year	—	—	—	29	29
Graduate Year	—	—	9	36	45
Total	26	15	20	75	136

TABLE 8

Women Students Classified by Courses and Years

COURSE	YEAR					Total
	1	2	3	4	G	
II Mechanical Engineering	1	—	—	—	2	3
IV Architecture	—	—	—	2	—	2
Fifth Year	—	—	—	1	—	1
IV-B City Planning	—	—	—	—	3	3
V Chemistry	1	4	—	2	16	23
VI Electrical Engineering	—	1	—	1	—	2
VII Quantitative Biology	2	1	—	—	5	8
VIII Physics	2	—	1	1	2	6
X Chemical Engineering	1	—	—	—	—	1
XII Geology	—	—	—	—	1	1
XIV Meteorology	—	—	—	—	2	2
XV-A Business and Engin. Admin.	—	1	—	—	—	1
XVI Aeronautical Engineering	2	—	2	2	—	6
XVIII Mathematics	1	2	—	—	3	6
Industrial Economics	—	—	—	—	3	3
Unclassified Special	—	—	—	1	—	1
Total	10	9	3	10	37	69

TABLE 9

Old and New Civilian Students

Year	1940–41	1941–42	1942–43	1943–44	1944–45	1945–46
Students registered at end of last academic year (including specials)	1,973	1,897	1,936	855	500	653
Students who have previously attended the Institute, but were not registered at end of last academic year (including specials)	127	77	84	37	98	62
New students who entered by examination	229	318	212	190	118	313
New students who entered without examination	303	264	462	351	266	336
New students who entered from other colleges as candidates for degrees	404	367	326	124	179	136
New students (specials, not candidates for degrees)	102	132	28	22	37	38
Total	3,138	3,055	3,048	1,579	1,198	1,538

TABLE 10. List of American Colleges and Universities with Number of Graduates Attending the Institute

College		College		College	
Alabama Poly. Institute	2	Mass. State College	1	University of Chicago	3
Amherst College	1	Middlebury College	1	University of Cincinnati	2
Armour Inst. of Technology	2	Mississippi State College	1	University of Delaware	2
Bard College	1	Missouri School of Mines	2	University of Florida	1
Bates College	1	Montana School of Mines	1	University of Illinois	7
Birmingham-Southern Col.	1	Montana State College	1	University of Kansas	1
Boston Teachers' College	1	Mt. Holyoke College	2	University of Michigan	5
Boston University	2	Newcomb College	1	University of Minnesota	5
Bowdoin College	1	New Jersey Coll. for Women	1	University of Missouri	1
Brooklyn College	2	New Mexico College of Agric. and Mechanic Arts	1	University of New Hampshire	1
Brown University	1	New York University	4	University of North Dakota	2
Bryn Mawr College	1	North Carolina State Coll.	2	University of Notre Dame	1
California Inst. of Tech.	3	North Central College	1	University of Oklahoma	2
Carnegie Inst. of Technology	1	North Dakota Agric. Coll.	1	University of Pennsylvania	3
Case School of App. Science	2	Northeastern University	8	University of Pittsburgh	2
Chicago Teachers' College	1	Ohio Wesleyan University	1	University of Rochester	1
Clarkson College of Tech.	1	Pomona College	1	Univ. of Southern California	2
Clemson College	1	Pratt Institute	1	University of Utah	3
College of the City of N. Y.	3	Purdue University	5	University of Virginia	2
College of Wooster	1	Queens College (N. Y.)	1	University of Washington	5
Columbia University (N. Y.)	6	Radcliffe College	1	Vanderbilt University	1
Cornell University	3	Rensselaer Polytechnic Inst.	2	Vassar College	3
Dartmouth College	2	Simmons College	3	Virginia Military Institute	1
Dickinson College	1	Smith College	1	Virginia Polytechnic Inst.	1
Drew University	1	Southwestern College	1	Washington-Jefferson Coll.	1
Drexel Inst. of Technology	1	Southwest. Louisiana Inst. of Liberal and Tech. Learning	2	Wellesley College	1
Duke University	1	Springfield College	1	Wesleyan University	1
E. Texas State Teachers' Col.	1	Stanford University	3	Weston College	1
Emmanuel College	3	State Coll. of Washington	1	West Virginia University	1
Fordham University	1	State University of Iowa	2	Wheaton College (Ill.)	1
Georgetown University	2	Stevens Institute of Tech.	1	William Jewell College	2
Georgia School of Tech.	4	Syracuse University	4	Williams College	1
Harvard University	8	Temple University	1	Woodstock College	2
Howard College	1	Texas College of Mines	1	Worcester Polytechnic Inst.	4
Hunter College	1	Texas Technological Coll.	1	Yale University	5
Illinois Inst. of Technology	1	Tri-State College	1		
Johns Hopkins University	2	Tufts College	2	Total	363
Kansas State Coll. of Agric. and Applied Science	2	Tulane Univ. of Louisiana	4		
Lehigh University	5	Union College (N. Y.)	1	Number of American Colleges Represented	121
Linfield College	1	U. S. Coast Guard Academy	10	Number of Foreign Colleges Represented (not listed)	59
Louisiana State Univ. and Agric. and Mech. College	3	U. S. Military Academy	1	Total	180
Marquette University	1	U. S. Naval Academy	43		
Mass. Inst. of Technology	79	University of California	3		

TABLE 11

Regular Civilian Students from Colleges Classified by Courses

COURSE	No Previous Degree			Graduates of Other Colleges					Graduates of M. I. T. Taking Graduate Work		
	Entered			Entered							
				July 1945		Previous Years					
	July 1945	Previous Years	Total	Undergrad.	Grad.	Undergrad.	Grad.	Total	S.B. Degree 6-'45	Other Graduates	Total
Aeronautical Engineering XVI	—	16	16	—	1	11	18	30	—	2	2
Special XVI	—	—	—	—	10	—	—	10	—	—	—
Architecture IV, IV-B	—	2	2	1	2	—	4	7	—	4	4
Biology VII	—	1	1	—	—	1	4	5	—	—	—
Building Engineering and Construction XVII	—	1	1	—	—	—	—	—	—	—	—
Business and Engineering Administration XV	2	4	6	2	—	1	—	3	1	1	2
Chemical Engineering X	1	4	5	—	4	1	20	25	2	4	6
Chemistry V	—	4	4	—	7	—	20	27	2	9	11
Civil Engineering I	—	8	8	—	5	1	18	24	—	3	3
Electrical Engineering VI, VI-A	7	15	22	3	4	3	34	44	9	6	15
Food Technology VII-B	—	—	—	—	—	—	2	2	—	1	1
General Engineering IX-B	—	—	—	—	—	—	—	—	—	—	—
General Science IX-A	—	1	1	—	—	—	—	—	—	—	—
Geology XII	—	—	—	—	—	—	2	2	—	—	—
Industrial Economics	—	—	—	—	1	—	3	4	—	—	—
Mathematics XVIII	1	—	1	—	1	—	3	4	—	—	—
Mechanical Engineering II	1	10	11	1	1	22	18	42	2	6	8
Metallurgy III	—	2	2	1	3	—	9	13	—	3	3
Meteorology XIV	1	—	1	—	—	—	6	6	—	—	—
Naval Architecture and Marine Eng. XIII	—	5	5	—	—	3	—	3	—	—	—
Naval Construction and Engineering XIII-A	—	—	—	28	—	—	43	71	—	—	—
Physics VIII	1	6	7	—	5	—	11	16	1	7	8
Sanitary Engineering XI	—	—	—	—	1	—	2	3	—	—	—
First Year	41	—	41	—	—	—	—	—	—	—	—
Total	55	79	134	36	45	43	217	341	17	46	63

TABLE 12. Number of Degrees Awarded in October 1945, February 1946, and June 1946

Name of Course	S.B.			B.Arch. and B.C.P.			S.M.			M.Arch. and M.C.P.			Ph.D.			Sc.D.			Total		
	Oct.* 1945	Feb.† 1946	June‡ 1946	Oct. 1945	Feb. 1946	June 1946	Oct. 1945	Feb. 1946	June 1946	Oct. 1945	Feb. 1946	June 1946	Oct. 1945	Feb. 1946	June 1946	Oct. 1945	Feb. 1946	June 1946	Oct. 1945	Feb. 1946	June 1946
Aeronautical Engineering	6	57	12	—	—	—	8	6	26	—	—	—	—	—	—	—	—	—	14	63	38
Architecture	—	—	—	—	3	2	—	—	—	—	—	—	—	—	—	—	—	—	—	3	2
Biology	—	—	—	—	—	—	2	1	—	—	—	—	—	—	2	—	—	—	2	1	2
Building Engineering and Construction	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Business and Engineering Admin.	1	5	9	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2	5	9
Ceramics	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chemical Engineering	6	31	12	—	—	—	5	7	10	—	—	—	—	—	—	2	4	1	13	42	23
Chemistry	2	2	3	—	—	—	1	1	1	—	—	—	1	1	3	—	—	—	4	4	7
City Planning	—	—	—	—	—	—	—	—	—	2	3	—	—	—	—	—	—	—	2	3	—
Civil Engineering	3	6	3	—	—	—	—	13	5	—	—	—	—	—	—	1	1	1	4	20	9
Electrical Engineering	10	50	26	—	—	—	11	10	15	—	—	—	—	—	—	—	—	—	21	60	41
Food Technology	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	2
General Engineering	1	1	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	4
General Science	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Geology	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	2
Industrial Economics	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2	—	—	—	—	1	2
Marine Engineering	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Marine Transportation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mathematics	—	1	1	—	—	—	—	3	1	—	—	—	—	1	2	—	—	—	—	5	4
Mechanical Engineering	10	55	17	—	—	—	3	17	12	—	—	—	—	—	—	—	1	—	13	73	29
Metallurgy	—	1	3	—	—	—	2	1	2	—	—	—	—	—	—	1	—	—	3	2	5
Meteorology	—	23	—	—	—	—	2	2	3	—	—	—	—	—	—	—	1	1	2	26	4
Naval Arch. and Marine Engineering	1	15	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	15	8
Naval Construction and Engineering	—	—	—	—	—	—	—	—	16	—	—	—	—	—	—	—	—	—	—	—	16
Physical Biology	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Physics	2	8	3	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	2	9	3
Quantitative Biology	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sanitary Engineering	—	—	—	—	—	—	1	1	2	—	—	—	—	—	—	—	—	—	1	1	2
Textile Technology	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	2	—
Without Course Classification	—	—	—	—	—	—	9	4	1	—	—	—	—	—	—	—	—	—	9	4	1
Total	42	255	105	—	3	2	45	68	95	2	3	—	1	4	10	4	7	4	94	340	216

* Includes 15 Navy V-12 students.
† Includes 178 Navy V-12 students.
‡ Includes 23 Navy V-12 students.

TABLE 13

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

Class (Calendar Year)	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			1						1	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			5	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					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 57)

TABLE 13 — (*Continued*)

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

Class (Calendar Year)	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*	Food Technology	General Eng.	General Science or General Course	Geology	Mathematics	Mechanical Eng. (Inc. II-A)	Metallurgy**	Meteorology	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	8	—	—	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	300	
1920 . .	—	—	19	2	—	48	63	—	6	52	30	9	—	1	4	—	—	55	—	—	—	13	12	2	2	318	2,963
1921 . .	—	—	11	3	—	70	92	—	9	98	75	15	—	15	—	3	—	128	—	—	—	24	18	1	3	565	
1922 . .	—	—	32	8	—	126	98	15	11	65	109	25	—	25	1	8	—	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 . .	36	—	—	6	7	59	54	8	28	22	79	—	—	23	5	8	6	90	29	—	—	—	18	23	—	501	
1942 . .	39	—	—	17	3	61	60	8	34	16	66	—	—	20	11	5	4	98	34	—	—	—	29	25	1	531	
1943 . .	38	—	—	10	5	49	49	14	21	14	83	—	—	18	11	2	6	80	24	—	—	—	33	14	1	472	
1944 . .	57	—	—	4	3	28	41	20	12	18	47	—	—	14	4	1	2	78	8	—	—	—	37	20	2	396	
1945 . .	22	—	—	1	1	22	36	—	5	9	45	—	—	6	1	—	5	70	3	—	—	—	13	16	—	255	
§1946 . .	69	—	—	—	2	14	43	—	5	9	76	—	1	5	1	—	2	72	4	23	—	—	23	11	—	360	
Total . .	616	172	865	339	152	1,888	1,874	239	937	2,374	3,339	301	1	540	248	91	92	3,533	154	23	5	880	671	403	264	20,001	

* 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 February and June degrees.

TABLE 14

Degrees of Master of Science Awarded

Class (Calendar Year)	Aeronautical 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)	Geology	Marine Engineering	Mathematics	Mech. Eng. (Inc. II-A)	Metallurgy	Meteorology	Naval Architecture	Naval Construction and Eng.	Petroleum Engineering	Physics	Sanitary Engineering	Without Course Classification	Total
1886	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
1887	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
1888	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1889	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1890	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	—	—	—	—	—	—	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	—	—	—	3	—	1	—	—	17
1910	—	6	1	—	—	—	—	1	2	—	1	—	—	—	1	—	—	—	7	—	—	—	—	19
1911	—	5	2	—	—	—	—	2	2	—	4	—	—	—	2	—	—	—	3	—	—	—	—	20
1912	—	4	2	—	—	—	—	3	3	—	2	—	—	—	—	—	—	—	4	—	—	2	—	20
1913	—	4	1	—	—	7	—	—	1	—	1	1	—	—	2	—	—	—	2	—	—	—	—	19
1914	—	3	2	—	—	3	—	5	3	—	2	1	—	—	1	—	—	—	2	—	—	3	—	25
1915	1	4	—	—	—	2	—	2	1	—	10	—	—	—	4	—	—	1	2	—	—	—	—	27
1916	5	7	1	—	—	1	—	3	5	—	6	—	—	—	4	—	—	—	2	—	—	1	—	35
1917	4	3	—	—	—	1	—	1	3	—	5	—	—	—	1	—	—	—	9	—	1	2	—	30
1918	5	1	1	—	—	1	—	1	1	—	2	—	—	—	2	—	—	—	—	—	—	—	1	15
1919	2	—	—	—	—	—	—	3	4	—	4	—	—	1	1	—	—	—	—	—	—	—	—	15
1920	—	—	1	—	—	3	—	2	4	—	7	3	—	1	5	—	—	—	19	—	1	—	4	50
1921	3	—	—	—	—	29	—	6	2	—	4	2	—	—	10	—	—	—	20	—	—	—	17	93
1922	5	—	—	—	—	6	32	4	5	—	37	2	—	2	4	—	—	—	10	—	1	—	18	126
1923	10	—	—	—	—	3	34	1	5	—	45	2	—	—	15	1	—	4	21	—	3	—	26	170
1924	4	—	—	—	—	6	41	1	5	—	34	1	—	—	8	1	—	—	12	—	5	—	28	146
1925	5	—	—	1	—	3	35	3	5	—	35	—	—	—	10	2	—	—	—	—	2	1	21	123
1926	6	—	—	—	—	5	20	2	2	—	60	3	—	—	6	1	—	—	12	—	—	—	25	142
1927	9	—	1	—	—	2	26	4	6	—	54	6	—	1	13	—	—	—	6	—	1	—	32	161
1928	9	—	—	—	—	5	14	2	8	—	63	—	—	2	13	—	—	—	9	—	1	—	43	169
1929	5	—	—	2	—	3	21	4	6	—	79	4	—	2	16	—	—	—	6	—	2	1	45	196
1930	3	—	—	1	—	7	22	5	9	—	51	1	—	—	5	3	—	1	5	—	1	1	53	170
1931	4	—	2	5	—	15	34	5	12	—	57	2	—	5	10	4	4	—	8	—	2	—	20	189
1932	5	—	5	9	—	25	33	8	17	—	56	2	—	3	16	1	4	—	7	—	6	—	40	237
1933	10	—	1	5	—	14	26	7	12	—	46	—	—	1	18	2	—	1	13	—	—	2	20	182
1934	7	—	5	5	—	16	19	11	9	—	46	3	—	3	20	5	1	—	11	—	3	1	21	186
1935	3	—	1	2	—	16	14	4	13	—	55	—	—	3	16	6	—	—	10	—	7	2	21	173
1936	5	—	—	4	2	7	30	3	19	—	22	2	—	2	14	—	4	1	7	1	5	—	23	151
1937	12	—	1	5	1	12	29	8	17	7	35	—	—	1	15	4	4	—	8	1	2	1	23	186
1938	13	—	—	8	—	11	28	1	29	2	58	—	—	1	24	1	4	—	7	1	3	—	30	221
1939	8	—	3	8	—	20	34	1	31	3	45	2	—	1	21	6	6	—	8	—	5	2	28	232
1940	9	—	1	9	—	16	37	3	20	—	54	4	—	5	22	7	8	18	10	2	3	2	37	267
1941	16	—	1	12	—	15	42	3	10	3	35	3	1	2	25	7	18	14	22	—	4	1	25	259
1942	9	—	2	16	1	12	23	2	5	1	24	2	15	1	24	8	11	—	9	—	—	1	7	173
1943	21	—	1	—	—	15	36	3	9	—	30	2	7	—	26	5	14	—	18	—	2	1	4	194
1944	22	—	—	1	1	3	7	2	9	—	13	—	—	—	12	5	11	1	55	—	—	3	5	150
1945	9	—	3	1	—	12	—	3	5	—	25	—	—	2	11	7	6	—	23	—	2	3	9	121
*1946	32	—	1	—	—	15	2	2	18	—	25	1	—	4	31	3	5	—	16	—	—	3	5	163
Total	261	84	40	94	5	316	639	133	320	16	1,138	50	23	45	436	79	100	43	415	5	71	35	631	4,979

Total of degrees in discontinued courses, Architectural Engineering, Electrochemical Engineering, Fuel and Gas Engineering, General Science, Mining Engineering, Naval Construction (Foreign Students), and Railroad Operation (see 1940–41 Report)	126
Grand Total	5,105

* Includes only February and June degrees.

TABLE 15

DEGREES AWARDED IN ARCHITECTURE AND CITY PLANNING

Class (Calendar 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	17	2	6	1
1942	15	1	4	4
1943	10	—	3	6
1944	8	—	2	3
1945	5	—	—	7
*1946	5	—	—	3
Total	206	17	159	42

* Includes only February and June degrees.

TABLE 16

DEGREES OF MASTER IN PUBLIC HEALTH AWARDED
(Discontinued after 1944)

Class (Calendar Year)	Number
1941	3
1942	11
1943	10
1944	7
Total	31

TABLE 17

Degrees of Doctor of Philosophy Awarded

Class (Calendar Year)	Biology	Chemistry	Food Technology	Geology	Industrial Economics	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	18	—	1	—	3	5	28
1942	1	19	—	5	—	1	8	34
1943	2	8	—	2	—	3	8	23
1944	2	12	—	—	1	—	9	24
1945	1	6	—	—	—	1	1	9
*1946	2	4	1	—	3	3	1	14
Total	37	298	1	48	4	42	88	518

* Includes only February and June degrees.

TABLE 18. DEGREES OF DOCTOR OF SCIENCE AWARDED

Class (Calendar 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	15	3	—	3	—	—	—	3	8	3	—	—	—	3	1	41
1942	1	2	14	—	2	—	—	—	—	1	3	1	—	—	—	2	—	26
1943	—	2	10	—	—	1	—	—	—	—	5	—	—	—	—	2	—	20
1944	2	—	4	—	—	1	—	2	—	1	4	—	—	—	—	1	—	15
1945	—	1	7	—	2	—	—	—	—	1	3	1	—	—	—	—	—	15
*1946	—	—	5	—	2	—	—	1	—	1	—	2	—	—	—	—	—	11
Total	15	13	156	10	20	50	2	10	5	24	62	13	5	1	1	31	3	421

*Includes only February and June degrees.

TABLE 19

Degrees of Doctor of Public Health Awarded
(Discontinued after 1944)

Class (Calendar Year)	Number
1924	1
1927	1
1928	1
1930	1
1939	1
1942	1
1944	3
Total	9

TABLE 20

Degrees of Doctor of Engineering Awarded
(Discontinued after 1918)

Class (Calendar Year)	Electrical Engineering	Electrochemical Engineering	Total
1910	1	—	1
1914	1	—	1
1916	1	—	1
1917	—	1	1
Total	3	1	4

TABLE 21

Summary of Degrees Awarded (1868–1946)

Bachelor of Science	20,001
Bachelor in Architecture	206
Bachelor of Architecture in City Planning	17
Master of Science	5,105
Master in Architecture	159
Master in City Planning	42
Master in Public Health (Discontinued after 1944)	31
Doctor of Philosophy	518
Doctor of Science	421
Doctor of Public Health (Discontinued after 1944)	9
Doctor of Engineering (Discontinued after 1918)	4
Grand Total	26,513

Director of Admissions

A sharp increase in inquiries received at the Admissions Office took place within 48 hours after the end of the war in August, 1945, and within three weeks the volume of callers and of incoming mail had soared to over five times its normal level. The peak of activity came early in 1946, when weekly interviews ranged in the vicinity of 300, and incoming mail reached 4,000 letters a week, of which about 1,500 represented new inquiries concerning admission.

Not only was an emergency increase in the clerical force required, but it was also necessary to call on the teaching staff for assistance in interviewing the large number of veterans who called daily. The prompt and enthusiastic response of members of the staff to this appeal made it possible to organize a group of 60, each of whom contributed a half day a week as admissions counselor. The work of this group has been of great importance from the public relations standpoint, since several thousand veterans were interviewed and counseled. Though the majority could not be accepted for admission, each one had an opportunity to have his application considered and to secure advice and authoritative information. The painstaking effort and sympathetic attitude of the admissions counselors will undoubtedly bring the Institute dividends of good will for many years to come. As a valuable by-product of the project, this group of staff members has been brought into closer contact with the entire range of problems centering upon student selection and guidance. Such a broadening of the group participating in these functions is analogous to that which occurred when the Honorary Secretary system was put into effect. Both steps are in the direction of a healthy decentralization of this important range of activities.

Special mention is due of the extraordinary overload carried during the past year by the corps of Honorary Secretaries, which could not be rapidly expanded in number. This group interviewed and reported upon nearly 4,000 candidates in the period of the postwar rush.

We now have trained groups, both from the teaching staff and from the alumni, chosen with reference to their interest in and qualifications for counseling young men in an intelligent

and sympathetic manner. While the Admissions Office performs a vital co-ordinating function, these activities are on a much sounder and broader basis than would be the case if they were narrowly channeled through this office alone. The work, furthermore, is in the hands of men of breadth, experience, and common sense. This is of importance in an era in which educational guidance so often relies unduly on batteries of psychological tests which are at best inadequate measures of character, pertinacity, and vigor.

First-year classes have been admitted in each term as indicated in the following figures; the classes which entered in March and June, 1946, consisted of veterans only.

FIRST-YEAR CLASSES

	November, 1945	*March, 1946*	*June, 1946*	*September, 1946*
Total Applications	761	891	436	4,045
Admissions Granted*	230	106	70	776
Actual Registration*	198	89	67	648
Registration as Per Cent of Admissions	86.0	84.0	95.6	83.5

* Exclusive of former students returning.

Beginning March 1, 1946, applications from students with previous college work were not accepted, except for the School of Architecture and Planning and except for those to whom prior commitments had been made, such as students entitled to enter under the combined plan of study with liberal arts colleges. In the following table, therefore, the applications shown for June and September include only those to whom application forms had been sent prior to March 1. Some 2,600 inquiries were subsequently received for transfer at these dates. This group was permitted to file preliminary applications for possible admission in September, 1947, in so far as it might then be possible to accommodate transfer entrants.

COLLEGE TRANSFERS

	November, 1945	*March, 1946*	*June, 1946*	*September, 1946*
Total Applications	468	711	349	598
Admissions Granted	235	160	17	42

John W. Sheetz, 3d, '42, has assisted in the work of the office, beginning in March, 1946.

B. A. THRESHER

DIRECTOR OF LIBRARIES

This year has been marked by the largest total of gifts ever made to the Library; by major steps in the planning of a new library building; by significant changes in accessions policy and budget; by inevitable postwar changes in circulation and use; by the successful introduction of the Library Fellowships; and by the customary contributions by the Library staff to outside library activities.

Gifts. Clearly the most important single event in the history of the Library has been the gift of $2,200,000 by the Hayden Foundation for the erection of the Charles Hayden Memorial Library as soon as Federal building permission can be obtained. Details of the gift, of the planning, and of the philosophy of the building have been adequately described elsewhere and need no further attention here. Two other important gifts were some $20,000 from the M.I.T. Stein Club of Boston for the map room of the new building and $10,000 from Samuel Berkowitz, '15, to increase the capital amount of the present Samuel Berkowitz Fund for general purposes of the Library. Gifts of books are detailed in the Librarian's report, which follows this one.

Inter-University Committee. Studies have been made with the Inter-University Cooperative Committee on Library Building Plans. This committee was the outgrowth of an invitation extended by President Harold W. Dodds of Princeton University to some dozen educational institutions, known to be about to build important libraries, to meet together informally for the exchange of views and to supply each other with free and uninhibited criticism. Technology was a member of the original group and has profited enormously from the several meetings. The work of the committee has attracted increasing national attention; this has led to a steady increase in membership and to a demand that the findings of the committee be made still more widely available. In turn this has led to a grant from the Rockefeller Foundation for the prepara-

tion of such a report. For this fund the Institute is trustee, and management of the fund is provided by a committee of three, consisting of Charles W. David, director of libraries at the University of Pennsylvania, Julian P. Boyd, Librarian of Princeton University and member of the Visiting Committee on the Institute Library, and Professor Burchard.

Accessions. Accessions policy has been carefully studied during the year, with the result that several changes have been made, some the result of old and some of new opportunities. The most difficult accessions problem immediately confronting any American library is to fill the gaps in the foreign literature caused by the hiatus in shipments and by the physical and intellectual destruction in Europe. This has been further complicated by the fact that devastation has put many items in short supply; additionally many nations are still so heavily controlled that no ordinary system of individual purchase has much chance of success. In these circumstances, the Institute was happy to join with 130 other libraries in a co-operative purchase plan, whereby, with the assistance of the Library of Congress and the State Department, as much is acquired abroad for the national resources as can be found. For many desired items there are naturally but few copies, and a distributional priorities system has therefore been adopted which takes account both of the eminence of the individual institution in specific subject fields and of its geographical location so that there will be an approximate parity of regional resources. On the whole, we have fared well in the priorities allocations. Although, in common with every other library, we feel chagrin at our allocations in some fields, we are sure we are doing better by this method than we could possibly have done under any other method. Funds have been available for these extraordinary purchases through the foresight of the Faculty Committee on the Library, which, several years ago, began to augment the Library Growth Fund from current appropriations so as to establish a backlog to meet the anticipated emergency which has now become real.

Other governmental sources for material have also been canvassed. It will be recalled that on the collapse of Germany many technical intelligence missions were sent to the Continent

and that these sent home voluminous documentation. Though much of this is doubtless ephemeral in interest or of no value, there is surely some which will be important. Selectivity is extremely difficult. Through the assistance of most of the leading industrial chemical laboratories of the Boston region, a fund has been established at M.I.T. which will permit full buying in the chemical field. Accessions of comparable material in other fields of interest to the Institute are being cared for out of current appropriations since they are on the whole much smaller in their coverage.

The Institute will receive from the Library of Congress a set of the releasable reports of the Office of Scientific Research and Development, and will enjoy a very high priority in this field. We have been named a depository of the United States Army Map Service, along with many other institutions, and this arrangement will yield some 50,000 maps. A special arrangement has been made with the Hydrographic Office of the United States Navy which will give us an important collection of their material. Finally, the Library has become an official depository for government documents.

The tremendous outpouring of written material has posed a problem which has to be met squarely by all libraries. To be sure, the problem is more than one of storage, and requires fundamental research in the method by which, out of all the expanding welter of words, the ideas can get from the library into the human head. But even the problem of storage is serious enough. It can be solved in some degree by consigning little-used material to a deposit such as the New England Deposit Library, of which we are a member. Some day full-scale microreproduction may help. For the moment the most important key lies in wholehearted interlibrary co-operation on a regional basis so that extensive duplication of rarely used material can be avoided by neighboring institutions. Keyes D. Metcalf, director of the Harvard University Library, has long been a leader in urging such action, and substantial progress has been made this year in negotiations between the Harvard and Technology libraries, looking toward such a solution.

Circulation and Use. Circulation problems have been aggravated by the short supply of books for sale so that students,

especially graduate students, have often had to study the Library's few reserve copies in shifts. The greatest percentage of borrowing is still, however, made by the members of the undergraduate body.

Library Fellows. This has been the first year in which the value of the newly created Library Fellowships could be assessed. The Library Fellow is a mature man whose stipend and expenses are provided by an industrial corporation, usually for a two-year term. He comes into residence at the Institute and is expected to spend about half his time working on some library problem of interest to his sponsor, the other half for the Institute. He is administratively attached both to the Director of Libraries and to a specified department. His work for M.I.T. may range from a strictly departmental task to one of general concern to the Library.

Thus Harold J. Oatfield, Schenley Fellow, is attached to the Department of Biology and has concerned himself with developing a list of lacunae in our biological collections which ought to be filled if the Biology library is to meet the needs of and be consonant with the plans for the new Biology program. As a result of this study a special accessions fund has been created to build up the collections in this field.

On the other hand, James W. Perry, Diamond Alkali Fellow, assigned to the Chemistry Department, has headed up the accession of captured German chemical documents, using for that purpose the fund already described. He has been most active in developing information on the possibility of using punched-card and other rapid-selector techniques in relation to library problems and the correlation of data; and at the request of the American Chemical Society organized a symposium on that subject for the fall meeting of the society. He has explored the problem of Russian exchanges for us and has given an accelerated course in Russian designed to impart a reading knowledge of scientific Russian in one term.

All in all, the Library Fellows have clearly proved their worth, and the Library will welcome the suggestion of industrial units for the establishment of further such fellowships.

Branch Libraries. The basic policy of operating a combination of a Central Library with centrally administered branch or

departmental libraries which have wide latitude was reaffirmed by the Faculty Committee on the Library this year. There remains the difficult problem of the inefficient and haphazard growth of very small collections which cannot be given the minimum of useful library administration. Nonetheless there are occasions when a department needs a small group of books for a special and somewhat temporary purpose, or where, as in a shop, the use is not consonant with ordinary library practice. It is altogether desirable that such collections shall exist but not that they shall grow into disorganized small libraries. The executive board of the Faculty Committee on the Library has considered this problem and made a policy statement which will assist the Library administration in determining when a new branch should be established and which will at the same time permit the departments to create these small working collections with their own funds.

A major new arrangement was made when conversations with the School of Architecture and Planning led to an agreement whereby on July 1, 1946, the Rotch Library of Architecture, previously autonomous, was transferred to the jurisdiction of the library administration on the same basis as any other of the important branch libraries.

Foreign Visitors. The Institute Library is visited with increasing frequency by librarians, architects, and others from foreign lands. During the past year visitors representing foreign libraries came to us from the United Kingdom, France, Canada, Brazil, and Venezuela. Nonlibrarians came from Belgium, Holland, Argentina, Brazil, Spain, Sweden, Finland, Switzerland, China, and the U.S.S.R.

The Museum. Notable changes have been made in the museum policy during the past year under the able leadership of Herbert L. Beckwith, Associate Professor of Architecture and newly appointed Director of Exhibits. In administrative charge Professor Beckwith has worked closely with a reconstituted Faculty Committee on the Museum, of which the chairman is Professor Howard R. Bartlett. The results of some of the long-range planning can better be reported after more has been accomplished. For this report, it is enough to say that this is the first year in which the enlarged policy of having a series of

temporary exhibitions of national distinction has been carried out. Some of the shows were mounted in the lobby of Building 7 and some in the lobby of Building 10, a few in both. Here they stood on the main flow of Institute traffic, as was intended. They embellished the lobbies for a time and unquestionably engaged the interest of many who would not, in this early stage, have sought them out had they been in a remote and formal exhibition room.

The purpose of this activity is to support the general program for providing a richer and more stimulating cultural life at the Institute. It was possible even in this initial year when the Institute was still in transition from war to peace to achieve a substantial diversification of the fields of expression. At the conclusion of the year's program the results appear encouraging, both as regards student and public interest. Local press notices have been increasingly favorable, responses to requests for the loan of exhibition material have been excellent, and a gratifying number of unsolicited suggestions have been made.

In accordance with previous practice there follows a more detailed report by the Librarian.

JOHN E. BURCHARD

LIBRARIAN

Demobilization of the war research laboratories and return of students have altered the character of library patronage. All the branches report a dwindling of users from special laboratories and a great revival of student use. Undergraduates, however, continued to borrow the largest percentage of books. The circulation of two-week books increased, totaling 93,619, but did not overtake the pre-war figure, 101,117, of 1939–1940. The circulation of reserved books for overnight, however, increased over 25 per cent, reaching 31,369. There was thus a total circulation of 124,988, also below the pre-war high of 135,273 in 1939–1940.

Because of diminished publication of new technical books satisfying the requirements of faculty advisers and because but few foreign books had begun to arrive, our total accessions

figure was again low, amounting to only 6,980 volumes. The total estimated contents of the Library on June 30 stood at 390,718 volumes.

The work of the reference department develops more and more in the direction of a lending service to outside firms and organizations, an ever increasing number of which tend to make use of the borrowing privilege which the Library has traditionally granted with liberality. Such loans have tripled since 1939–1940, reaching this year a total of 3,047 loans to firms and 2,000 to government bureaus, educational institutions, public libraries, and alumni, a total of 5,047. Similar loans of 2,916 volumes direct from the circulation desk make a total of 7,963 loans outside the Institute community. The largest outside borrowers were the Boston Navy Yard, 944 volumes, and the National Research Corporation, 211 volumes. Of the total loans made, about half were supplied by the branch libraries, all such service being centrally handled by the reference department. Such service costs us something substantial in diversion of effort from research and bibliographical service, but the challenge is a welcome one.

Notwithstanding the preoccupation of the reference staff with outside loans, time was found to handle 1,646 desk questions in the science, engineering, and economic fields, to compile 16 short bibliographies in answer to requests, to give advisory service to 23 visitors on such subjects as engineering library methods, trade catalogue collections, and microfilm and photostats as aids in special libraries, to obtain for readers 785 photostats and 254 microfilms, and to handle 6,312 telephone calls.

All the foregoing facts and figures give some indication of how necessary was the addition of a third assistant to the department staff, which now consists of Mirian S. Smith, reference librarian, Margaret P. Hazen, associate reference librarian, and Carolyn U. Turner, reference assistant.

The associate reference librarian, besides sharing in the work just described, prepared the usual bimonthly lists of new books, a new edition of the library handbook, *How to Use the Institute Library* (1946), the annual *List of Periodical Publications, Books and Reviews by Members of the Staff*, and the

Technology Bookshelf; also, for the Special Libraries Association convention in Boston in June, a folder descriptive of the Institute Library, for which Professor Frederick W. Morris designed an attractive map. Miss Hazen also prepared a loan exhibit of book treasures for the Boston Book Fair, which was held in October.

The catalogue department was consulted by several visiting librarians for advice on special classifications and cataloguing procedure and on the organizing of new libraries. The department is now preparing to share in the co-operative cataloguing of foreign books received under the co-operative acquisitions program of the Library of Congress.

The work of the circulation department is taken so much for granted by library patrons that few appreciate the hard work, long hours, and careful planning put into it under the direction of the supervisor, Louise Trainor. This year a system of daily checking with the branches made possible immediate clearances for hundreds of Division of Industrial Cooperation, Chemical Warfare Service, Radiation Laboratory and V-12 men without undue delay.

An important addition to the Aeronautics library was a subscription to the R.T.P. translations of the British Ministry for Air, reprinted by the Durant Reprinting Committee at California Institute of Technology. The size of the Aeronautics library was reduced somewhat by the removal of the Meteorology Department to Building 24 and the return of Meteorology books to the Central Library. The Sloan Laboratories deposit added 50 books, having now 345 books plus 541 publications of the National Advisory Committee for Aeronautics.

At Dewey Library it was necessary to discontinue the engineering librarian's monthly lists. Ralph R. McNay gave talks to freshmen and graduate students and spoke to students at Northeastern and before the Rhode Island Library Association. Mrs. Genieve Stone, economics librarian, reported 414 books added in economics, business, and international relations. She has co-operated with the marketing group by compiling lists of sources and giving students instruction in the use of the library to meet their individual problems.

Eastman Library was used by overwhelming numbers of graduate students, who had found the supply of books for sale diminishing. Large classes were forced to study in shifts the library's few reserve copies. The seating capacity proved insufficient, a situation which will grow worse as graduate classes increase. It has been impossible to find competent student assistants either to do the routine work or to keep the library open evenings and Saturday afternoons; the professional staff have therefore had to cover many extra hours.

In November, the Lindgren Library lost its able librarian, Grace E. Bogart, who resigned to become librarian of an industrial corporation; her place was filled by Sibyl E. Warren of the Central Library staff, who was already familiar with the work of the branch. The increase in use of this library was especially noticeable in the loans to D.I.C. men.

The Vail Librarian, Mrs. Ruth McG. Lane, reports ordinary accessions still below normal. However, much documentary material restricted during the war but now "unclassified" was received from the special war laboratories, including Lee A. DuBridge's file from the Radiation Laboratory. The decimal classification of material in electronics and radar was revised in consultation with members of the Electrical Engineering Department. There was a steady increase of course references in fields lacking adequate textbook material. Advice in the problems of technical library organization was given to the new laboratories and to foreign students returning to their native countries.

At Walker Memorial Library, 1,808 readers registered, of whom 63 per cent were undergraduates. There was a slight drop in two-week circulation due to the departure of special laboratory personnel, but the use of overnight books by students increased. The choral music collection was used a great deal by the Musical Clubs, and the student librarian of the Glee Club gave valuable assistance in straightening up the collection. One hundred new albums were obtained for the record collection. Mrs. Emily Harris, who had ably filled the position of Walker Library assistant in the north room, resigned, much to the regret of all whom she had served at this important post.

Members of the library staff maintained their interest in the Boston chapter of the Special Libraries Association by attending frequent meetings. Marguerite Chamberlain was a member of its executive board, Mrs. Ruth Lane of its program and nominating committees, and Cecile Barsky of its membership committee. When the national association met in Boston in June, Miss Hazen served on two convention committees and Miss Chamberlain arranged a luncheon and meeting, here at the Institute, of the university and college group, of which she is local chairman. Miss Chamberlain was secretary of the engineering school librarians committee of the New England section of the Society for the Promotion of Engineering Education, and Mrs. Lane was chairman of the engineering school librarians committee of the national S.P.E.E. Mrs. Lane also continued to serve on the American Standards Association's Committee Z-39. Hildegarde Ziegler, Mrs. Margaret de Le Vin, and other members of the catalogue department were frequent attendants at meetings of the Boston Group of Catalogers and Classifiers.

Miss Chamberlain represented the Librarian at a board meeting of the Association of College and Reference Libraries at Chicago in December and at the meeting of the S.P.E.E. at Wentworth Institute in May. The Librarian was present at the Eastern Conference of College Librarians at Columbia in December. In June, he attended the annual meeting of the engineering school librarians' section of the Association of College and Reference Libraries at Buffalo and represented the section at board meetings; he was present also at meetings of the association and of the American Library Association held the same week. Miss Barsky, Irene Jelatis, and the Librarian attended the meeting of New England College Librarians at Clark University, Worcester, in May, and several staff members were present at meetings of the Special Libraries Association in Boston and Cambridge in June.

Notable among the gifts of books during the year were 200 volumes from Professor Jerome C. Hunsaker and 1,370 volumes from the discontinued library of the Naval Torpedo Station at Newport, R. I. Included in the latter gift were several long runs of valuable foreign periodicals. From the Friends of the Library we have received the 1679 edition of Robert Hooke's *Lectiones*

Cutlerianae. Professor Bernard E. Proctor of the Department of Food Technology presented two volumes of research reports on Quartermaster Contract Projects, covering the years 1942–1943 and 1943–1944, and Professors Joseph H. Keenan and Dean Peabody, Jr., presented copies of their own works. The Massachusetts Division of Public Libraries donated a large number of books, of which 168 were added to our shelves, and from the French consul we received many French journals and other publications.

WILLIAM N. SEAVER

DIRECTOR OF THE DIVISION OF INDUSTRIAL COÖPERATION

The Division has successfully liquidated all projects under the Office of Scientific Research and Development with the exception of the Radiation Laboratory, which is almost completed. An index of the importance of the work undertaken for O.S.R.D. is that about one-third of the O.S.R.D. researches have been continued under the sponsorship of the Army or Navy.

Research for industries has lagged because of saturation of Institute facilities with government work and industry's preoccupation with problems it is facing today rather than those it will face years hence.

In general, the research now being undertaken for the government is unclassified and is purposely designed to permit maximum use of graduate students so that the nation will benefit not only through the accomplishment of the researches but also through the training of man power.

DOLLAR VOLUME OF CONTRACTS

(For the Fiscal Year Ended June 30, 1946)

O.S.R.D.	$19,914,000
General Government	3,649,800
Industrial	695,200
	$24,259,000

N. MCL. SAGE

Adviser to Foreign Students

The registration of foreign students at the Institute in September, 1946, showed the substantial accomplishment of the two chief aims of the limitation on foreign students voted by the Faculty in April, 1945: (1) to set a maximum limit on the number of foreign students at the Institute in a period when its facilities would be crowded by returning veterans, and (2) to secure a proper diversification among our foreign representation.

The Institute administration has been constantly aware of its obligations as an educational institution of international significance, and in recent months particularly aware of its obligations to students whose universities have been partially or wholly destroyed by war. These obligations have had to be balanced by the paramount one of making room for the many Institute men who, as veterans, have been returning to interrupted study. This has made necessary a severe limitation on the admissions of foreign students and a rigid selection among the many applicants.

There were 52 admissions of foreign students at the Institute in September, 1946. Of these, 31 entered the first-year class and 21 the Graduate School. Thirteen students came from Norway; seven from the Latin American countries; five from Great Britain; two each from China, France, the Netherlands, Poland, Sweden, and Turkey; and one each from Afghanistan, Cyprus, Denmark, Finland, Greece, Iceland, India, Iraq, Lebanon, Luxembourg, Palestine, the Philippines, Spain, Switzerland, and Siam.

There follows a table comparing the registration of foreign students in the academic year 1946–1947 with that of former years. It is to be noted that the registration of November, 1944, represents the situation before controls were imposed, with the preponderance of students from areas not closely involved in the war, i.e., Latin America, the Near East, China, and India. By careful control a more equitable and more desirable distribution has been achieved, with places saved particularly for students from those countries which could not send representatives here because of active participation in the war.

Area	*Average Attendance 1920–1939*	*Registration November, 1944*	*Registration September, 1946*
Latin America	42	90	69
British Empire	14	6	17
Northern Europe	15	3	38
Western Europe	12	12	34
Central and Southern Europe	8	14	17
Near East	8	33	29
China	36	93	39
India	7	28	13
Other Far East	14	0	11
	156	279	267

PAUL M. CHALMERS

PLACEMENT OFFICER

Alumni Placement. The fiscal year 1945–1946 was the busiest that the Placement Bureau, under the direction of Mrs. James A. Yates, has ever had. Two indices of activity — men interviewed per week and jobs per week — follow:

	1941–1942	*1942–1943*	*1943–1944*	*1944–1945*	*1945–1946*	*July 1946**
Weekly Interviews.	9.1	9.6	7.4	7.4	29.3	31.3
Jobs	17.6	19.5	27.8	28.2	54.4	59

* Note July, 1946, increase over annual weekly average.

While increase in interviews is readily traceable to the release of man power by the services, it is difficult to know exactly why industry has asked us for so many more men this year than in 1941–1942. Undoubtedly, one reason is that industry has had no annual supply of young technically trained men for five years. Moreover, during the past five years, more companies have learned to turn to college placement bureaus for help, and many companies find that it is no longer possible for them to get along without technically trained men.

Requests have come to us from companies in 46 states, the District of Columbia, and more than 20 foreign countries. This is the first year that every state west of the Mississippi, except Utah and Idaho, has turned to us for men. While Connecticut,

Illinois, Massachusetts, New Jersey, New York, Ohio, and Pennsylvania industries still continued to make the greatest demand for man power, it is interesting to notice that we had 17 requests from Florida, which is not heavily industrialized, 11 from the state of Washington, and 7 from Montana.

A glance at the number of jobs listed and at the number of men who have gone on the available list indicates that there is still a serious man-power shortage.

Placement Bureau Figures	*July, 1945–June, 1946*	*July, 1944–June, 1945*
Number of Jobs	2,831	1,445
Men Who Went on Available List	1,527	392
Men Who Came off Available List	830	241
Placements	207	106

What the foregoing figures do not show is the fact that at least half of the men who registered through interviews or correspondence were exservicemen and had civilian jobs waiting for them but thought that they should "shop around" before going back to their pre-war positions. This brings the number of men honestly in need of work to not more than 700. Many of the remaining 700 did not fit a large percentage of the positions listed because of lack of maturity. They had received their degrees under the V-12 program in 1945 and 1946 and were obviously better qualified for openings normally listed with the Senior Placement Office, which has co-operated in placing them.

This bureau has not discouraged a man from shopping for positions when he is released from the service, but we have tried to urge him not to accept a position with a new company before checking with the company he had worked for before going into service. It is pleasant to be able to report that a great majority discovered that their old employers were eager to have them return and offered them salaries and promotions better than anything they could have obtained in another organization.

During the year we have worked very closely with the Senior Placement Office and with department personnel

officers. We have made a real effort to notify department personnel officers of positions and to keep them informed of alumni in their Courses who were available. As a result, one department has reported 20 placements. While the other departments have not kept accurate records, they have been helpful to a great many men. No placements made through the Senior Placement Office or the departments are included in this report.

The employment assistance offered by the Placement Bureau to men returning from military service has been augmented by a regional placement organization sponsored by the Alumni Association and directed by John N. Higgins. Committees appointed by local Technology clubs have acted as employment advisers in 66 of the principal cities of the country, and by a combination of personal interviews and correspondence they have been handling approximately 150 applications a month. Their voluntary efforts have contributed to the re-employment of many of our young veterans and have provided the Placement Bureau with valuable regional information on opportunities for technical men.

Student Placement. During the past year the Student Placement Bureau, under Professor Carlton E. Tucker, has been in continuous operation, with representatives from 107 companies coming to the Institute to interview students. Because of the large number of opportunities that were available, many students secured their own positions without resorting to the Placement Bureau and oftentimes did not report to us on their location. Between October, 1945, and June, 1946, a total of 650 degrees was awarded. The demand for trained men still exceeds the number available, particularly in the following fields: chemical engineering, electronics, aeronautical engineering, and mechanical engineering, including machine design and textiles.

N. McL. SAGE

PERSONNEL OFFICER

A number of changes have been effected for the nonstaff personnel of the Institute in the year 1945–1946. After V-J Day, all employees working on war projects were reduced to a 40-

hour, five-day week by government directive; the regular laboratory service employees of the academic departments continued on a 44-hour basis, five and one-half days a week. The majority of Radiation Laboratory personnel were terminated in the fall of 1945, with only those necessary to maintain records and write reports remaining; the Chemical Warfare Service Development Laboratory was closed in October, 1945. Personnel employed on most of the sponsored research projects under the Division of Industrial Coöperation have been continued.

In January, 1946, there was a general wage increase for the regular Institute employees to bring them up to the same salary level as the D.I.C. and also to keep pace with the trend in wages paid outside the Institute. At the same time, other Institute policies were applied uniformly to all D.I.C. personnel. By adjustment of the rate schedule for academic employees, the wages paid both groups were equalized. The work week for the D.I.C. was increased to 44 hours, five and one-half days, since the Institute could not operate on a five-day week. Also, the D.I.C. personnel were given the same privileges with regard to annuity, sick leave, and holidays.

The Wage Board was reconstituted to comprise H. S. Ford, Treasurer (chairman), R. M. Kimball, Assistant to the President, F. L. Foster, Assistant Director of the D.I.C., D. L. Rhind, Bursar, W. A. Hokanson, Assistant Bursar, and Ruth C. Glynn, Personnel Officer. Now known as the Personnel Board, it continues to review salary recommendations and all policy changes, meeting quarterly or oftener.

The following is an index of nonstaff personnel activity for the past year (excluding Radiation and C.W.S.).

	M. I. T.	*D. I. C.*	*Total*
Number of Employees as of July, 1945.....	663	581	1,244
Number of Employees as of July, 1946.....	938	524	1,462
Total Accessions from July, 1945, to July, 1946			1,085
Total Terminations.....			902

RUTH C. GLYNN

Medical Director

Announcement of the appointment of a full-time Medical Director, the establishment of an Eye Clinic, and the opening of the completely remodeled and refurnished second floor of the Infirmary have made the year an unusually eventful one in the history of the Medical Department.

Medical Director. On April 10, 1946, it was announced that Dr. George W. Morse, Medical Director on a part-time basis for the past 25 years, would retire on January 31, 1947, to be succeeded by Dr. Dana L. Farnsworth, who would serve on a full-time basis. Dr. Farnsworth was recently released from active duty with the Navy and had returned to Williams College, where he was director of health.

William R. Kales Eye Clinic. In 1944, Mrs. William R. Kales and her family presented the Institute with a fund for the establishment of an Eye Clinic in memory of her husband, William Robert Kales of the Class of 1892. Because of the war, it was impossible to procure equipment or obtain the services of an ophthalmologist. In December, 1945, Dr. Thomas J. Cavanaugh, recently released from active duty with the Army and a member of the staff of the Massachusetts Eye and Ear Infirmary, was appointed to the staff of the Medical Department as ophthalmologist. One of the examining rooms on the first floor was reserved for the Eye Clinic, and during the spring it was newly decorated and completely equipped. Dedication exercises were held in June. The clinic was opened in January, 1946, and during six months of part-time operation 211 patients (147 students, 29 faculty members, and 35 employees) were examined.

Infirmary. In 1944, the first and second floors of the Infirmary building were completely remodeled. Difficulty was experienced in obtaining equipment, and the second floor could not be used until last fall. Patients were admitted for the first time on November 27, 1945.

During the year, 652 bed patients were treated in the Infirmary for a total of 3,156 days, an average census of 8.6. As would be expected, the great majority of sick days were incurred during the months of December, January, and February. There were no major epidemics, and although on

several occasions the demand for beds closely approximated the 33 beds available, it never exceeded that number. It is noteworthy that 76 staff members and 69 employees were hospitalized in the Infirmary.

The Infirmary personnel also rendered emergency ambulatory treatment to 723 patients.

Personnel. With the end of hostilities, Dr. John W. Chamberlain and Dr. John M. Murray were released from active duty in the armed services and resumed duties at the Institute as assistant medical director and senior psychiatrist, respectively. As of January 1, 1946, two nurses were added to the staff. A third nurse resigned, leaving five on the full-time Infirmary staff.

Veterans. It was anticipated that the growing percentage of veterans in the student body would result in a considerable increase in demands on the Medical Department in general and on the psychiatric service in particular. This has not been so. Only a very small amount of time has been lost by students because of illness incident to military duty. During the first six months of 1946, 33 veterans and 47 civilian students consulted one or the other of our two psychiatrists. These figures correspond very closely to the ratio of veteran to civilian students for this period.

General Medical and Special Clinics. A total of 25,511 visits was made to the general medical and special clinics:

General Medical Clinic	17,645
Psychiatric Clinic (six months only)	97
Eye Clinic (six months only)	211
Dental Clinic	4,390
X-rays (including dental)	3,168
	25,511

An additional 2,850 visits were made for the purpose of obtaining "excuses." There were only seven instances of contagious disease.

During the war, an unusual burden was placed on the Medical Department in the increased number of employees who sought advice and treatment. This is also reflected in the large number of required employee physical examinations. With the termination of the war and the marked reduction in the number

of employees, particularly in the Radiation Laboratory, Harbor Building, and the Division of Industrial Coöperation, it is expected that the work of the Department will be lightened somewhat, though the actual number of individuals eligible for treatment will probably not change greatly, in view of the anticipated increase in the student body.

Use of Outside Medical Facilities. It is worth while to consider the use made of outside facilities. A total of 193 patients was referred to members of the consulting staff. The largest number — 64 — were referred to consultant dermatologists. Twenty-four patients were referred to outside hospitals. Outside private and state laboratories were used for a small number of blood chemical and serological determinations and a few special bacteriological examinations.

Physical Examinations. During the year, 4,554 physical examinations were done: staff, 3; students, 3,076; employees, 1,475.

In the student group of 3,076 examinations, 1,295 physical defects were noted and recorded. In 721 instances, the student concerned was seen in consultation with regard to his physical defect. While it frequently happens that aid and advice can be given to correct or compensate for physical defects found during routine physical examinations, it is not often that these examinations result in saving the life of a student. That did happen in the past year when a new student was found to have a malignant skin growth which was removed before it had spread beyond possibility of successful treatment.

GEORGE W. MORSE, M.D.

SCHOOL OF ENGINEERING

Aeronautical Engineering

The war has changed the basic problem of aeronautical engineering education. In the 1930's, caution was needed in estimating the number of aeronautical engineers who could be placed in any one year in a new but growing industry. This industry is now established as one of the major industries of the country. Although a large part of the wartime expansion of production capacity has already been liquidated, the demand for aeronautical engineers is even more insistent than during the war.

This comes about through the revolution in power plants caused by the gas turbine and jet propulsion. The new engines make possible speeds for which existing types of airplanes are unsuitable. Besides rendering obsolete entire air forces, the new means of propulsion presents possibilities for civil air transport on a global scale. Furthermore, the development of rockets now offers an opportunity for missiles of vital concern to the national defense. A vigorous part of the industry is devoted to the privately owned airplane and the helicopter.

These considerations lead to two conclusions for this Department: First, we should no longer limit enrollment for reasons of placement but should admit qualified students to the limit of our staff and facilities. Second, the requirements for high-speed flight demand of the aeronautical engineer a higher level of training. These demands include a knowledge of supersonic aerodynamics, the dynamics of elastic structures, and automatic controls, together with a facility in applied mathematics not ordinarily contemplated by an undergraduate program.

To strengthen the Department's teaching staff, provision was made to add 11 experts in special subjects by September, 1947, as follows: Frank K. Bentley, design; Raymond L. Bisplinghoff, dynamics of structures; James E. Forbes, servomechanisms; Walter H. Gale, elastic structures; John F. Hutzenlaub, instrumentation; René H. Miller, helicopters; Robert K. Mueller, dynamic stability; Rodney H. Smith, flutter; H. Guyford Stever, guided missiles; Hsue-Shen Tsien,

supersonic aerodynamics; and William R. Weems, automatic controls.

To accommodate the increase in both staff and students, the necessary space has been made in the Guggenheim Building by transfer of the Meteorology Department to Building 24 and the removal of special laboratories to outside quarters. The Guggenheim Building was extensively altered during the summer of 1946 to provide for larger drafting rooms and classrooms. It is planned to double the pre-war enrollment to permit 60 undergraduates in each class and 75 graduate students.

Wind Tunnels. With the end of the war, two-shift operation of the Wright Brothers Wind Tunnel was reduced to a single shift, but the demand for its services continued with a program scheduled several months ahead. The work consists of aerodynamic analysis of new designs for the industry. A portion of the funds accumulated from payments for services has been set aside for modernization of the measuring equipment, for replacement of the five-foot wind tunnel used by students, and for research projects.

Instrumentation Division. During the academic year, the teaching load of this division of the Department more than doubled as compared with previous years. The enrollment for the basic graduate instrumentation courses was over 80, as compared with about 40 for the previous year. About half of this number was made up of regular Army and Navy officers following special courses in antiaircraft and air-borne fire-control equipment. A serious shortage in laboratory space that has existed for several years has been improved by removal of the fire-control laboratory to a new location in the Hood and Whittemore buildings. Classroom and desk equipment for naval officers will be located here, while all unclassified work of the division will remain in the Guggenheim Building. Subjects of instruction offered by the Division have been expanded to include six new classified courses for Army and Navy officers. The regular and unclassified instrument work has been increased by the addition of a course on flight test instruments. Research projects of a classified nature, started during the war for the armed services, have been expanded and now require a

staff of 40 engineers, 39 technicians, 9 computers, and 11 secretaries and clerks, under the leadership of 6 Research Associates.

Flutter Laboratory. Graduate and undergraduate courses in flutter were started during the year, with enrollments of about 25 students in each. These courses deal with flutter analysis, supplemented by demonstrations of actual flutter in the wind tunnel. The research program has been a continuation of the study of transient aerodynamic forces on an oscillating airfoil. More than 400 wind tunnel tests were run at various air speeds, frequencies, and amplitudes of oscillation. Lift, drag, and moment have been measured by means of elaborate instrumentation and compared with the values predicted by theory.

A Navy project has as its purpose the determination of the dynamic effects upon a wing of such masses as engines, tip floats, and tip tanks. A model and supporting structure were designed and built, and testing in the wind tunnel was begun. The critical speeds and frequencies obtained from wind tunnel tests are to be compared with theoretical predictions.

Co-operative Research. Members of the Department supervised research projects of professional interest for the Division of Industrial Coöperation as follows: C. Stark Draper, fire-control apparatus for the Army Air Forces, Navy Bureau of Ordnance, Sperry Gyroscope Company, and Emerson Electric Manufacturing Company; John F. Hutzenlaub, airplane stabilization for the Army; John R. Markham, predictor for flying qualities of airplane designs for the Navy; Manfred Rauscher, transient aerodynamic forces for the National Advisory Committee for Aeronautics and flutter characteristics of airplane structures for the Navy; Robert C. Seamans, Jr., tracking control for the Army; Edward S. Taylor, piston ring friction for the National Advisory Committee for Aeronautics and guided missile propulsion for the Navy.

Personnel. Professor C. Stark Draper was awarded the Medal for Merit by President Truman for improvements in antiaircraft fire-control equipment, and the fellows of the Institute of the Aeronautical Sciences voted Professor Draper the Sylvanus Albert Reed Award for his applications of the gyroscope. Professors Otto C. Koppen, Joseph S. Newell,

Shatswell Ober, John R. Markham, and Edward S. Taylor served on technical committees of the National Advisory Committee for Aeronautics. Professor Markham served as chairman of the committee on education of the Scientific Advisory Group of the Commanding General, Army Air Forces. Professor Rauscher spent two months on a technical mission in Europe for the Army Air Forces. Professor Newell relieved Professor Koppen as executive officer of the Department at the end of the year. Professor J. C. Hunsaker continued to serve as chairman of the N.A.C.A.

JEROME C. HUNSAKER

BUILDING ENGINEERING AND CONSTRUCTION

No changes have been made in the undergraduate curriculum. A request for graduate status, to enable the Department to offer the S.M. degree in Building Engineering and Construction, and the addition of eight more graduate subjects have been approved by the Committee on the Graduate School and by the Corporation. These new subjects include three courses dealing with plastics, three dealing with cementitious materials, and two in building management.

The Department has had the assistance of several additional men in the conduct of its academic work. Arthur Bradford Ellenwood, Jr., was appointed a special lecturer and Eugene R. Eisenberg a part-time assistant to help in carrying the teaching load during the summer. Professor Dean Peabody's time has been largely consumed in carrying an unusually heavy teaching load to get us over the emergency conditions of the year.

The research program sponsored by Godfrey L. Cabot, Inc., has continued under the direction of Professor Howard R. Staley, with studies on surface areas and particle size distribution and the significance of these characteristics as affecting finely divided powders. The National Lime Association has voted to support its research program in the Department as a continuing project, and its newly appointed committee on research has approved Professor Staley's program on the properties of lime under controlled and variable conditions. Professor Staley has been assisted in the Godfrey Cabot and

National Lime projects by Sidney H. Greenfeld, research associate in the Department of Chemistry, and Donald W. Sabean, Jr., of the D.I.C. staff. The Department is co-operating with the Physics Department in an investigation of the properties of concrete made with various additive substances which are effective in shielding against neutron radiation. This work is under the direction of Professor Staley, who is being assisted by Basil Thomas, research assistant.

The Plastics Materials Manufacturers' Association has set up a five-year program of research under the direction of a joint committee of the association and the Institute staff. The new Plastics Laboratory has been organized, and the development of testing equipment and test methods is going forward. Professor Albert G. H. Dietz is directing the research, assisted by George S. Burr and Lewis D. Lipschutz of the D.I.C.; William H. Campbell, technician; and Walter J. Gailus, Herbert G. Lauterbach, and Steven Yurenka, half-time research assistants. The Department is also co-operating with Professor Hoyt C. Hottel and Professor Lawrence B. Anderson in a project aimed at the methods of utilizing solar energy for the heating of houses. Professor Dietz is the Department's representative on this joint research committee and he has the immediate assistance of Paul W. Witherell, research associate.

The results of the first investigation of sheet-metal gutters have been published by Professor Walter C. Voss and Albert J. O'Neill, and a study of gravel stops and flat and standing seam roofing is being made with the assistance of Revere Copper and Brass, Inc. The staff of the Department, with the assistance of prominent men from the industry, has committed itself to the publication of a technical series on building construction, to be published by D. Van Nostrand Company, Inc. The series will include 10 volumes. The first volume of the series, *Dwelling House Construction* by Professor Dietz, was issued by the publishers in the fall of 1946. A second edition of *The Design of Reinforced Concrete Structures* by Dean Peabody, Jr., has been published by John Wiley and Sons, Inc.

Professor Voss spoke on housing materials and construction at district meetings of the American Society for Testing Materials in Philadelphia and Buffalo; discussed new building

materials and methods at the Rural Home Remodelling Conference held in Boston in October, 1945, under the auspices of the United States Department of Agriculture; spoke on housing before the Northeast Federal Savings League Conference in September, 1945; participated in a confidential housing clinic under the auspices of the Worcester Federal Savings Bank in August; spoke on the new state building code at the annual meeting of the Massachusetts Building Commissioners and Inspectors Association in September, 1945; and addressed builders and realtors on new materials of construction, under the auspices of the Natick Federal Savings and Loan Association.

The activities of the staff in the professional societies have been extensive during the year. Professor Peabody has continued his work on the building code committee of the American Concrete Institute and he is now chairman of the executive committee of the Designers Section of the Boston Society of Civil Engineers. Professor Staley has continued his activities as chairman of Subcommittee II of Committee C-7 of the American Society for Testing Materials and has obtained the committee's acceptance of the specification for "Limes for Structural Purposes." Professor Dietz has been active in Committees D-7, D-14, and D-20 of the American Society for Testing Materials and is chairman of Subcommittee I of Committee D-14. In connection with his work on this committee, he participated with R. C. Platow of the Bell Telephone Laboratories, Inc., in a symposium on adhesives last October. He is a member of the society's administrative committee on papers and publications. He continues his work with the timber committee of the American Society of Civil Engineers and the woodworking division of the American Society of Mechanical Engineers. He was awarded the Desmond Fitzgerald Medal of the Boston Society of Civil Engineers for his paper on "Details of Design with Timber Connectors." Professor Voss has continued his work with Committee D-7 of the American Society for Testing Materials and has been appointed a member of the society's administrative committee on research. He is also a member of the New England district council of the American Society for Testing Materials and is chairman of its program committee.

WALTER C. VOSS

Business and Engineering Administration

The energies of the Department during the year were devoted almost exclusively to the attainment of the highest possible quality of instruction in behalf of returning veterans, who have re-entered the Course in unexpectedly large numbers. Never has student interest been so high nor the best of educational service to them more richly deserved.

Special registration problems have been particularly pressing, and the Department has Professor Charles H. Porter particularly to thank for the long hours and patient attention given to this exacting task of preparing individualized term programs for the many students whose curricular difficulties had been intensified by their interim of wartime service.

The Department also found it necessary to repeat each term practically all its undergraduate required subjects, in order to make reasonably full schedules available to returning students who were proceeding upon readjusted programs. This requirement placed an unavoidably heavy load upon a teaching staff not yet reconstituted to normal size because of leaves of absence granted during hostilities. Fortunately, the Department had the advantage of continuance of its undergraduate teaching activities during the war and, therefore, did not meet the problem of regaining momentum which has faced so many other schools of business administration.

During the year, co-operative relationships were renewed with many establishments in Greater Boston and Massachusetts, permitting the rescheduling of student visitations and plant reports which have been in past years an important adjunct to departmental instruction. Evening dinner meetings of upperclassmen with industrial executives were also re-established for purposes of informal group discussion of today's managerial problems. A further step in the direction of closest possible co-ordination between theory and current practice was the re-establishment of summer placement activities. The Department was able to provide opportunities for employment for all students who chose to spend the summer term in industry.

Additional enlargement of student relationships has followed upon the inauguration of a student branch of the

American Management Association, which has initiated a promising series of dinners and discussions.

Especial stress has been laid upon the collection and preparation of new teaching material in the form of case problems, text material, and visual data. Present industrial issues differ so markedly from those of pre-war days that completely new backgrounds for managerial thought have been found imperative. Fortunately, with the collaboration of New England industrialists and departmental alumni in executive positions, it has been possible to present current data for study in practically all phases of administration, although the price in time and effort has been high.

Again, new teaching devices more closely in accord with present needs have been introduced. An intensified form of industrial visitation, whereby a small student group makes a thorough investigation and analysis of a managerial issue under current consideration by executives in a given plant, has proved unusually promising as an educational device and has gained the enthusiastic support of co-operating company officials. Even in second-year subjects, the Department has found it advantageous to capitalize upon the greater average maturity of the student body by presenting problems, the solutions of which are also of immediate interest to operating executives who provide the issues. In general, it may be said that emphasis has swung toward the increased inclusion of current realism into the teaching of administrative subjects.

The Department is pleased to report that a modest research program is under way having to do with managerial techniques essential in dealing with increasing economic and technological change. Under the leadership of Professor Edwin A. Boyan, a considerable body of contemporary data has been assembled and is now in process of classification preparatory to organization for teaching and publication.

The departmental graduate curriculum was resumed during the year, and in company with other divisions of the Institute, much time and attention have been given to matters of graduate-student selection and induction. The return of Professor Ronald H. Robnett to departmental activities as graduate registration officer and Graduate Committee member has

enabled the re-establishment of the program to take place with a minimum of difficulty and delay.

The Department has been particularly happy to welcome Professor Douglass V. Brown, formerly of the Department of Economics and Social Science, who has become the first Alfred P. Sloan Professor of Industrial Management, a professorship made possible by a gift from Alfred P. Sloan, Jr., '95.

Active and constructive interest in long-term departmental possibilities has been shown by the Visiting Committee of the Corporation. At its request, reports on future opportunities for constructive collaboration between industry and education, with especial reference to the Department, were prepared by Robert W. King, Assistant Vice President of the American Telephone and Telegraph Company, and Professor Wyman P. Fiske, a member of the departmental staff on leave of absence. These studies have received careful consideration by the Department and are proving of important value in the establishment of future departmental policy.

Alumni contacts have continued active, eight letters having been issued to the more than two thousand alumni during the year. A new and promising development has been undertaken which is aimed to acquaint both the Department and its former students with significant advances occurring in the management field. Preliminary correspondence and other activities have been made possible by a grant of unrestricted funds to the Department by Newman M. Marsilius, '17, for which we are most grateful.

The Department wishes also to express its appreciation to the many industrial executives who have given heavily of time and effort in the preparation of current problem material and in conferences with student groups. These services have been of invaluable assistance and have constituted a direct and especially important contribution to our educational activities during this year of re-establishment and renewal.

ERWIN H. SCHELL

CHEMICAL ENGINEERING

The year has been fluid and inspiring — fluid because of readjustments due to the return of senior staff, the shift of

research objectives, the move to a new building, and the influx of new students; inspiring because of the enthusiasm of the staff, the superior quarters which are now available, the high quality of the graduate student body, and the challenge of the educational emergency.

The Department has been fortunate in the timing of its reconversion. Most of the senior staff had been engaged in direct war activities but in civilian positions from which they could return immediately after the defeat of Japan and prior to the heavy influx of new students. The new Chemical Engineering Building, which was designed in 1940, constructed in 1941, and occupied by the Chemical Warfare Service as a development laboratory, was released by the Army in November, 1945, and the Department moved into its new quarters in January, 1946. We have therefore been able to enter the postwar era with the pre-war senior staff and much improved quarters.

The most vital task today is our graduate instruction and research program. Men who have been graduated from universities all over the country during the past four years are eager to complete their professional training, and the privileges afforded by the G.I. Bill of Rights encourage many to undertake graduate work who would otherwise have regarded it as financially impracticable. The Institute's position in Chemical Engineering draws many applications and we are currently able to accept only one-fourth of the fully qualified candidates. The task of selecting those to be admitted from the large number who apply is arduous and difficult, and it is regrettable that so many promising young men must be refused. Our primary duty in the present emergency is to the students, and we must take as many as possible without sacrifice to the quality of instruction. The challenge is sharpened by the realization that the graduate student group today is more purposeful and capable than any similar group in the past.

The undergraduate problem is less pressing at this time because there are relatively fewer men in the junior and senior classes, and the freshmen and sophomore classes do not take professional subjects in the Department. It is anticipated that undergraduate work will resume its pre-war importance as a staff load in the near future.

We expect that most of the graduate students will complete their programs when they have secured the master's degree and that only a relatively few should go on for the doctorate. The master's program in Chemical Engineering is designed to round out the basic professional training needed by most of the graduate students in preparation for their active careers as engineers. Furthermore, the period of Graduate School training for a doctorate man is at least twice as long as that for a master's man, and the Department feels that it can give optimum service in the emergency to the young engineers and to industry by handling more men for the M.S. degree than by restricting its enrollment to a much smaller group of students working toward the doctorate. The number of graduate students in the Department now exceeds pre-war figures and will be significantly higher next year.

Personnel. Professor Edwin R. Gilliland assisted the administration as deputy dean of engineering during the latter half of 1945. On February 1, 1946, Professor Thomas K. Sherwood replaced Professor Gilliland as deputy dean and on July 1, 1946, he was appointed dean of engineering when Dr. Edward L. Moreland became executive vice president of the Institute. The Department regrets the loss of Professor Sherwood as an active member of its staff but is gratified by his selection to a position where he can contribute more broadly to the over-all development of engineering education and research. We have lost two assistant professors from the staff: Scott W. Walker, who has become assistant director of research for the Stanolind Oil and Gas Company, and Roy P. Whitney, who has become director of industrial co-operation at the University of Maine.

Publication of the Smyth report on atomic energy revealed the part which Professor Warren K. Lewis played during the war as adviser to those in charge of the Manhattan District project. He has been called on frequently during the past year for similar services. Professor Hoyt C. Hottel received the William H. Walker Award for 1945 from the American Institute of Chemical Engineers for his work on radiation of furnace gases. This award is given annually to a member of the national society who is judged to have made the most valuable contribution to the society's chemical engineering literature during

the previous three years. It was established in honor of a former head of this Course.

The first presentation of the Leo Hendrik Baekeland Award was made by the North Jersey section of the American Chemical Society to Professor Gilliland. This medal and cash award will be given every two years to a man under 40 years of age for outstanding technical and industrial achievements. The selection of Professor Gilliland as the first recipient was based upon his contributions as a teacher, his creative research in synthetic chemistry, and his wartime accomplishments as assistant rubber director.

School of Chemical Engineering Practice. The stations of the School of Chemical Engineering Practice were re-opened as of July, 1946, with the enthusiastic support of the co-operating companies: the Bethlehem Steel Company at Buffalo, New York; the Hercules Powder Company at Parlin, New Jersey; and the Eastern Corporation and Penobscot Chemical Fiber Company at Bangor, Maine. Professor J. Edward Vivian is now the general director of the School of Chemical Engineering Practice. Professor William C. Bauer has returned to our staff to be director of the Bangor station; David P. Herron is director at Parlin; and Keith E. Rumbel is director at Buffalo. Both Mr. Herron and Mr. Rumbel were assistant directors at Practice School stations some years ago.

Practice School facilities and quarters at the various stations were used for other purposes during the war, and the School is therefore operating under some difficulties during the first six months. As might be expected, a major problem is securing adequate housing facilities for students and staff at the stations. For these reasons the student groups are being kept a little below maximum pre-war size, but it is expected that they can be increased next spring. The X-B Practice School for undergraduates, which was taken by seniors in the last term of their program, will be re-established as soon as it is evident that the Practice School can care for the additional number of men.

Research. During the war the research of the Department was directed toward problems of specific war interest, which were of course on a closed basis as regards publication. Two

major lines of endeavor for the services are being continued but along basic lines in which there will be relatively free publication of the results.

A research project to investigate the fundamental properties and reactions of hydrogen peroxide was initiated in July, 1945, at the request of the Navy. It was initially supervised by Professor Sherwood, with experimental work carried out in co-operation with Professor Frederick G. Keyes and other members of the Chemistry Department. After the appointment of Professor Sherwood as dean of engineering, the project was continued under the joint supervision of Professors Hoyt C. Hottel and Glenn C. Williams. Unlike many other war research projects, the study is fundamental in nature and without immediate concern for the applications of the material in munitions.

The project has been integrated with the research work of the Departments concerned; thus, suitable problems are being carried on as theses by candidates for advanced degrees in these Departments. The research program, involving a staff of about 35, includes studies of the fundamental properties of hydrogen peroxide and of its aqueous solutions, its stability in storage, the mechanism of catalytic decomposition in the liquid and vapor phases, and studies of other peroxide reactions. The results of some of these investigations have indicated that pure hydrogen peroxide in water is extremely stable and that the stabilization of impure peroxide by addition of appropriate chemicals is due primarily to inactivation of dissolved or suspended catalysts by complex formation or by adsorption. Other research has revealed the effects of temperature, concentration, nature of contacting materials, and other variables on rates of decomposition. A study by means of radioactive tracers indicates that catalytic decomposition by manganese and lead compounds occurs by cyclic oxidation-reduction and that catalyst poisons break the cycle. The activities of other catalysts have been investigated with both liquid and gaseous peroxide. Studies are proceeding to determine physical properties such as vapor-liquid equilibria of aqueous solutions, density, index of refraction, and electrical conductivity. Liaison is maintained between the hydrogen peroxide research

program and relevant portions of the M.I.T. Guided Missiles program.

A program of basic research in the field of high-output combustion, originally sponsored by the Navy Bureau of Aeronautics, has been under the direction of Professors Hottel and Williams for the past four and one-half years. This project is being continued under the joint sponsorship of the Navy's Bureau of Aeronautics and Bureau of Ordnance as part of the M.I.T. Guided Missiles program.

The research program on the fluidized powder technique has been continued and enlarged. The results of work on coal gasification are extremely promising and give indications of being more advantageous than present methods of gasification. The program has also been expanded to use the fluidized powder technique in preparing synthesis gases for the Fischer-Tropsch synthetic gasoline process. Work on the adsorption of gases has continued, and it appears that separation by adsorption, combined with fluidized powder methods, may be employed to reduce significantly the cost of separating hydrocarbons of low molecular weight.

Research in the field of high pressure has been started again after it was discontinued during the war. The major portion of the present effort is directed to the production of oxygenated compounds from hydrocarbons of low molecular weight.

With the co-operation of the Department of Mechanical Engineering, a study of heat transfer for air inside tubes at very high velocities was made under conditions where the kinetic energy is large compared with the change in enthalpy, and in consequence the stagnation temperature differs widely from the temperature of the flowing stream. This is of interest in the design of rockets and heat exchangers for aircraft. It was found that the potential causing heat transfer is the difference between the temperature of the heated wall and the temperature the tube wall would assume in the absence of heat transfer, known as the adiabatic wall temperature. The recovery factor, which relates adiabatic wall temperature, stream temperature, and stagnation temperature, was found to be independent of Mach number from two-tenths to one.

In the field of applied thermodynamics a study of azeo-

tropic mixtures has yielded generalizations which are applicable to hydrocarbon systems. Empirical relations have also been derived for estimating the entropy changes of certain chemical reactions, thus simplifying the prediction of chemical reaction equilibria.

Research on reactions of interest in industrial chemistry continues. An extended study of the chlorination of hydrocarbons has as its objective the determination of conditions for optimum yield and a minimum of undesired by-products. Other subjects in this field include a new synthesis for acrylates and various ion-exchange reactions.

An investigation into some of the fundamentals of cohesion and adhesion has been started, with the initial work limited to thermoplastic polymers. A collateral study is under way on the various physical and chemical properties of these polymers which contribute to their behavior in cohesion and adhesion, such as molecular weight, coefficients of expansion, and polarity.

Methods and techniques which the Department has developed during recent years in the colloidal field are finding increasing applications in industry and science. The use of stream double refraction of dilute suspensions of colloidal clays has been broadened and is now applied successfully to such studies as firebox design of locomotive engines, and is in continued use in a number of restricted Navy problems. The use of bentonite gels as coating for packaging paper and as insulation for wires has been stimulated. Clays having the property of forming thixotropic gels in organic dispersion media have been developed and put to use in oil-well drilling and as fillers for rubber and plastics. In the field of silicone resins new compounds have been developed which are characterized by very rapid polymerization and high resistance to the influence of corrosive chemicals.

In the field of reclaiming synthetic rubber, further advances were made which included reclaiming of Buna S, Buna N, and mixtures of all synthetic rubbers with natural rubber.

Work on the new microscopic technique using ultra-illumination by incident light, which was reported last year for the first time, has been extended, and yielded during the year a

great amount of valuable information on the molecular structure and properties of lyogels. The new technique has offered the first visual explanation for the differences in structure and properties of chemically identical compounds like gutta-percha and rubber and the difference in properties of structurally identical compounds like cationic soaps.

It had become increasingly evident just before the war that the Department's facilities for constructing research and thesis apparatus were inadequate. When the new Chemical Engineering Building was planned, provision was made for a modern shop. This shop is now equipped with machine tools, with machinery for doing the considerable amount of sheet-metal work needed in constructing chemical engineering research equipment, and with a suitable tool crib, and is staffed by a technical instructor and two experienced machinists. To provide for the demand for newly developed instruments in chemical engineering research and to assure improved service to research workers, the new building contains an instrument room. A competent man of long experience is in charge, assisted by a mechanic having the necessary skill and training to maintain the instruments. It is difficult to see how the departmental research now in progress could have been undertaken without the facilities which have thus been provided.

Plans are under way to provide small-scale chemical engineering equipment for undergraduate instruction in the new laboratory. Funds donated by E. B. Badger and Sons Company will assist this program.

The publication of papers and of textbooks was largely suspended during the war and will be difficult to re-establish while the pressures of classroom work and of research direction are so insistent. A steady flow of publications is essential to a healthy Department, but we fear that this will be the last feature of the program which can be brought up to proper standards. The staff must be allowed time for writing papers and books, and such time does not seem to be available in the near future.

The year 1945–1946 is the first chapter in a new era for the Department. A good start has been made, but we now see

clearly the need for additional junior staff and for more laboratories and research equipment if we are to meet our responsibilities to the returning veteran, to the profession, and to the industrial economy of the country.

WALTER G. WHITMAN

CIVIL AND SANITARY ENGINEERING

The year was characterized by progress in the development of new laboratory facilities carried out against a background of increased demands on the instructing staff resulting from the return of veterans.

Undergraduate enrollment in this Department has shown a definite increase, but we could accommodate a further increase at the undergraduate level. Qualified applicants for graduate study in Civil Engineering exceed the number that can be accepted. It was necessary to raise the quota for this group from 40 to 50, of whom not more than 15 may be Army officers. The latter provision provides for the resumption of our pre-war arrangement to accept a group of regular Army Engineer officers each year for a three-term course leading to the master's degree in Civil Engineering. A group of 14 officers entered in June under this arrangement. It was also necessary to increase the quota for graduate students in Sanitary Engineering from 8 to 14.

The Summer Surveying Camp could not be operated because both students and staff had to remain in Cambridge throughout the summer. We are, however, planning to resume the camp in the summer of 1947.

The Visiting Committee for the Department, under the able and active chairmanship of Thomas C. Desmond, '09, held two well-attended meetings and was instrumental in forwarding a program to improve our laboratory facilities.

The River Hydraulics Laboratory in Building 21 has been put into operation once more, and will be utilized on a temporary basis for instruction and research in advanced hydrodynamics. Plans are well under way for a new hydrodynamics laboratory that will serve for both undergraduate and graduate instruction and research, as well as provide extensive facilities

for research for outside agencies. A naval towing tank for the Department of Naval Architecture and Marine Engineering will be included in the laboratory. Arthur T. Ippen assumed his duties as associate professor of hydraulics in October, 1945, and James W. Daily of the hydrodynamics laboratory at the California Institute of Technology was appointed assistant professor of hydraulics in September, 1946. Allan T. Gifford was promoted to associate professor of hydraulic engineering.

The Sanitary Engineering division has progressed steadily under the direction of Professor William E. Stanley. Structural changes for the sanitary chemistry section of the William T. Sedgwick Laboratories of Sanitary Science have been completed, and utilities have been provided. Delays in equipment deliveries have retarded the development of this section, but it is now operating under the direction of Clair N. Sawyer, who joined the staff in September, 1945, as associate professor of sanitary chemistry. Space for the sanitary bacteriology section has been provided and will be developed by Professor Murray P. Horwood during the coming year; meanwhile this work is being conducted in the Biology Department laboratories. The engineering section is already in an operating condition, although a number of improvements are contemplated. With the completion of these laboratories, the Course in Sanitary Engineering will for the first time be provided with modern, unified laboratory facilities. Ariel A. Thomas joined the staff in February as instructor in Sanitary Engineering.

In January, the Department was greatly saddened by the tragic death of John D. Mitsch, Associate Professor of Structural Engineering, who for several months had been serving as chairman of the Surplus Property Committee of the Institute. This loss deprived us of one of our best teachers in the Structural division. The serious illness of Professor Walter M. Fife during the spring further reduced the staff available for teaching in that division. To meet this situation partially, Charles H. Norris, who was promoted to the grade of associate professor during the spring, became acting registration officer for graduate students in Civil Engineering, and Myle J. Holley, Jr., joined the staff as instructor in Structural Engineering. In the Structural Analysis Laboratory, an investigation

of the strength of timber floors has been conducted, in co-operation with the Liberty Mutual Insurance Company. Arrangements have also been made to initiate a research program dealing with the effect of weld spacing on elastic stability, to be financed by the Welding Research Council.

In the Transportation division, Professor Charles B. Breed retired from his post as professor of civil engineering in June, 1946, having completed almost half a century of distinguished service to the Institute, which included a decade as head of this Department. Professor Alexander J. Bone played a leading role in arranging for the third New England Traffic Engineering Conference held at the Institute in June, which was sponsored jointly by this Department and the Traffic Division of the Massachusetts Department of Public Works, with the National Conservation Bureau of New York acting as co-ordinator. Professor John B. Babcock, 3d, continued his excellent work as placement officer for the Department, his main concern having become that of finding men who might be available for the many openings in civil engineering.

In the Soil Mechanics Laboratory, investigations of samples for a talus deposit which forms the abutment of a large proposed flood control dam in Oregon have been conducted by Professor Donald W. Taylor for the Portland district, United States Engineers. Arrangements have been completed to undertake a research program dealing with the solidification of soils for the Engineer Board of the War Department.

The student chapter of the American Society of Civil Engineers, which was relatively inactive during the war, has become revitalized, owing in part to the unusual interest of Professor Charles H. Norris, who is now the Faculty adviser for that group.

In December, another department news letter was sent to the living graduates of this Department, who now number approximately 2,500.

JOHN B. WILBUR

ELECTRICAL ENGINEERING

The transition from war to peace has posed not only the problem of converting to a peacetime basis after five years of war

status but the problem of preparing for a markedly enlarged scope of activity. This enlargement is a response to two conditions: first, the extraordinarily large number of applications for admission, mainly from returning servicemen who have had their undergraduate study interrupted or who desire to return for graduate work; and, second, the greatly augmented support for research available from both government and industry, as compared with pre-war years. Both of these forces for enlargement are so compelling that the limitation on our scale of activity is neither that of well-qualified students nor that of funds. Rather it is the amount of mature and experienced talent available for responsibility in teaching and research. Space limitations are almost as serious. In the face of these pressures, much of the administrative effort of the Department has been directed toward utilizing with maximum effectiveness the available mature man power and the available space. These problems are common to the entire Institute, but they have been particularly acute in this Department.

In the teaching aspect, the transition from war to peace has involved the re-establishing of our normal curriculum and more particularly the reinstating of more individualized instruction. In the laboratories, the individual project type of work is replacing the standardized experiments to which we necessarily reverted for man-power economy during the war.

In the research aspect, reconversion involved the transition of research projects from their wartime operation as pure development agencies to a peacetime status as closely integrated components of the graduate educational structure. While the objectives of some of the research projects have not permitted a complete shift to academic workers, this aim has been on the whole successfully accomplished. It would have been more so had not the Graduate School capacity limited the number of academic research appointments.

Sound enlargement of staff to meet the greatly augmented teaching and research loads has required much effort. Early in 1946 it became apparent that the number of well-qualified applicants for graduate work in Electrical Engineering was going to be far beyond our capacity to provide a mature staff to teach and direct their programs. It likewise became evident

that our greatly augmented needs for teaching and research assistants appointed on an academic basis would use the major part of our Department graduate-student capacity. Three different studies to determine this capacity were made during 1946 as these pressures increased. The Department teaching and research staff needs are now reasonably well satisfied, but with the result that we have room for only about 25 normal full-time civilian graduate students out of a total Department graduate enrollment expectation of 170 for the fall of 1946. Large numbers of very well qualified applicants for graduate study have had to be refused. As a result of the high ratio of graduate applications to graduate admissions, of the order five to one, the general level of ability in the Graduate School is becoming extraordinarily high, and we can look forward in the immediate future to an exceptionally high level of accomplishment among our graduate-student group. In the selection process for graduate assistants, we have obtained many excellent men for both teaching and research, including a substantial fraction of considerable maturity derived from several years of professional war experience. Such maturity among our new appointees permits greater staff expansion than would be possible were all of our new men freshly out of school.

A significant fraction of our graduate facilities is devoted to officers of the armed services. This fraction — of the order of a quarter to a third — would be even larger except for arbitrary limitation as a matter of Institute policy. At the undergraduate level, a comparable effort is devoted to the naval electronics program.

More specific information on various phases of the activities of the Department follow.

Staff. Of the 20-odd Faculty members on leave or special assignment during the war, only Professors Ralph D. Bennett, Edward L. Bowles, and Wilmer L. Barrow are still on leave, while Professors Clifford E. Lansil and William M. Hall have resigned to enter industry, Professor James E. Mulligan has resigned to stay with the Naval Ordnance Laboratory, and Professor J. Albert Wood, Jr., left to join the staff of the department of electrical engineering at Dartmouth College. The Faculty has been augmented by the addition of Ivan A.

Getting, Robert G. Breckenridge, Stuart T. Martin, Jerome B Wiesner, Yuk Wing Lee, Marvin B. Sledd, and Willard F. Gray and by the promotion of Richard Taylor, Godfrey T. Coate, Henry J. Zimmermann, and Donald P. Campbell. The Department now has a total active staff of 9 full professors, 17 associate professors, 12 assistant professors, 21 instructors, 32 assistants, 22 research associates, 52 research assistants, 8 nonresident instructors, and 1 administrative assistant to handle the heavy teaching and research load with which the Department is faced.

The Department has been fortunate to procure a reasonable number of experienced men with engineering, research, or teaching experience, or a combination of these. The staff engaged for the coming academic year totals over 170, which is approximately double the pre-war maximum number. With such a large number of additions, attention must be given to teaching methods. Plans are under way for appropriate instruction of new staff members in teaching methods.

Discontinuance of wartime restrictions made possible the publication of a number of textbooks and a relatively large number of articles by staff members during the year. Various members of the staff have continued active in the American Institute of Electrical Engineers, the Institute of Radio Engineers, the Society for the Promotion of Engineering Education (now the American Society for Engineering Education), and the Illuminating Engineering Society, as well as in some others.

Army and Navy Programs. Graduate programs for the Army and Navy have continued in operation, and many requests for similar programs have been received. In addition to those which we have had in the past, we expect to admit a number of Signal Corps officers to graduate work in the fall. Plans have been made with the Army Ordnance to admit six officers to graduate work in the fall of 1947, and with the Navy to admit 25 Navy officers for a program on guided missiles.

The Radar School terminated the wartime phase of its training program on December 15, 1945. During the war a total of 2,635 Army personnel, 5,955 Navy, Coast Guard, and Marine personnel, principally officers, and 265 civilians from

the Radiation Laboratory were given training. A substantial number of Radar School graduates were in attendance at the Institute during the past year and received some credit for work taken at the school.

In March a postwar radar program was begun primarily for junior Navy officers, most of whom have degrees in electrical engineering or are graduates of the United States Naval Academy. They take such subjects as are required to qualify for our degree, and in addition take the specialized radio, radar, and sonar subjects, with atomic theory and nuclear physics. Upon the successful completion of this program, the Institute's bachelor of science degree will be awarded. It was hoped to move the radar laboratories to the Institute buildings in Cambridge, but because of the present overcrowding of space, it was decided to retain space at the Harbor Building on Atlantic Avenue, Boston, for instruction in radar, with sonar continuing in Building 18 at the Institute.

During the year, a second edition of the Radar School's text, *Principles of Radar*, was prepared as an unclassified document. Professor Joseph W. Horton is actively engaged in writing a text, "Fundamentals of Sonar."

Graduate Work. Fortunately the great postwar demand for graduate study in the Department coincides with active and well-supported research programs. That effective research stimulates vigorous graduate work continues to be clearly illustrated in the live class material and the significant thesis research associated directly and indirectly with these programs. With an extensive research program, our capacity for graduate students is substantially augmented. While care is necessary to assure that the training of men is ranked as at least the equal of research results, sound staff thinking can and does provide graduate-study opportunities of the best sort. Much effort has been devoted to achieving these ends in this unprecedented graduate activity.

During the year two new graduate subjects were offered. The first of these was "principles of pulse circuits," given by Professor Henry J. Zimmermann, and the second was "electronic circuit theory," given by Professor Godfrey T. Coate. New undergraduate subjects included "industrial applications

of servomechanisms," given by Professor Donald P. Campbell; two terms of "principles of radar" and one term of "aircraft electronic equipment," given by Professor Zimmermann; two subjects, "shipboard radio communication equipment" and "radio navigational systems," given by Professor William H. Radford; and "principles and applications of sonar," given by Professor Joseph W. Horton. The subjects in radar, radio communication, and sonar are at present restricted to Navy officers studying radar.

Additional laboratory space has been provided for graduate instruction in servomechanisms. With the declassification of a large amount of the theoretical material which was restricted during the war, the scope of the instruction was extended, with many wartime developments used as illustrative material. Additional space has been provided for the Communications Laboratory and will be used to provide facilities in microwave equipment developed during the war. As a part of the Measurements Laboratory the work in electrical implementation has been expanded under the direction of Professor Richard H. Frazier, but still more space is desirable for this activity.

The Department is currently the largest in the Institute, with a continuing heavy pressure upon it for enrollment of additional students. While some additional space has become available for laboratories as indicated above, it is nowhere nearly adequate to take care of the present large increase in student numbers beyond our previously determined quotas. It will probably be necessary to resort to evening laboratory sessions during the coming academic year, and to encourage as many students as possible to take advantage of attendance at summer sessions. In this way our capacity to handle students in the existing space can be somewhat extended.

Research. The wartime research activity of the Department is gradually being returned to a more nearly normal basis, but on a greatly augmented scale as compared to the pre-war period because of the large amount of contract-supported research in progress. This is supervised by senior staff members assisted by junior staff who are working toward advanced degrees and by employees of the Division of Industrial Coöperation. A very significant trend is the increasing number of multi-

department research groups. The Department of Electrical Engineering is currently a partner in the Research Laboratory of Electronics, the Acoustics Research Laboratory, the Laboratory for Nuclear Science and Engineering, and the Guided Missiles project. In addition, most of the Department's other research activities, while handled administratively within the Department, have a strong interdepartmental flavor in practical operation. Such are the Center of Analysis, the Servomechanisms Laboratory, the Laboratory for Insulation Research, and the Laboratory for Instruments and Measurements.

The largest of our research activities has been in the field of servomechanisms, under the direction of Professor Gordon S. Brown. The activity of the Servomechanisms Laboratory, sponsored largely by Division of Industrial Coöperation contracts but now operating within the Department, has shown no decrease since the war. Its staff has been maintained at about the 1945 average and is now well represented by physicists, mathematicians, electrical engineers, and mechanical engineers, with supporting drafting, technician, and shop personnel. The laboratory had undertaken projects of a fundamental character prior to V-J Day. During the fall of 1945 they were all reviewed and in general the emphasis was shifted to aspects of the work which represented greater fundamental advance in the art but which involved more time for completion than originally had been allocated. The total of the present laboratory contracts exceeds one million dollars, and certain projects will require two to three years for completion. As is true in most of the other laboratories, the Servomechanisms Laboratory is administered in a manner which gives research under sponsorship the dual objectives of training men and of providing a high order of accomplishment for the sponsor. This provides facilities for a large number of graduate theses, either by academic staff members assigned to the laboratory, or by service or civilian personnel who are full-time students. It offers in addition extraordinary opportunities for creative responsibility at the postgraduate level.

The Laboratory for Insulation Research has terminated its wartime commitments and has engaged in a broad program of fundamental research in dielectrics under the sponsorship of

the Office of Naval Research. The work is carried on to a major extent by research associates and assistants of the Departments of Electrical Engineering, Physics, and Chemistry who are working toward doctorates. The laboratory has facilities for the measurement of dielectric constant and loss, a section for high-voltage and field-strength research, laboratories for inorganic and organic chemistry, x-ray and electron diffraction, optical and photoelectric research, a ceramic laboratory, a microwave research laboratory, and laboratories for the growth and study of single crystals. The laboratory is engaged in the study of nonmetals in electric and electromagnetic fields under a wide range of frequencies, temperatures, and field strengths. Dielectric constant and loss are measured under frequencies from direct current to 3×10^{10} cycles per second. The optical group is concerned with measurements from infrared to ultraviolet, and the section on x-ray and electron diffraction completes the frequency span by studying surface and volume structures and phase transitions of the dielectrics under investigation. Thirteen of the publications of the laboratory pertaining to war research have been declassified and can be obtained as photostats from the Office of the Publication Board, Department of Commerce. Additional papers have been published in the scientific journals. A "Handbook of Dielectric Materials" is to be published under the imprint of the Technology Press.

In the years 1943 and 1944, the administration of the Institute set aside funds and laid plans to establish a Research Laboratory of Electronics as soon as the end of the war permitted. This laboratory was to act jointly with the Departments of Electrical Engineering and Physics to further the research work of the Institute in the broad field of electronics. As such the laboratory may be viewed as a facility of the Institute where any staff member or student (primarily graduate) may carry on personal research which properly lies in the general electronics field. While the administration of the laboratory is the responsibility of the Departments of Electrical Engineering and Physics, it was early realized that other departments, especially those of Mathematics, Chemistry, and Biology, would be interested in the work of the laboratory and

the use of its facilities. Accordingly, the director of the Radiation Laboratory established the Basic Research Division (of Radiation Laboratory) and turned over its administration to the Research Laboratory of Electronics. This support allowed the new laboratory to operate with a larger staff than had been previously contemplated.

Early in 1946, negotiations were begun by the Institute and three service organizations — namely, the Navy Office of Research and Inventions (now the Office of Naval Research), the Army Air Forces, and the Signal Corps — to continue the work started under the auspices of the Office of Scientific Research and Development. Accordingly, the mutual interests of the three services named above have culminated in a contract between the Signal Corps and the Institute for the continuance of the Research Laboratory of Electronics at approximately the same rate as the Office of Scientific Research and Development support. The participation of the three services is equal, but for contractual convenience the legal arrangement is between the Institute and the Signal Corps only. During the past year 8 senior staff members and 25 junior staff members of the Electrical Engineering Department have engaged in research in the Electronics Laboratory. Their interests are varied and the work has included microwave tube electronics, cathode research, research leading to the design of a microwave accelerator, high-speed oscillograph, and high-voltage pulse-measuring techniques, a study of hydrogen thyratron tubes, studies of subminiature tubes and circuits, the application of modern electronic techniques to brain current studies, and an extensive group of communication studies investigating relative merits of amplitude, frequency, and pulse modulation techniques and the problems encountered in employing these techniques in microwave communication systems. It should be emphasized that many of the projects in the Electronics Laboratory are of interest to both the Departments of Electrical Engineering and Physics but that certain of those listed here, in which the Electrical Engineering staff participates, are primarily of interest to physicists.

In addition to the work outlined above, the Electronics Laboratory is also responsible for the administration and

technical supervision of the electronics part of the Bureau of Ordnance Project Meteor and the administration of the Radiation Laboratory document library sponsored by the Office of Naval Research.

A laboratory has been set up in the Department to carry on research and development on the control and dynamics problems of guided missiles and high-speed aircraft. The Department of Aeronautical Engineering is collaborating with personnel and assistance in the aeronautical phases of the work. This laboratory, under the supervision of Professor Albert C. Hall, is directing its initial efforts toward the development of a flight simulator, a computing machine of the analogy type, which is expected to aid materially in solving guidance and control problems.

The Center of Analysis continued its normal program of research and development and of operation as a computing service during the past year. In addition, it was able to resume two important activities which had to be curtailed during the war: Classroom and laboratory instruction in mechanized aids to computation has been made fully available again to civilian students, and research in the field of electronic computing means was resumed on September 1, 1945. This latter program was financed by the Center of Analysis budget from September 1 to June 30, but the program will be supported for two years starting July 1, 1946, by funds provided by the Rockefeller Foundation.

In the High Voltage Research Laboratory a program of deep-cancer therapy with 3,000,000-electron-volt x-rays is now in progress. Selected patients are being treated daily with the radiations produced by the pressure-insulated electrostatic generator constructed some years ago with the Godfrey M. Hyams Trust Fund. These radiations are far superior in therapy to those presently used throughout the world, both in their ability to deliver a high dose to a deep-seated tumor and in the unusual completeness with which skin damage is avoided. This generator, which employs the Van de Graaff principles and which was used during the war on the atom bomb project, is also being used in a co-operative program with the Department of Food Technology in which bactericidal, photo-

chemical, and other effects of high-energy x-rays and cathode rays are studied.

Professor Ivan A. Getting has designed a machine to produce 300,000,000-electron-volt electrons. This machine, which is now under construction, will be used in the Laboratory for Nuclear Science and Engineering when completed.

The Laboratory of Stroboscopic Measurement has continued in the study and development of light sources and their uses. The fundamental problems of the efficiency of conversion of electrical energy into light energy, and the production of light of the desired color for different applications, have active attention. Work is in progress to develop higher flashing rates and higher powers of illumination than are currently available.

HAROLD L. HAZEN

SECTION OF GRAPHICS

The drafting rooms of the Section were completely repainted and equipped with adequate fluorescent lighting during the year.

Professors Earle F. Watts and John T. Rule published a textbook on descriptive geometry embodying the notes long used by the Section. Professor Rule was elected chairman of the drawing division of the American Society for Engineering Education.

One project from the Division of Industrial Coöperation involving graphical analysis was undertaken by the Section.

Increased emphasis has been placed on methods of graphical analysis in the course in engineering drawing.

JOHN T. RULE

MECHANICAL ENGINEERING

With increasing enrollment, steps were initiated to increase the teaching staff in anticipation of greater pressure in the coming year. Professors Jacob P. den Hartog, John T. Burwell, Jr., and Robert Plunkett returned from military service, some other staff members were able to devote more time to teaching with the closing down of war research projects, and several new appointments were made. However, the individual teaching

load was not eased, because of the necessity for giving a double program in each of three terms while providing for vacations. The teaching load continued to be burdensome, and further additions to the staff must be made next year in spite of the shortage of competent instructors.

Mention was made in last year's report of a projected revision of the curriculum for the senior class, giving a different program for those who plan graduate study and research. The new curriculum was put into effect at the end of this academic year. New subjects of instruction were inaugurated, including electives on gas turbines by Professor C. Richard Soderberg, on compressible flow by Professor Ascher H. Shapiro, on experimental stress analysis by Professor William M. Murray, on lubrication by Professor John T. Burwell, Jr., on low-temperature refrigeration by Professor Samuel C. Collins, and on fatigue of metals by Professor John M. Lessells.

Gas Turbine Laboratory. During the year, the Gas Turbine Laboratory was being designed by a group headed by Professor Edward S. Taylor under the general guidance of the Aeronautical, Mechanical, and Chemical Engineering departments. The Navy Department made available a number of direct-current electric motors to constitute the power supply of the new laboratory, and the combustion research building of the Office of Scientific Research and Development was purchased by the Institute. This building will become a part of the new laboratory. Completion is expected in 1947. The Department is strengthened in this field by the appointment of Professor William R. Hawthorne, formerly deputy director of engine research of the British Ministry of Supply, who has been identified with the development of the pioneer British jet propulsion engines.

Engineering Laboratories. The program of modernization of the Engineering Laboratories was initiated by extensive scrapping of obsolete equipment and rearrangement of space. New apparatus was provided to parallel the lecture courses in fluid mechanics, thermodynamics, and heat transfer. Strikes prevented delivery of the new steam turbine unit, but space has been made for it by the rearrangements effected.

A new fan test setup and experimental apparatus for determining the lost head in piping has been installed in a Fluid Mechanics Laboratory on the second floor, in space made by the removal of the old flume. In the basement, a room has been set up with all facilities such as steam, water, air, gas, and so on, for theses and research, and rooms for work in fatigue of metals and for creep and plastic flow. In the Heat Transfer Laboratory experimental apparatus has been constructed to show the effect of tube size on the rate of heat transfer by convection and to show the relative rates of heat transfer by convection between bare tubes and finned tubes.

The Air Conditioning and Refrigeration laboratories have been consolidated and reorganized under the direction of Professor A. L. Hesselschwerdt, Jr. Instructional material and methods have been co-ordinated with the program of the Engineering Laboratories. For the Department of Food Technology two new subjects of instruction were arranged, together with laboratory work. In addition to normal operation, these laboratories are also engaged on a research project supported by the American Society of Refrigerating Engineers.

The department maintenance shop has been modernized, eliminating overhead shafting and belting by the substitution of motor-driven machine tools.

Cryogenic Engineering. With support from the Aero Medical Laboratory of Wright Field, an air-transportable plant for the production of liquid oxygen and liquid nitrogen was completed. This unit is the engineering embodiment of new principles of air purification, liquefaction, and rectification which have been developed over a period of years by Professor Samuel C. Collins.

In addition, Professor Collins completed a new type of helium cryostat with a refrigerated chamber for temperatures as low as 2°K. If desired, liquid helium can be made. This apparatus has been loaned to the Electronics Laboratory until a special cryogenic laboratory can be provided. The need for adequate laboratory facilities is urgent, as advances in low-temperature refrigeration suggest revolutionary changes in the manufacture and use of industrial gases. Here is an opportunity for research and training of graduate students in a new field.

Machine Design. With the retirement of Professor George W. Swett, the Machine Design division has been put in charge of Professor John A. Hrones. Professor Swett continues as lecturer on machine design and as senior registration officer. A small laboratory for mechanical control has been set up with means to study the functioning of systems for automatic regulation of fluid and heat flow and the operation of machines. Apparatus was supplied by the manufacturers. It is planned to offer laboratory work in connection with classroom instruction in this field. A comprehensive and cross-indexed file of industrial catalogues is being assembled for use by students and staff in connection with machine design problems.

Mechanical Processes. The laboratories for forging, welding, forming, and casting, collectively known as "mechanical processes," have been developed over the years from the older shops of the same designation. Our program of transition from instruction in mechanic arts to instruction in the engineering fundamentals of these important manufacturing processes has taken some ten years. The work was started by Professor John H. Zimmerman and Professor John M. Lessells but largely accomplished by Professor Peter E. Kyle.

With Professor Kyle's departure to undertake a somewhat analogous responsibility at Cornell University, it was decided to advance still farther along the road from shops to laboratory. At the present time, an understanding of the fundamentals of these manufacturing processes involves not only the mechanical engineer but also the metallurgist. Strength and fatigue considerations cannot be divorced from internal structure. Consequently, the Mechanical Processes Laboratories, with staff, were transferred at the end of the year to the Department of Metallurgy, with Professor John Wulff taking charge. General control of the instruction given engineering students will rest jointly with the heads of the two Departments.

Placement. During the war, placement of graduates was no problem. With the expected return to more normal conditions, it is desired to extend the Department's influence on the professional growth of its graduates. The Department wishes not only to help the graduate find a suitable job but also to follow his progress in it and generally to help him in the early years of

his professional career. For this objective, Professor Arthur L. Townsend has been designated placement officer for the Department and relieved of part of his normal teaching load.

Machine Tool Laboratory. The modernization of the Machine Tool Laboratory mentioned in last year's report has been advanced by the acquisition from war surplus of some 250 pieces of equipment as replacements for tools acquired from a similar source 25 years ago. Some of these new tools were installed and put in use, but the majority are being held for installation in a projected new laboratory. The Ordnance Department of the Army has made the Institute custodian of its Boston Gage Laboratory. This magnificent collection of standards of precise measurement has been temporarily placed in Building 3, where it can be available to students of machine tool practice pending transfer to a permanent location with the Machine Tool Laboratory.

Sloan Automotive and Aircraft Engine Laboratories. In anticipation of the increased enrollment of civilian students, together with the greatly expanded programs for naval officers scheduled for the coming year, these laboratories have undertaken a program of expansion and modernization. Through the renewed generosity of Alfred P. Sloan, Jr., '95, a substantial fund was made available. The building should, therefore, in the future as in the past, continue to be one of the best equipped of its kind. There will be seven enclosed test cells in addition to the six previously installed. The number of CFR engines available for instruction and research has been increased from seven to eleven, the additional engines coming from government surplus. Three single-cylinder engines of similar design, but of different size, are being built to provide for research in dynamic similitude, in which the staff has already done pioneer theoretical work. Six new dynamometers are being installed to accommodate the additional engines. Heating, ventilation, and fuel storage systems are being revised to maintain health and safety standards. A welcome addition to the engine equipment is a 200-kilowatt Fairbanks-Morse opposed-piston Diesel generator set. Machine shop capacity is being expanded through the purchase of government surplus tools to take care of the needs of the new adjacent Gas Turbine Laboratory.

Textiles. A joint research program on textiles and plastics, administered by a faculty committee of which Professor Edward R. Schwarz is a member, was established in January, 1946. Certain of the facilities of the Samuel Slater Memorial Research Laboratory of the Textile Division are being used and a new Textiles-Plastics Instrumentation Laboratory has been established. Through the Division of Industrial Coöperation, two staff members have been added, with time equally divided between the plastics program sponsored by the Plastics Materials Manufacturers' Association and the fundamental textile research program operating under the S. Slater and Sons, Inc., Fund.

Co-operative Research. Members of the Department supervised research projects of professional interest for the Division of Industrial Coöperation as follows: Professor Joseph H. Keenan, theory and design of ejectors for the Elliott Company, heat transfer in supersonic flow for the Navy; Professor Charles W. MacGregor, the ductility of welded steel for the American Welding Society, bursting strength of rotating discs for the Welding Research Council, stress analysis of guns for the Navy; Professor William M. Murray, magnetic testing for the Magnaflux Corporation, photoelastic stress analysis for the Foster-Wheeler Corporation; Professor Brandon G. Rightmire, research on fretting corrosion for the National Advisory Committee for Aeronautics, erosion tests for the Wright Aeronautical Corporation; Professor Edward R. Schwarz, mechanical properties of nylon for parachute construction for the Army; Professor C. Fayette Taylor, development of a balanced engine pressure indicator, detonation studies, and an investigation of very rapid compression for the National Advisory Committee for Aeronautics.

Professor John M. Lessells continued as editor of the *Journal of Applied Mechanics.* He also served as a member of the committee on ship construction of the National Research Council, and of the fatigue research committee of the American Society for Testing Materials. Professor James Holt has served as executive officer of the Department. Professors Jacob P. den Hartog, Joseph H. Keenan, C. Richard Soderberg, and

C. Fayette Taylor served on technical committees of the National Advisory Committee for Aeronautics.

Graduate Students. A rapid increase in the applications for enrollment in the Graduate School has necessitated the setting of a limit of 90 for such registration. The large excess of qualified applicants has had the effect of raising the normal standards for admission. A graduate conference and seminar room is urgently needed.

JEROME C. HUNSAKER

METALLURGY

The activities of the Department during the year were characterized by a gradual shift from war activities to normal teaching and research, although the process is by no means complete.

Two staff members, Professor Robert S. Williams and Professor Carle R. Hayward, retired on July 1, becoming professors emeriti. Professor Williams has been a member of the staff for 44 years, the last nine as head of the Department. Professor Hayward completed 40 years of service to the Institute.

On July 1, Professor John Chipman, who has been a member of the staff since 1937, became head of the Department. During the war, Professor Chipman was chief of the metallurgy section of the Manhattan Project at the University of Chicago. This section was particularly concerned with the metallurgy of uranium. Much of the experimental work was done in the Metallurgy and Ceramic laboratories at the Institute under the immediate direction of Professors Morris Cohen, Albert R. Kaufmann, and Frederick H. Norton. This work is continuing under the direction of Professor Kaufmann.

Another important project being carried out in the Metallurgy Laboratories is the development of high-temperature heat-resistant alloys, particularly for gas turbines and jet engines. This work is under the direction of Professor Nicholas J. Grant. The Mineral Dressing Laboratories have been used almost entirely for government-sponsored research under the supervision of Professor Antoine M. Gaudin. Other important

contributions were made in the physical chemistry of metallurgical processes, dimensional stability of metals, solubility of gases in metals, heat treatment of high-speed steel, the austenite-martensite transformation in steel, x-ray stress analysis, flotation of minerals, and powder metallurgy.

Professor Chipman has been elected a national trustee of the American Society for Metals and a fellow of the Royal Academy of Sweden. Professor Morris Cohen, Dr. Stewart G. Fletcher, and Dr. Dara P. Antia were awarded the Henry Marion Howe Medal of the American Society for Metals for "the paper of highest merit published by the Society in 1945." This paper was entitled "Structural Changes During the Tempering of High Carbon Steels."

ROBERT S. WILLIAMS

METEOROLOGY

In February, 1946, the Navy V-12 class in aerological engineering completed its training. Since the fully prescribed Navy curriculum was almost identical with the Institute's undergraduate Course in Meteorology, these men were granted the degree of bachelor of science in Meteorology and thus became the first to be awarded this degree at the Institute. Because of the curtailment of the Navy V-12 program in the fall of 1945, the third-year V-12 aerological engineering class was transferred to colleges having a Naval Reserve Officers' Training Corps. With the completion of the V-12 program, the bulk of our students are civilians, although the Army Air Forces are sending us a few officers for advanced training. The number of applicants for graduate training has steadily increased and only the best qualified can be admitted even though our quota was recently increased by 50 per cent. There is also a considerable demand for admission to the undergraduate Course, particularly from men who attended the Army and Navy "A" meteorology program.

With the aid of several new contracts, a well-rounded research program has been established. All the projects are ones which we would have wished to undertake on our own if funds had been available. The largest project, which is being under-

taken under contract with the Signal Corps, is the weather radar research. The purpose of this project is to obtain quantitative relationships between radar echoes of atmospheric origin and the meteorological variables so as to increase the utility of radar in weather forecasting and research. A group of 15 research men and technicians under the direction of Alan C. Bemis is engaged on this project.

With the aid of a contract from the Office of Naval Research, we have been able to continue and expand a research program which was initiated as a departmental project more than a year ago. It is the purpose of this program to determine the physical mechanisms responsible for surface pressure changes in the atmosphere. This is the fundamental problem of meteorology, and even a partial solution would be of great importance. This work is being conducted by a group of seven research men and two plotters and is under the immediate supervision of Professors James M. Austin and Thomas F. Malone.

A third new research contract, with the General Electric Company, is in the instrumentation field. A group of four research men and technicians under the direction of Professor Delbar P. Keily is engaged in a fundamental investigation of hygrometric elements for use in the radiosonde. It is hoped to develop an element of improved performance, particularly in the upper troposphere and stratosphere, where present elements are unsatisfactory.

The long-range forecasting research has been continued in co-operation with the Weather Bureau by a group of four research workers under the direction of Professor Hurd C. Willett. The tedious but essential statistical phase of this project has been largely completed, and a start has been made on the study of certain problems of the general circulation of the atmosphere suggested by the statistics. A number of the results of this research program have been incorporated into the routine procedure of the five-day-forecast section of the Weather Bureau. The research program for the Army Air Forces on the development of flight instruments to measure atmospheric quantities was continued. New instruments were devised, others were further refined, and a number of successful flights were made. This program, which is of importance to

the airplane de-icing problem, will be continued on a smaller scale during the coming year. Charles J. Hubbard made the necessary preliminary studies on the establishment and maintenance by air of arctic meteorological stations. His work was instrumental in the activation of a program for the establishment of such stations by the Weather Bureau, and he left the Institute on April 1 to take an active part in this program.

Professor Bernhard Haurwitz spent three months at the Institute of Tropical Meteorology at Puerto Rico conducting research on hurricanes and other tropical weather phenomena. He has also developed new subjects in dynamic meteorology and graphical analysis. Professor Henry G. Houghton was elected president of the American Meteorological Society in January, 1946, for a term of two years. Professor Willett is serving as a member of the council of the same society.

In June, 1946, the Department moved from Building 33 to new quarters in Building 24. Although little additional space was acquired, a more efficient layout has been possible. Coincident with the move, Professor Delbar P. Keily and Leonard W. Weis were transferred from the Department of Aeronautical Engineering to the Department of Meteorology. Professor Keily will be in charge of the Meteorological Instruments Laboratory, which was formerly a part of the Instrumentation Laboratory of the Department of Aeronautical Engineering. This change was necessitated by the physical removal of the Department from Building 33.

HENRY G. HOUGHTON

MILITARY SCIENCE AND TACTICS

There were no notable changes of policy within the Department during the past year. Because of the wartime inactivation of the advanced course of the Reserve Officers' Training Corps, instruction was again confined to the elementary course, composed of freshmen and sophomores only. The strength of the R.O.T.C. unit varied from a high of 602 in July, 1945, to a low of 318 in June, 1946.

In accordance with the postwar policy of the War Department, plans were undertaken during the spring and summer for

the reactivation of the advanced course, senior division, Reserve Officers' Training Corps, beginning with the fall term of 1946. Advanced course units of the Corps of Engineers, Signal Corps, Chemical Corps, and Ordnance Department, which were formerly active at the Institute, will be reactivated on the basis of three hours of classroom work per week during the third and fourth years. Negotiations are being conducted with a view to reactivating the Coast Artillery Corps (antiaircraft) unit, and, if satisfactory arrangements can be made, the unit will be reactivated in February, 1947. Also, it is expected that an Air Force Reserve Officers' Training Corps unit, not heretofore active at the Institute, will be initiated.

There have been many personnel changes since the last report. Colonel Harold R. Jackson, Coast Artillery Corps, replaced Lieutenant Colonel John C. Dunbar as professor of military science and tactics on March 31, 1946. Colonel Jackson was formerly assigned to the Department as head of the Coast Artillery unit from 1938 to 1940. Colonel William D. Bridges, Corps of Engineers, was assigned on June 1, 1946, as head of the Engineer unit and as executive officer of the Department. Colonel Bridges was formerly assigned to the Department with the Engineer unit from 1934 to 1938. Lieutenant Colonel Thomas M. Larner, Coast Artillery Corps, was assigned as head of the Coast Artillery Corps (antiaircraft) unit on May 17, 1946. Major Jack F. Lane, Chemical Corps, was assigned as head of the Chemical Corps unit on August 28, 1946. Major John C. Bolton, Coast Artillery Corps, was assigned on August 30, 1946. Lieutenant Colonel Raymond S. Crossman, Ordnance Department, was assigned on September 6, 1946. It is expected that two more officers will be assigned to the Institute in the near future.

Master Sergeant Edward Woiccak, formerly at the Institute with the Engineer unit from 1941 to 1943, was assigned as sergeant major of the Department on July 29, 1946. Staff Sergeant Ward B. Carroll was assigned on February 15, 1946, as supply sergeant of the Department. From 1939 to 1941, he was assigned to the Coast Artillery Corps unit of this Department.

HAROLD R. JACKSON

Naval Architecture and Marine Engineering

Professor Henry H. W. Keith, Head of the Department, and Henry E. Rossell, Professor of Naval Construction, have retired as professors emeriti. Captain Charles D. Wheelock, United States Navy, was detailed to the Institute by the Navy Department and served as professor of naval construction until his promotion to rear admiral and his appointment as deputy chief of the Bureau of Ships. He succeeded Professor Rossell in charge of Course XIII-A. Captain William H. Buracker, United States Navy, who succeeded Captain Roswell H. Blair as commanding officer for the United States Naval Training Schools at the Institute, has been appointed professor of naval science in the Department. Another new appointment during the year was Albert J. Harno, Jr., who joined our staff in May as instructor in marine transportation and marine engineering.

The last group of students taking the United States Navy V-12 program was graduated during the year, and consequently the enrollment in Course XIII is considerably reduced. The number of students in Course XIII-A, however, continues to be large. The new class of XIII-A students who arrived in June to begin the review of mathematics before starting the fall term consisted of 48 United States Navy officers and two United States Coast Guard officers. Course XIII-B, which was established last year for students in warship design other than United States naval officers, has been suspended indefinitely because of the large enrollment in XIII-A and the limited staff available for handling the special subjects required in Course XIII-B. Course XIII-C, Marine Transportation, which had a very low enrollment during the war and was entirely suspended in October, 1944, was started again this fall with a good enrollment in the junior class and a few students in the sophomore and senior classes.

An exhibition room for ship models was opened this fall in the basement of Building 5, and two large models which have been loaned to the Institute have been placed in this room. One of these is the Bethlehem-Fairfield transparent plastic model of the Victory ship and the other is a large scale model of the machinery of one of the United States Navy destroyers.

Negotiations are also under way to secure display models of modern naval vessels to replace the older models now in our Nautical Museum.

It is hoped that the long-needed ship model towing tank for the Department may be acquired during the next year. The Department's propeller tunnel has already proved of great value for student instruction, theses, and research, and the model tank will provide a valuable expansion of our laboratory facilities.

LAWRENCE B. CHAPMAN

SCHOOL OF SCIENCE

Biology

The development of the Department's program in modern physical and chemical biology, interrupted by the war, is proceeding along lines previously conceived. Several new staff members have been appointed and certain changes have been made in previously established fields. Instruction and research in plant science were strengthened by the appointment of Dr. George T. Johnson as assistant professor of botany. Dr. H. Stanley Bennett, who has been on leave of absence from the department of anatomy at the Harvard Medical School, joined the staff as assistant professor of cytology on his release from the Navy. He is taking an active part in the research program in cytochemistry. In bacteriology the emphasis has been shifted from the more classical to the chemical aspects. New courses on the biochemistry of microorganisms have been organized by Professor Bernard S. Gould with the collaboration of Professor Johnson.

The Laboratory of Nutritional Biochemistry and all courses concerned with that subject have been transferred to the Department of Food Technology. Professor Robert S. Harris, in charge of the work, Professor Ernest E. Lockhart, and research assistants have joined the staff of the new Department.

With increasing enrollment, all undergraduate and graduate courses are again being offered, as are several new graduate electives. The Department is also preparing to facilitate, as far as space will permit, the training of postdoctoral fellows in the application of physical and chemical methods to biological and medical problems. The need is particularly acute in the case of medical fellows; several are in residence and more are expected shortly. Along somewhat similar lines, the program sponsored by the Baruch Committee on Physical Medicine is progressing well. Under the direction of Professor Kurt S. Lion, an extensive series of teaching units has been constructed in the Laboratory for Medical Instrumentation. Three classes of Baruch fellows have received training in the laboratories, and applica-

tions now far exceed the number which can be accommodated in the space available.

The postwar research programs of the staff have gotten well under way, facilitated by the addition of professional and technical assistants. The investigation of the ultrastructure of cell constituents has been accelerated. Professor Francis O. Schmitt, Cecil E. Hall, and Dr. Marie A. Jakus have continued their studies of the fibrous proteins of muscle and connective tissue. Professor Richard S. Bear, assisted by Dr. Orvil E. A. Bolduan, extended previous low-angle x-ray diffraction studies of collagen and initiated a comparative study of the collagens in the various animal phyla. Dr. Torsti P. Salo has made biochemical and analytical studies of collagen; this work, together with the electron microscope and x-ray investigations of this protein, is under a contract with the Office of the Quartermaster General. Professor John R. Loofbourow demonstrated that injured cells synthesize excessive amounts of various metabolism-stimulating factors. He and his associates are also developing new techniques of ultraviolet microscopy. Professor David F. Waugh's research on insulin resulted in information of importance not only to the theory of protein structure but also to commercial producers of insulin.

Professor Irwin W. Sizer demonstrated that certain groups in proteins are attacked in vitro by nonproteolytic enzymes, and he has accumulated further evidence about the groups responsible for the activity of the enzyme, chymotrypsin. Professor Bernard S. Gould investigated phosphatase in relation to vitamin C deficiency and collagen formation as well as the chemistry of pigments in neurospora. Professor Charles H. Blake devoted his attention to studies of coloration in birds and to a collaborative study, with Professors H. Stanley Bennett and George T. Johnson, of primitive forms of life in pond water. Professor Kurt S. Lion completed a study of resistance changes in human skin, developed an electronic harmonic synthesizer, and originated studies of phenomena of gaseous discharge at high frequencies and medical applications of supersonics.

To help solve the difficult space problem, several of the large laboratories have been altered, and detailed rearrangements have been made whereby space presently available will

be most efficiently used until the Department is transferred to more adequate permanent quarters elsewhere.

FRANCIS O. SCHMITT

CHEMISTRY

The formal organization of the Department into separate research laboratories and undergraduate divisions was discontinued on July 1, 1945, through action by the Institute administration, in order to remove barriers and encourage unity within the Department. Two additional steps in this direction became effective during the 1946 fall semester: One is the adoption of a uniform system of qualifying examinations covering the four major branches of chemistry, which are to be taken by all candidates for the degree of doctor of philosophy as a prerequisite to research in a major field; the other is the appointment of faculty committees composed of men representing each of the major branches to examine the thesis and conduct the final examination of each candidate for the degree of doctor of philosophy. Unity within each of the branches, which was the outstanding virtue of the previous organization, is retained through continuation of the seminars, journal clubs, research conferences, and activities of the registration officers for each major field of chemistry.

The program of modernizing and refurnishing the laboratories of the Department has continued. The laboratories for first-year general chemistry were refurnished during the war to accommodate 896 students. The process of remodeling the third-year organic chemistry laboratory for 300 students now has been completed. Three second-year analytical chemistry laboratories for a total of 480 students and a new third-year physical chemistry laboratory are in process of construction. Two of the analytical chemistry laboratories were completed in time for the 1946 fall term, and all will be ready for the 1947 spring semester. Additional remodeling and space reallocation will provide a new air-conditioned microanalytical laboratory and increased space for research in each field of chemistry.

An important change in undergraduate curriculum which became effective in the 1946 fall term is reorganization of the

course in first-year general chemistry, under the leadership of Professor James A. Beattie with the co-operation of all members of the staff responsible for teaching that subject. The two one-semester courses in organic chemistry for seniors majoring in chemistry, which are also open to beginning graduate students, will be given by John D. Roberts (theoretical organic chemistry) and by Professor John C. Sheehan (synthetic organic chemistry). Changes in the organic chemistry graduate curriculum involve some modification of courses previously offered, with the result that three one-semester courses in advanced organic chemistry will follow the two subjects mentioned above: synthesis (Professor Arthur C. Cope), mechanisms (Professor Avery A. Morton), and identification (Professor Ernest H. Huntress). The recent advances course in organic chemistry, which was so successful before the disruption brought by war years, is offered again as a staff seminar beginning with the 1946 fall term. These subjects and advanced laboratory courses in methods and identification are to constitute the entire program of courses for graduate students in organic chemistry. Semester subjects in specialized fields of organic chemistry have been dropped in order to reduce the total course load for graduate students and to increase the emphasis on research as the nucleus of graduate work. New graduate subjects will be offered during the year 1946-1947 in applied radiochemistry (Professor Charles D. Coryell and Professor John W. Irvine, Jr.) and in molecular spectra and molecular structure (Professor Richard C. Lord, Jr.).

During the year 1946-1947 the teaching duties of the staff will reflect the 50 per cent increase in undergraduate enrollment at the Institute and the increase in the Chemistry Department's quota of graduate students from 83 to 140.

Members of the staff returned from leaves of absence granted for special war research or other assignments, with the exception of Professor George Scatchard, who has been in Germany as technical adviser to Lieutenant General Lucius Clay, and Professor Robert C. Hockett, who is continuing to serve as scientific director of the Sugar Research Foundation. Professor William M. Hearon has returned to the organic chemistry staff from leave of absence for duty with the Engi-

neer Corps on Manhattan District assignment, and Professor Alberto F. Thompson, Jr., has resigned from the staff to continue work for the civilian successor to that organization.

Some fundamental aspects of research begun during the war for the armed services or for civilian government agencies are being continued under contract with the Office of Naval Research, the Manhattan District, and the Chemical Warfare Service.

The following new appointments to the Department staff have been made: Lyle B. Borst and Charles D. Coryell (radiochemistry); Richard C. Lord, Jr. (physical chemistry); John D. Roberts and John C. Sheehan (organic chemistry).

ARTHUR C. COPE

FOOD TECHNOLOGY

The war work in Food Technology for the Quartermaster Corps ended on October 31, 1945, and three volumes of reports of this work have been published, covering the complete period from July 1, 1942. Further research in food acceptance and in acceleration of bread fermentation has since been completed for the Army.

In conjunction with American Can Company, Dow Chemical Company, Nestle's Milk Products, Inc., Standard Brands, Inc., Pillsbury Mills, and Wilson and Company, a co-operative program has been undertaken on dehydration, sterilization, packaging, and flavor. This work has been greatly aided by the co-operation of the Physics and Electrical Engineering departments, as well as by the use of laboratory facilities of the Submarine Signal Company. With the help of the Chemical Engineering Department, research has been started on vegetable oils. The Mechanical Engineering Department has aided in revising the course in food engineering, particularly in refrigeration. More extended co-operative work with the Biology and Chemistry departments is expected during the next year.

At the annual meeting of the Institute of Food Technologists, Professor Bernard E. Proctor was chairman of the program committee, and two members of this Department pre-

sented papers. We regret that Professor John C. Sluder has resigned. He has become technical head of the largest single plant for frozen foods in this country. Colonel Cecil G. Dunn has rejoined the Department after nearly five years' service during the war with the Quartermaster Corps.

On March 1, 1946, the Nutritional Biochemistry Laboratory group became part of the Department of Food Technology. Professor Robert S. Harris, who has headed this group, has been advanced to full professorship and has continued as consultant to the War Department in charge of the Pentagon Nutrition Laboratory in Washington. In addition, he has served as consultant in nutrition for the Pan American Sanitary Bureau, which has been planning the program for the Institute of Nutrition of Central America. Dr. Hazel E. Munsell, formerly of the United States Department of Agriculture and more recently of the University of Puerto Rico, joined the staff in May.

During the year this laboratory conducted research (a) on the metabolism of deuteriumated fatty acids, (b) on the effect of food phytates upon the absorption of radio-iron, (c) on the effect of hydroxy stearic acid upon vitamin synthesis in the intestine, (d) on the effect of fat in diet on amino acid requirement, (e) on the composition of Ecuadorian foods, (f) on the composition of Chinese foods (in collaboration with the United States War Department, United States Department of State, and the Chinese Government), and (g) on the nutrient content of Central American foods (a three-year program which was recently started).

The laboratory also trained Dr. Alfredo Gomez of Ecuador in nutrition and food analysis so that he could take charge of the Laboratory of Bromatology in the Institute of Nutrition of Ecuador, and four Chinese students have been trained in research for the Institute of Nutrition in China. The laboratory expresses gratitude to the W. K. Kellogg Foundation, Nutrition Foundation, Quaker Oats Company, Swift and Company, Inc., Lever Brothers Company, Hoffmann-LaRoche, Inc., and United Fruit Company for their generous support of research in the field of their interests without imposing restrictions which would limit research activities.

At present the Department is divided among four locations, but preparatory work is now in progress which will lead to the consolidation of the Department in Building 20.

WILLIAM L. CAMPBELL

GEOLOGY

The Department with all its rocks, minerals, and laboratory equipment has been moved from its old home in Building 4 to new quarters in Building 24. The space now occupied comprises the third and fourth floors and a portion of the ground floor. Preparations for this move and the noise, dirt, and invasion necessitated by reconversion of the floor above into a new chemical laboratory made the year difficult.

Changes in the department staff have been the resignation of Walter H. Newhouse, Professor of Economic Geology; the appointment of John N. Adkins as assistant professor of geophysics; and the appointment of Patrick M. Hurley as assistant professor of economic geology.

For the coming year, graduate student enrollment will somewhat exceed the Department's quota. Undergraduate enrollment will be light. Courses in Geology were suspended during the war years, and the first regular crop of sophomores has not yet come through.

Research activities in the Department supported by funds from outside the Institute are briefly listed as follows: (1) A project involving study of the behavior of rock and mineral material under controlled pressure, temperature, and solution environments, under the direction of Professor Harold W. Fairbairn, is supported by a grant of $15,000 from the Penrose Fund of the Geological Society of America. (2) Investigation of the relationship of radioactivity to the origin of petroleum is in progress under the direction of Professor Walter L. Whitehead, financed by a grant for the current year of $14,360 from the American Petroleum Institute. This is a continuing project now in its fifth year. Five publications by members of the staff reporting results appeared last year. (3) Closely related to this project is a second investigation under the direction of Professor Whitehead for the measurement of variation of radioactivity

of selected geological formations from important oil fields. This work, supported by a grant of $3,800 from the Penrose Fund of the Geological Society of America, involves the co-operation of several of the large oil companies. (4) A project of our Division of Industrial Coöperation, under the direction of Professor Martin J. Buerger, is of special interest because it is devoted to fundamental science rather than to the usual type of industrial development research. It has to do principally with silicate crystal chemistry and the structure of silicate minerals. This project, which is financed by the Owens-Illinois Glass Company and has an annual budget totaling approximately $17,000, carries three graduate students. In addition to this D.I.C. project, a graduate fellowship devoted to fundamental research is provided by the Owens-Illinois Glass Company. (5) Investigation of the age of rocks and minerals by measurement of products of radioactive decay will be carried on under the direction of Professor Hurley, financed by a grant of $6,800 from the Penrose Fund of the Geological Society of America.

During the past year, Professor Buerger has served as president of the Crystallographic Society and during the past summer, as a delegate for the American Society of X-ray and Electron Diffraction, he attended a meeting in London called by the British Institute of Physics for the purpose of establishing an international journal devoted to crystallographic research and to be known as "Acta Crystallographica." Professor Buerger is serving as a member of the permanent committee to launch the journal.

WARREN J. MEAD

MATHEMATICS

Registration in Mathematics during the fall term returned to about the pre-war normal and during the spring term was slightly larger than normal. The principal change was in graduate courses, the registration in those being about twice that before the war. Also the increase was greatest in the most advanced subjects. There is strong evidence that this change in character of work is permanent and will go much further,

being due to a more general recognition that mathematics has a dominant place in theoretical research.

To prepare the Department more adequately to handle advanced work, further steps were taken to strengthen the staff, particularly in the fundamental field of analysis. For this we were fortunate in securing the services of Henry Wallman and Witold Hurewicz, who were appointed associate professors. During the war, Professors Wallman and Hurewicz were staff members of the Radiation Laboratory.

In the field of applied mathematical statistics the work of the last four years was continued on the statistical predictability of weather elements, the mathematical representation of weather maps, and the proper selective use of analogous situations as a tool in long-range weather forecasting. Also, work is continuing on the development and application of techniques for the solution of statistical problems encountered in manufacturing and on experimental work in conjunction with numerous industrial organizations.

Professor Norman Levinson was made a member of the editorial board of the *Annals of Mathematics*. Professor Norbert Wiener participated in a conference arranged by the Josiah Macy, Jr., Foundation on circular causal processes and feedbacks, especially in biology and the social sciences. In June, 1946, Professor Wiener was awarded an honorary degree of Sc.D. by Tufts College.

William T. Martin returned to the staff in September, 1946, as professor of mathematics and executive officer of the Department.

HENRY B. PHILLIPS

PHYSICS

The year of reconversion from war to peace has been one of the very greatest activity in the Physics Department. Physics during the war achieved an importance which has probably never before been attained by any other science. The Institute, as the leading technical institution of the country and probably of the world, should properly have a physics department unequaled anywhere. Great steps have been taken during the

year to lay the foundations for rapidly reaching this goal. It has become clear that the scale of experimentation in physics is bound to be much greater than in the years before the war. The various war projects, such as the Manhattan District nuclear project and the Radiation Laboratory, have shown the gains resulting from large-scale co-operative work, liberally financed. The first problem to be faced in planning the postwar Physics Department was to find how to secure the benefits connected with such large projects without losing the academic atmosphere necessary in an educational institution. The basic decision was not to establish research institutes, separated from the teaching faculties, but rather to combine research and teaching in the way in which it has always been done at the Institute, so that all staff members secure the stimulus of a research environment but at the same time contribute to the teaching program which, after all, is the fundamental purpose of the Institute. The next decision was to retain the policy which has guided the development of the Physics Department for the past 15 years — that of encouraging a broad range of interests among the members of the Department, rather than concentrating on one limited field of research. In a small department, concentration is probably wise, to secure the intensity of effort necessary for a successful research program, but in a department of the size of the Institute's, and with the range of applications met in the various engineering departments, it is unwise for any important field of physics to be unrepresented.

There might have been a tendency to take advantage of the existence at the Institute of the Radiation Laboratory, and to try to prolong into peacetime an organization of the same sort and on the same scale. Fortunately it was decided that a much smaller organization should be set up, which was denoted as the Research Laboratory of Electronics. The size of this laboratory was fixed by the essential requirement that its permanent staff consist of permanent professors of the Institute. Since its interests overlapped the Departments of Physics and of Electrical Engineering, the laboratory was set up as a joint project of those Departments and draws its staff from the professors of those Departments. An appropriate budget for

this laboratory was estimated at the order of $600,000 a year; it was felt that a laboratory operating on that scale would not be unwieldy and yet would be large enough so that it could carry on much of the fundamental research in electronics and microwaves which followed as a logical outgrowth of the opening up of the field of microwaves by the wartime development of radar. A tentative program of research was set up, based on the applications of these developments to pure physics and to engineering. Professor J. A. Stratton of the Department of Physics was induced to take the position of director of this laboratory. His long experience in the field of electromagnetic theory, his familiarity with the electrical engineering as well as the physics side of the subject, and his wartime experience not only in the Radiation Laboratory but in the Office of the Secretary of War, fitted him uniquely for the position. Plans for the laboratory were far along at the time of V-J Day.

One essential feature not only of the Research Laboratory of Electronics but of the other developments in the Department was a plan for the creation of many research associateships and research assistantships for service in those laboratories. Many young men who would normally have gone on to graduate work entered the Radiation Laboratory and other government research projects during the war. They acquired much practical and some theoretical experience, so that at the end of the war they had advanced far beyond where they otherwise would have been in limited fields, but they did not have the broad grasp of physics which they would have attained through graduate work. Many, however, were unable to return to school without much greater financial assistance than is required by the usual graduate student. Many of them had married, they had all been used to large salaries, and there was a real danger that many of these men would have taken attractive industrial or governmental positions at the close of the war, would have never completed their graduate work, and would have suffered permanently as a result. Accordingly, the policy was adopted of appointing many research associates and assistants from men of this group. The salaries would allow them to return to school, taking part-time graduate work, and

at the same time their presence would make possible a staff of well-trained and experienced men in the various experimental fields. Thus in particular a group of the ablest young men in the Radiation Laboratory were granted research associateships, and they furnished an invaluable continuity between that laboratory and the Research Laboratory of Electronics. The policies regarding these appointments were completely formulated at the time of V-J Day, and immediate announcement of them was made, with the result that we had the pick of the ablest young men of the country in making the appointments.

The early formulation of plans for the Research Laboratory of Electronics made it possible to take advantage of various developments soon after V-J Day. The Office of Scientific Research and Development requested the Radiation Laboratory to continue certain basic research in microwaves until June 30, 1946, so that the experience of that laboratory would not be lost and continuity could be maintained in case the services should later wish to establish a laboratory in that field. The responsibility for this basic research was turned over to the Research Laboratory of Electronics, which thus began its career as a part of the Radiation Laboratory. Professor Albert G. Hill joined the Department as associate director of the laboratory, and he and Professor Stratton carried through the difficult steps of making a gradual transition from the wartime scale of the Radiation Laboratory to a peacetime organization. This they accomplished with conspicuous success. By the close of the year, the laboratory was in smooth operation, with a large and enthusiastic staff, and many results of real scientific importance had already been obtained, as indicated in the very impressive final report presented to the Office of Scientific Research and Development at the conclusion of the contract on June 30, 1946. At the same time the interest of the armed services had been aroused in the laboratory, and a contract was entered into between the Institute and the Signal Corps, the Air Forces, and the Office of Naval Research (formerly the Office of Research and Inventions), acting jointly, for the future support of the laboratory at the same rate which held under the O.S.R.D. contract, namely $600,000 a year, the amount which had been considered the ideal rate of

expenditure for the laboratory. As the new year 1946-1947 opens, the indications are excellent for a bright future for the laboratory.

One reason for feeling that the work in electronics should not grow too great was the overwhelming importance which nuclear physics seemed likely to have in the period after the war and the large part that the Institute should be expected to play in that field. The activities of the Manhattan District were not known to the general public until August, 1946, but they were familiar in a general way to the Department, though few members of the Department had been directly concerned in them. It was clear that our future work in the nuclear field should be on a larger scale than in electronics, and that we did not have the head start which we had obtained in electronics by the presence of the Radiation Laboratory on the campus. Accordingly plans were under way well before V-J day to develop the nuclear work of the Department on a much larger scale than before the war. This scale itself was not negligible. The Radioactivity Center, under Professor Robley D. Evans, had grown into one of the best centers in the country in the study and application of radioactivity, and its cyclotron throughout the war was the principal supplier of radioactive isotopes to the country, for medical and other applications. The High Voltage Laboratory, under Professor Robert J. Van de Graaff, had developed an electrostatic belt generator which became recognized during the war as the best source of high-energy particles in the range of a few million electron volts. Theoretical work on cosmic rays, under Professor Manuel S. Vallarta (now resigned) had laid the basis for much of the understanding of the nature of the primary cosmic rays, and Professor Herman Feshbach had made significant contributions to nuclear theory. Nevertheless this program, extensive though it was, seemed far from large enough with the increased scale of importance of nuclear physics.

Accordingly, it was decided that the staff should be enlarged by addition of physicists familiar with the Manhattan project, in order to build up a staff so outstanding that a laboratory in nuclear physics could be organized on a scale even larger than that of the Research Laboratory of Electronics. Professor

Jerrold R. Zacharias joined the Department somewhat before the beginning of the year 1945-1946. After experience during the war in the Radiation Laboratory, he went in the early summer of 1945 to the Los Alamos laboratory of the Manhattan District, where he took charge of an important division. There he had an opportunity to assist in the selection of additional staff members of the Department. Largely at his suggestion, Professors Bruno B. Rossi and Victor F. Weisskopf and a number of younger men were added to the Department. The policy of appointing research associates and assistants was put into effect in the nuclear field as well as in electronics, and immediately after V-J Day an active effort was made to recruit young men from the various projects of the Manhattan District; the results were excellent. Thus a staff was built up which had the promise of developing into a group of the greatest strength in nuclear physics.

Soon after Professor Zacharias' return from Los Alamos, it was decided to establish a Laboratory for Nuclear Science and Engineering, under his direction, to correlate the various Institute activities in that field. This laboratory was the outgrowth of the deliberations of a committee under the chairmanship of Dean George R. Harrison which had been in existence for several months previously. The Departments concerned were not merely Physics but also Electrical Engineering (with its activities in the development of a synchrotron, under Professor Ivan A. Getting, and of belt-driven electrostatic generators, under Professor John G. Trump), Chemistry (with work in radiochemistry), Chemical Engineering, Metallurgy, and Mechanical Engineering. During the remainder of the fiscal year the Laboratory for Nuclear Science and Engineering was developing, and at the close of the year almost all projects under it were in active operation. Consisting as it does of a number of rather disconnected projects from various departments, its organization has had to be somewhat different from the rather compact organization of the Research Laboratory of Electronics. Central administrative and shop facilities for the laboratory were set up, but so far the various other activities are located in the departments themselves. Even prior to formal establishment of the laboratory, application for financial support was made to

the Office of Naval Research (then the Office of Research and Inventions). An initial contract was entered into, which has been since enlarged, until at present the annual support of the contract by the Navy amounts to well over a million dollars a year. At the same time the Institute pledged a considerable sum to the laboratory, as a revolving fund, and has indicated its interest in the construction of a building to house many activities of the laboratory. Plans for this building were being actively worked on during the year, as were plans for various subsidiary building projects, including an addition to the cyclotron building to provide improved shielding for the cyclotron itself and increased laboratory space for the study of the emergent beam. Construction of this addition will start shortly.

The projects in the Physics Department under the Laboratory for Nuclear Science and Engineering include the Radioactivity Center, the High Voltage Laboratory, the Cosmic Ray Laboratory, and the theoretical group. The Radioactivity Center has continued with its research program in the fundamentals of nuclear structure, a program interrupted by the war. The High Voltage Laboratory has been able to start research again, obtaining valuable results on the scattering of electrons by light nuclei, and at the same time has carried out the larger part of the construction of a 5,000,000-volt pressure generator, which is being constructed under a grant from the Rockefeller Foundation. The Cosmic Ray Laboratory, under the direction of Professor Rossi, started in the spring with his arrival from Los Alamos and has made remarkable progress on the construction of equipment, largely counters and cloud chambers, for use in the study of the nature and properties of the fundamental particles. At the close of the year, the first actual experiments with this equipment were started, both by high-altitude flights in Army airplanes and by experiments at the laboratory in Climax, Colo. The theoretical group, under Professor Weisskopf, has been actively studying the structure of nuclei, and interesting and significant results have already been obtained.

The projects already started by the Laboratory for Nuclear Science and Engineering do not include nuclear reactors or piles. These so far have been entirely under the control of the

Manhattan District. In order to have members of the Institute staff familiar with their operation, Professor Clark Goodman spent part of the year at Oak Ridge, engaged in research. Several of the other members of the Physics Department had experience with piles in their work for the Manhattan District, and in other departments several appointments have been made of men familiar with this field. It was felt, however, that work on nuclear reactors would have to be carried out for some years at a central laboratory organized by a group of universities and financed by the Manhattan District. Accordingly the Institute joined with a group of nine universities in organizing such a central laboratory. After much negotiation, Associated Universities, Inc., a corporation consisting of members of those nine universities, has been formed, and plans are being formulated for the establishment of the Brookhaven National Laboratory at Camp Upton, Long Island, at which there will be not only nuclear reactors but also machines for the production of high-energy particles. Members of the Institute staff are taking leading parts in the plans for that laboratory, and recently Professor Philip M. Morse was appointed its director, an appointment for which he will receive a leave of absence from the Institute. This laboratory will be regarded as an important part of the activity of the Institute and of the Physics Department.

In addition to the two large laboratories which have been so far mentioned, two smaller laboratories have been organized following the same general model. The Acoustics Laboratory, under the direction of Professor Richard H. Bolt, has been organized as a project of the Departments of Physics and Electrical Engineering and the School of Architecture and Planning, and has already under way interesting programs of research in both low-frequency and high-frequency acoustics, together with its applications to engineering and architectural problems; financial support has been obtained from the Navy. Finally, the Spectroscopy Laboratory, which has been in existence for many years as a project of the Physics Department, has become an interdepartmental laboratory, under the directorship of Professor Richard C. Lord, Jr., of the Department of Chemistry.

The special laboratories which have been enumerated contain much, but by no means all, of the research and advanced teaching activities of the Department. In addition to them, a number of lines of research which were carried on before the war are being started again after the necessary interruption and will again form important features of the Department. Among these are the X-Ray Laboratory, under Professor Bertram E. Warren; the Optics Laboratory, under Professor Arthur C. Hardy; work in physical electronics, under Professor Wayne B. Nottingham, correlated to some extent with the Research Laboratory of Electronics; work on the properties of dielectrics, under Professor Hans Mueller, also correlated with the Research Laboratory of Electronics; and the Magnet Laboratory, under Professor Francis Bitter, now a member of this Department.

With all this activity in the development of research and research facilities, the teaching side of the Department's program has not been neglected. For several years during the war, active consideration was given to revision of the undergraduate schedule of Course VIII, so that we should be ready for the rush of students expected after the war. Study of the curriculum convinced the Department that no important changes of subjects were required but that better arrangement of subject matter, and particularly a better correlation of the laboratory subjects, would make the curriculum satisfactory. Particularly important was improved laboratory space for the third- and fourth-year laboratories. In the past, these laboratories had been widely scattered, with the result that they could not be administered in any correlated manner, and the space was inadequate and unsatisfactory for any large number of students. Fortunately, in the plans for reorganization of space, the third floor of Building 4 was assigned to the Department for its undergraduate laboratories, including the freshman laboratory (formerly on the fourth floor) and the sophomore laboratory (in its former location). To carry out wise planning both of the laboratory facilities and of the subjects to be taught in them, a committee was appointed under the chairmanship of Professor Mueller which has very actively been planning and carrying out changes in the undergraduate work of Course VIII. A special appropriation was made by the Institute to help provide

improved equipment to go in the new laboratories, and as the year closed, the actual moves were under way, so that with the new year we start out with greatly improved facilities for the teaching of the undergraduate work of Course VIII. At the same time, the various laboratories have been put under the direction of an enthusiastic group of the younger members of the department staff, so that improvement in the undergraduate teaching should be very marked.

The first- and second-year teaching of the Department is of course the place in which it most closely touches the rest of the Institute. With the retirement of Professor Newell C. Page, Professor Francis W. Sears has been put in general charge of the work of the first two years, and unified policies are being worked out for the instruction of the two years. With the new laboratory arrangements, improvements in the laboratory instruction in the first- and second-year work are being put into effect. Furthermore, provisions have been made to give classroom instruction of the best quality to the large number of undergraduates who will be attending the Institute in the coming terms. In the first place, with the return of the older members of the staff from their war assignments, it is becoming possible to assign the majority of the recitation sections to experienced staff members, a policy which was followed for many years before the war. Secondly, many of the research associates have been assigned recitation sections, so as to become familiar with the undergraduate teaching, and they form a large reservoir of trained men who can be called on to teach additional sections. In this way a staff of experience and of great flexibility has been built up, with which the Department feels no hesitation about undertaking the large teaching load which it will have to carry for the next few years.

Not only the undergraduate curriculum but the graduate curriculum as well was reviewed during the year. With the aid of Professors Morse and Feshbach, a complete revision of the graduate subjects was worked out, which will be put into effect for the first time in the academic year 1946-1947. This revision, while still far from a final arrangement, will take a long step toward making the curriculum appropriate for the postwar period. It has been important to arrange the curricu-

lum well, on account of the very large number of graduate students who have entered the Department. It became obvious long ago that the pre-war quota of 62 students was far from adequate. It was clear that the pressure of applications would be so great and the deficiency in trained physicists so serious, that it was a national duty for our Department, like those in other institutions, to train as many graduate students in physics as possible over the next few years. Accordingly a survey was made to determine the maximum number of graduate students whom we could handle. It was concluded that the limiting factor was the ability of the staff to supervise theses, and by a study of the number of students whom each staff member could handle, combined with a statistical study of the relation between the number of students in residence and those doing research, a figure of 150 was arrived at as a suitable quota. This figure was approved by the administration. To work into a steady-state distribution, it was found that this figure should not be attained until the fall term of 1946. Thus the number of graduate students was allowed to build up during the year, and out of many additional applications there were enough admissions for the fall of 1946, so that, within the errors of prediction, the enrollment should be 150 in that term. The possibility of wide choice has permitted the selection of a group of graduate students of outstanding excellence.

JOHN C. SLATER

COSMIC TERRESTRIAL RESEARCH

For a number of years the Institute has sponsored investigations in the field of cosmic terrestrial relationships made possible by initial contributions to a Cosmic Terrestrial Research Fund set up for this purpose at M.I.T. The work has been carried on at the Suburban Laboratory at Needham, Massachusetts, at a site suitably selected for a minimum of interference in radio field intensity investigations.

The laboratory is now maintaining six field intensity recorders for the study of radio wave propagation at wave lengths ranging from the broadcast band to television frequencies. Through the war these investigations were carried on

in close affiliation with the Interservice Radio Propagation Laboratory under the Joint Communications Board in Washington. With the termination of the war and the declassification of data, the laboratory has continued to co-operate with the recently organized Central Radio Propagation Laboratory of the National Bureau of Standards.

The records of standardized field intensity measurements for selected frequencies and transmission paths are already affording valuable information as to modes of transmission through the upper atmosphere. The importance of such records of performance for comparison with predicted communication conditions based on other ionospheric data is receiving increasing emphasis. Under agreements between M.I.T., government agencies, and certain industrial organizations, the laboratory has provided periodic reports of benefit not only to the government but to the communication industry in general.

Conferences on cosmic effects as related to ionospheric and tropospheric transmission have been held at the laboratory; representatives of other institutions and organizations have participated in these conferences in an endeavor to define more clearly some of the basic problems of world-wide communications in which extraterrestrial factors are especially important.

During the past year the laboratory has added the services of Greenleaf Whittier Pickard. Mr. Pickard, utilizing the accumulated records, has already made significant contributions to the fundamental study of both ionospheric and tropospheric propagation. Measurements of field intensity, as a record of actual performance, often reveal significant departures from predictions of ionospheric transmission based upon well-accepted methods. Studies of tropospheric reception in the 40-50 megacycle band have revealed a close correspondence with the refractive index of the lower atmosphere when allowance has been made for the water vapor content. Preliminary results of these investigations were reported by Pickard and Stetson at a joint meeting of the Institute of Radio Engineers and the International Scientific Radio Union in Washington in May. Marked correlation has also been found between very high frequency reception and the passage of fronts. The laboratory has had the co-operation of the United States Weather

Bureau in obtaining upper air data for comparing tropospheric transmission with meteorological changes.

At the request of the National Bureau of Standards, special attention was given to possible effects resulting from the solar eclipse of July 9, 1945. At the request of the bureau special studies were made over a transpacific transmission path at a frequency of 12.02 megacycles during the Crossroads experiment. The results of these observations were forwarded to Washington.

Studies have been continued of the long-wave transmission from the Boston Air Beacon. The ratio of the A to N signal of this beacon has been found to be subject to variations accompanying changes in meteorological conditions.

Certain changes have been made during the year in effecting more permanent antenna installations and in improving the recording technique. The work of the laboratory has continued its close affiliation with the work of the special committee on cosmic terrestrial relationships of the American Geophysical Union under the National Research Council.

HARLAN T. STETSON

SCHOOL OF ARCHITECTURE AND PLANNING

A moderate enrollment has given us continuing time to study content of courses and to lay long-range plans for the growth of the School. Changes in curricula have been made which enable this School to share more fully in the work of the Institute, including the common first year.

After careful deliberation by the staff, a report was made on March 1, 1946, which covered matters concerning enrollment, staff, and space for teaching. To present a more complete picture of the past and outline of the future, this report pointed out that in 1928-1929 the School had the largest enrollment in its 79-year history: Course IV, Architecture, then had 218 students; Course IV-A, Architectural Engineering, had 84 students, making a total of 302 students. (The Architectural Engineering Course has since been discontinued, and there was no City and Regional Planning Course at that time.) In 1943 the School had its lowest enrollment — 30 students. Staff and teaching space were planned to accommodate an expected enrollment of 130 students in the fall of 1946.

A balancing of many factors indicates that a healthy maximum enrollment, for which we can efficiently plan, is 100 undergraduate students and 20 graduate students in Course IV, Architecture; and 10 undergraduate students and 20 graduate students in Course IV-B, City and Regional Planning. This enrollment of 150 students will be reached in the fall term of 1947 if the present demand continues.

The 1945 conference in city and regional planning, held between October 22 and November 2, brought together 26 planners, city officials, educators, and students for seminars conducted by Professor Frederick J. Adams and staff. The need for planning our environment is so in the forefront that this conference gains increasing importance.

Westgate, the M.I.T. veterans' housing project of 100 houses, is now complete and filled. This work was carried on under the leadership of Professor Robert W. Kennedy. Many different departments and many staff members co-operated with their technical knowledge and time. Westgate West, the veterans' temporary project of 180 apartments, is being built next to Westgate by the Federal Public Housing Authority.

The site plan was the work of Professor Kennedy. The construction is being carried on under the direction of Professor William H. Brown. Professor Herbert L. Beckwith has been in charge of our own space changes at the Institute and has co-operated with many other departments in their like problems.

We are pleased to announce that Professor William H. Brown has returned to the staff as an architectural design critic after a two-and-a-half-year leave of absence while serving in the Navy. Professor Ralph Rapson started work with us in the fall term of 1946 as an architectural design critic. He was trained at Alma College, the University of Michigan, and Cranbrook Academy of Art under Eliel Saarinen. He has worked in the offices of Eliel Saarinen, Paul Schweikher, and George Fred Keck. In the past two years he has been head of the architectural department at the Institute of Design in Chicago. Professor Carl Koch came to us on a part-time basis in the fall of 1946 as an architectural design critic. He received his M.Arch. degree from Harvard in 1937 and has had experience in the offices of Markelius in Sweden, Edward D. Stone, '27, and Gropius and Breuer. Norman P. Anderson, a recent graduate from our own School, has been appointed an instructor in architectural design.

Burnham Kelly returned to the Institute in October, 1945, as research associate in City and Regional Planning and assistant director of the Albert Farwell Bemis Foundation. Mr. Kelly is a graduate of Williams College, Harvard Law School (LL.B., 1936), and M.I.T. (M.C.P., 1941). During the war he was with the National Research Council. Arthur D. McVoy has been appointed assistant professor of city planning, coming here during the summer term in 1946. A graduate of the University of Florida with B.S. and M.A. degrees, he has taught at the University of Florida and has served as city planner in Buffalo, Daytona Beach, and Portland, Oregon. Lloyd Rodwin, who has joined the staff of the City and Regional Planning Course as research associate in land economics, received a B.S. in social science from City College, New York, in 1939, a master's degree in economics from the University of

Wisconsin in 1945, and was a Littauer fellow at Harvard in 1946.

WILLIAM W. WURSTER

ALBERT FARWELL BEMIS FOUNDATION

With the conclusion of hostilities, the foundation staff returned from its war work. Since the Director has been devoting an increasing portion of his time to his duties as director of libraries, active charge of the research program has been entrusted to the new Assistant Director, Burnham Kelly.

First efforts were aimed at bringing up to date the Foundation's substantial files on prefabrication systems. At the same time, careful consideration has been given to a number of research proposals, with the purpose of formulating a program of direct usefulness in the present housing crisis. To fill an immediate need, a detailed report is being prepared on the planning and construction of Westgate, the housing project built by the Institute for its married veterans.

A general survey of technical and psychological factors affecting the mass production of houses has also been undertaken, with additional support to the Foundation in the form of a grant from the Republic Steel Corporation. The technical portion of this survey has been held back temporarily by the difficulty at the present moment of finding qualified personnel who are not already fully engaged in productive work. For the study of psychological factors involved in mass housing, the Foundation is fortunate in having secured the capable direction of the Research Center for Group Dynamics, recently established at the Institute under Dr. Kurt Lewin. A pilot survey of the tenants in Westgate is well under way, directed by Dr. Leon Festinger.

On the academic side, both the Director and the Assistant Director have taken part in seminars given by the School of Architecture and Planning. Addresses outside the Institute include one given by the Assistant Director at the Boston Public Library. The Foundation has been able to offer assistance to several foreign missions sent to this country for information on means of combatting enormous problems of rehousing and reconstruction abroad. The principal missions represented Great Britain, Sweden, and France.

JOHN E. BURCHARD

DIVISION OF HUMANITIES

Economics and Social Science

The main development in the work of the Department has been the introduction of a new undergraduate program of studies in Economics and Engineering. This program, under the title Course XIV, was open for student registration in the fall term of 1946. Though it may take some time for the Course to become known, we expect the enrollment to increase gradually over the next few years. The Course combines engineering subjects — mechanical, electrical, or chemical — with a group of subjects chosen from our own field. Students may elect Option I, Human Relations, or Option II, Industrial Economics.

I have to report a revival of interest in our five-year course. This also is a combination of engineering and social studies. Under this plan, however, the student takes a full undergraduate program in engineering, specializing in Economics and Social Science in the fifth year, at the end of which he receives the S.B. and S.M. degrees. Apparently a curriculum of this kind has some appeal for veterans whose interests have been broadened as a result of their war experiences and who are in a financial position to remain at the Institute for a fifth year.

The organization of the Research Center for Group Dynamics has progressed during the year. The main areas of the research are in the fields of industry, community life, minority problems, and relations between economics and culture. Both laboratory and field experiments are included. An expanded teaching program was inaugurated for the fall term. It includes graduate courses in individual and group psychology, and in statistics, as well as some undergraduate courses taught co-operatively with the Industrial Relations Section. An increased number of graduate students are enrolled at the center, most of them candidates for the Ph.D. in Group Psychology.

Two useful textbooks have been completed by members of the Department — one by Professor Paul A. Samuelson for our third-year course in economic principles, and another by Professors Paul Pigors and Charles A. Myers in personnel administration. The series of studies on the economics of

science and engineering, being prepared under the direction of Professor W. Rupert Maclaurin, will be published shortly. This work is also resulting in new subjects of instruction which will be offered to seniors and graduate students.

The international relations staff has been considerably augmented during the past year. It has begun work, with the assistance of a grant from the Rockefeller Foundation, on the preparation of a series of new teaching materials in international relations. These are being designed not only for use in the large course in international relations which is a part of the new humanities program, but also for possible adoption in other engineering schools.

The members of the staff have engaged in various public service activities during the year. Professor Douglass V. Brown, now associated with the Committee for Economic Development, has been active in the arbitration of industrial disputes. As Sloan Professor of Industrial Management, he has recently transferred to the Department of Business and Engineering Administration. Professor Myers was chairman of a committee engaged in setting up the New England panel for the United States Conciliation Service. Professor Samuelson has been working on a study of the guaranteed annual wage, for the Office of War Mobilization and Reconversion. Professor Harold A. Freeman completed his work on sequential analysis for the National Defense Research Committee; one volume has already been published and the second will appear soon. Sequential analysis is a new method of judging and improving the quality of industrial product, and during the war was used by well over 6,000 plants supplying high-quality product to the Army and Navy. Professor Norman J. Padelford has continued to serve as a consultant to the Department of State on matters relating to the United Nations, European waterways, and the peace treaties.

RALPH E. FREEMAN

ENGLISH AND HISTORY

Except for minor revisions the regular required first- and second-year subjects of English composition and United States in world history have not been changed. Revisions begun last

year in the courses in history of thought and Western World literature, now fourth-year options in the new program of the humanities and social sciences, have been completed. The unavailability of inexpensive editions of many of the standard classics of literature, however, has made some second choices necessary in the literature option. Plans have been made for a new option in the second year to be called "intellectual problems of democracy." Although it will be open to all sophomores, it is intended particularly for men who have had good introductory courses in history in secondary schools. The object of it is to provide a basis for intelligent thinking on some of the fundamental ideas and problems of democracy. It is being given for the first time in the fall of 1946.

At a meeting of the Visiting Committee in June, the problem of providing more instruction in public speaking was discussed at length. As a result, plans for expanding our activities in this field have been approved by the administration, and they will be put into effect as soon as a qualified staff and suitable equipment are available.

At the request of the Department of Electrical Engineering, the Department of English and History has participated in a graduate seminar in which each student wrote an extensive report on some subject in electrical engineering and presented it orally at a meeting of the seminar. Professor Stuart Edgerly has devoted at least a third of his time to this work. Each written report is discussed first in rough draft and then in final form by members of both Departments. They also hear and criticize a preliminary oral presentation before the final one is made in the seminar.

In April, Professor John B. Rae participated in a discussion of Federal land grants to railways, held by the Lexington Group — an association of people particularly interested in railroad history — in conjunction with the annual meeting of the Mississippi Valley Historical Association at Bloomington, Indiana.

HOWARD R. BARTLETT

MODERN LANGUAGES

We have been able to increase the scope of our contribution to the Institute by giving for the first time a series of courses

designed to help graduate students pass the foreign language reading requirements for the master's and doctor's degrees. Introduced first experimentally in the fall term of 1945 with a one-semester course in reading scientific and technical German, the series was continued with Russian in the spring term, French in the summer. It was found that in one semester even beginners could achieve sufficient command of these languages to pass the doctoral requirements. This result was made possible by extreme simplification of aim and method. The class was divided into sections according to courses, as each man was to read only material in his own field; the material was unedited and technical from the start; and grammar was considered only as a tool. In the fall term, 94 per cent of the men had passed the German doctoral reading requirement by the end of the term. In the spring, 70 per cent passed the Russian. (It is expected that, as these courses continue, a higher percentage in Russian may be successful, the low figure here resulting from the fact that practically all were beginners.)

The importance of Russian to scientists and engineers is rapidly becoming more evident, and the number of students taking undergraduate Russian at the Institute more than doubled this year. In the teaching of English to poorly prepared foreign students, our activity is also developing, with special sections of freshman English in the first and second semesters being taught by members of this Department.

A change in emphasis is to be noted in Spanish. In accord with the desires of the students and with the approval of the Visiting Committee on the Department, the emphasis is primarily on oral Spanish, in contrast to French, German, and Russian, which students at the Institute study mainly for the purpose of acquiring a reading knowledge of them.

The services of the Department to students were broadened by the purchase of record-making equipment, enabling those who wish to perfect their accent in the various languages to hear themselves objectively. This equipment and the stock of language records with play back will be located in a sound-treated room in the Department's new offices in Building 24. The Department has also joined with the Departments of Electrical Engineering, English and History, and Physics to

lay plans for a new monitoring and recording center for instruction and research. We shall use these facilities for making good-quality, permanent recordings of students' speech and also for recording important foreign language events at the Institute and on the air.

The new Head of the Department, Professor William N. Locke, returned from overseas to take up his duties on August 1, 1945. Ernest F. Langley, Professor of French, in charge of Romance Languages from 1910 to 1930 and head of the Department of Modern Languages since 1930, made effective at that time his previously announced ret rement. George A. Znamensky, instructor in Russian since 1942, was promoted to assistant professor, effective July 1, 1946. Dr. Fritjof A. Raven was appointed instructor in modern languages, effective at the beginning of the summer term, 1946. Dr. Raven was instructor in French and Spanish at George Washington University and for five years during the war served as head of the translation section of the David W. Taylor Model Basin of the Navy. Previously he had been at the University of Washington from 1937 to 1940 as instructor in German. Another new appointment in the summer term was that of George E. Condoyannis as instructor in modern languages. Mr. Condoyannis comes to us from the University of Rochester, where he had served a three-year term as instructor in modern languages. From 1941 to 1943 he was at Union College.

Dr. Herman Klugman, Marshall Newton, John C. Wells, Albert J. Kruse, James W. Perry, and Serge S. Boutourline served as part-time instructors.

WILLIAM N. LOCKE

REPORT OF THE TREASURER

AUDITORS' CERTIFICATE

To the Auditing Committee of the Massachusetts Institute of Technology:

We have examined the accompanying balance sheet of Massachusetts Institute of Technology as at June 30, 1946 (pages 170 and 171) and the related statements of educational and administrative operations (pages 172 and 173), current surplus (page 174) and certain reserve funds (page 159) for the year ended June 30, 1946, have reviewed the system of internal control and the accounting procedures of the Institute and, without making a detailed audit of all the transactions, have examined or tested accounting records and other supporting evidence by methods and to the extent we deemed appropriate.

In our opinion, said financial statements present fairly the position of Massachusetts Institute of Technology at June 30, 1946, and the results of its educational and administrative operations for the year then ended.

LYBRAND, ROSS BROS. & MONTGOMERY

Boston, Massachusetts
September 19, 1946.

REPORT OF THE AUDITING COMMITTEE

To the Corporation of the Massachusetts Institute of Technology:

The Auditing Committee reports that the firm of Lybrand, Ross Bros. & Montgomery was employed to make an audit of the books and accounts of the Institute for the fiscal year ended June 30, 1946, and their certificate is submitted herewith.

Respectfully,

WALTER HUMPHREYS
HENRY E. WORCESTER
PHILLIPS KETCHUM, *Chairman*

September 23, 1946

TREASURER'S STATEMENT

To the Corporation:

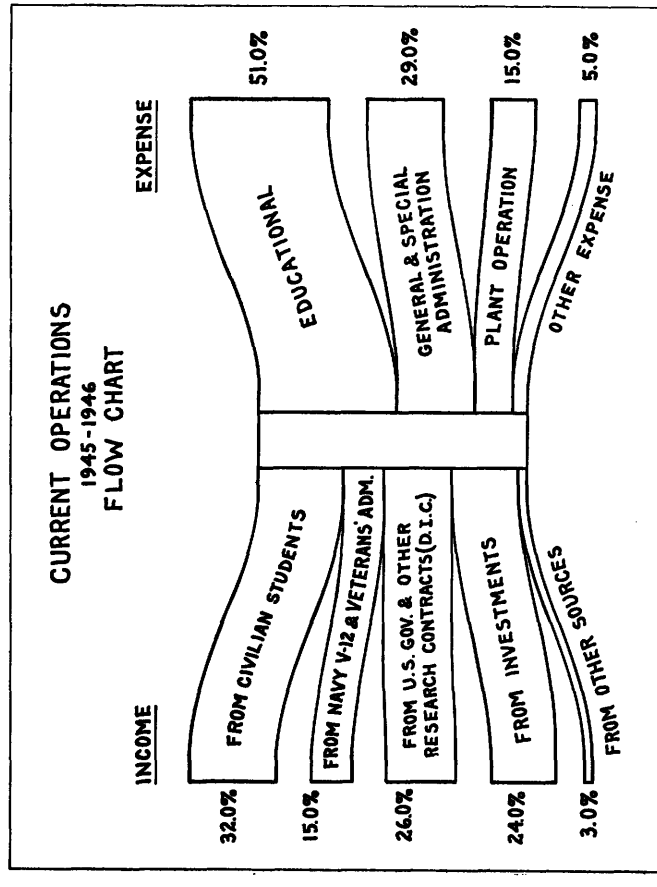
The statements and schedules submitted herewith, in accordance with Section VI of the By-Laws of the Corporation, show the financial condition of the Institute as at June 30, 1946, also the financial transactions during the year ended on that date.

Three major schedules present: (A) BALANCE SHEET, (B) EDUCATIONAL AND ADMINISTRATIVE OPERATIONS FOR THE YEAR and (C) CURRENT SURPLUS. The first two are broken down into supporting schedules designated A-1, B-1, etc.

EDUCATIONAL PLANT

Total plant assets, $17,310,000 (Schedule A-13), have increased $100,000 during the year largely by additions to the Sloan Automotive Laboratory Building and the Servomechanisms Laboratory. The buildings on the campus which have been erected from funds provided through Government contracts are not included in the above total.

The sources of plant capital are shown in Schedule A-14, listing the principal gifts and appropriations for the Educational Plant.


CURRENT OPERATIONS
1945-1946
FLOW CHART
INCOME
EXPENSE
FROM CIVILIAN STUDENTS
32.0%
FROM NAVY V-12 & VETERANS' ADM.
15.0%
FROM U.S. GOV. & OTHER RESEARCH CONTRACTS(D.I.C.)
26.0%
FROM INVESTMENTS
24.0%
FROM OTHER SOURCES
3.0%
EDUCATIONAL
51.0%
GENERAL & SPECIAL ADMINISTRATION
29.0%
PLANT OPERATION
15.0%
OTHER EXPENSE
5.0%

Educational and Administrative Operations

The flow chart, opposite, shows the sources of budgeted income and the expenses for the year ended June 30, 1946. It excludes income and expenses of Dining Services and Dormitories, of Current Funds and of the War Research Projects, which latter are summarized in a following paragraph.

Income from students — civilian and military — including loan and scholarship awards, $1,905,000, was nearly $500,000 more than last year. Of this increase $320,000 was on account of civilian students and the balance from the Navy V-12 Training program and Veterans Administration students.

Income from investments, $961,000, exceeded 1945, and reflected a slightly higher interest return on funds which show a substantial increase, as indicated.

Income from other sources, largely from research contracts for administrative and plant expenses, amounted to $1,184,000.

Expenses exceeded income by $109,300, but, as shown in Schedule C, the cumulative Operating Deficit now stands at $70,879.72.

War Research and Contract Operations

There follow two summaries of contract operations of the Division of Industrial Coöperation, of which the first shows the contract revenues and direct costs for the year ended June 30, 1946 and the second presents an interesting and significant comparison of operations over the past five years. The number of contracts in force as at June 30, 1946, was 125.

D. I. C. OPERATIONS FOR 1945–46

Costs reimbursed:	
Salaries and Wages	$8,408,966.83
Terminated Orders	854,207.07
Materials and Services	12,533,923.04
Travel, Communications, Shipping, etc.	883,523.98
Building Construction	16,891.59
Other	49,910.93
	$22,747,423.44
Overhead allowances under contracts for administrative and plant expenses and for the use of Institute facilities and funds (see page 172)	1,547,100.98
Total Contract Revenues	$24,294,524.42

The following is a five-year summary of the operations of the Division of Industrial Coöperation.

	Fiscal 1946	*1945*	*1944*	*1943*	*1942*
Total Volume (Revenues)	$24,294,500	$39,970,900	$25,461,300	$14,951,800	$7,822,800
Dollar increase over previous year	15,676,400*	14,509,600	10,509,500	7,129,000	
Percentage increase over previous year	(39%)*	57%	70%	91%	
Salaries and Wages	8,409,000	12,529,700	9,412,100	6,250,000	2,088,900
Overhead Allowances	1,547,100	1,312,300	1,142,500	851,000	862,400
Percentage of Salaries and Wages	18%	10.5%	12.2%	13.6%	41.3%
Percentage of Revenues	6.3%	3.3%	4.5%	5.7%	11.0%

*Decrease.

Endowment and Other Funds

The book value of the Endowment and other funds now stands at $45,988,000 — an increase of $2,890,000 during the year. Of this increase, $2,042,000 was from capital gifts. The Endowment Reserve Fund showed a net increase of $1,093,000 during the year on account of net profits resulting from sales, calls and maturities of securities during the year.

An analysis of the principal Reserve Funds is shown below:

ENDOWMENT RESERVE FUND

BALANCE June 30, 1945	$1,193,210.12
Add:	
Balance of 1946 income from general investments not allocated to funds	10,113.12
Net gain from sales of securities	1,127,272.76
	$2,330,596.00
Deduct:	
Amortization of bond premiums and custodian fee	44,453.51
BALANCE June 30, 1946	$2,286,142.49

INDUSTRIAL FUND

BALANCE June 30, 1945		$199,621.90
Add:		
Allocation from general investment income — 1946		5,649.00
Appropriation from 1946 industrial research contract revenues		168,000.00
Miscellaneous Contributions		2,705.41
		$375,976.31
Deduct:		
Special appropriations	$87,406.63	
Salary and other payments	2,877.81	90,284.44
BALANCE June 30, 1946		$285,691.87

RESERVE FOR USE OF FACILITIES

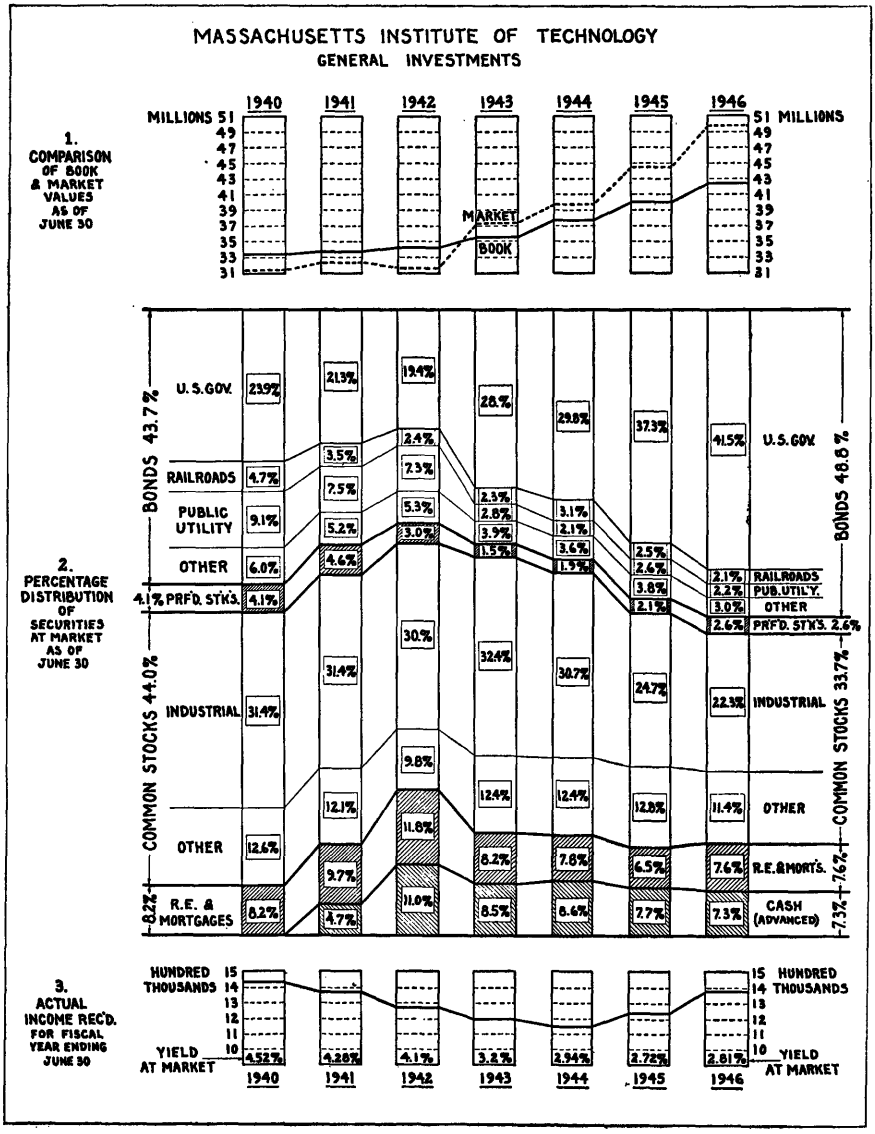
BALANCE June 30, 1945		$713,984.50
Add:		
Allocation from general investment income — 1946	$17,622.50	
Appropriation from 1946 research contract revenues	168,019.00	185,641.50
		$899,626.00
Less special appropriations — Laboratories	$397,040.00	
— Reconversion of facilities	72,548.73	469,588.73
BALANCE June 30, 1946		$430,037.27

INVESTMENTS

SUMMARY OF INVESTMENTS AS AT JUNE 30, 1946

General Investments	*Book*	*Market*	*Per Cent at Market*
Bonds —			
United States Government	$20,012,932	$20,656,518	41.5
Canadian	749,978	785,930	1.6
Industrial	668,000	693,728	1.4
Public Utility	1,038,878	1,097,180	2.2
Railroad	944,652	1,030,212	2.1
Total	$23,414,440	$24,263,568	48.8
Preferred Stocks —			
Total	$1,075,655	$1,309,214	2.6
Common Stocks —			
Industrial	$6,116,525	$11,104,760	22.3
Public Utility	775,258	1,015,350	2.1
Railroad	334,499	461,500	.9
Bank	2,198,224	2,324,566	4.8
Insurance	1,014,279	1,447,850	2.9
Other	325,042	383,000	.7
Total	$10,763,827	$16,737,026	33.7
Real Estate	$3,594,294	$3,594,294	7.3
Mortgages	$167,252	$167,252	.3
Cash — Advanced (Schedule A)	$3,696,318	$3,696,318	7.3
Total General Investments	$42,711,786	$49,767,672	100.0
Special Investments	$3,276,723	$3,533,714	
ALL INVESTMENTS	$45,988,509	$53,301,386	

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


MASSACHUSETTS INSTITUTE OF TECHNOLOGY
GENERAL INVESTMENTS
1. COMPARISON OF BOOK & MARKET VALUES AS OF JUNE 30
MILLIONS
51
49
47
45
43
41
39
37
35
33
31
1940
1941
1942
1943
1944
1945
1946
MARKET
BOOK
2. PERCENTAGE DISTRIBUTION OF SECURITIES AT MARKET AS OF JUNE 30
BONDS 43.7%
U.S.GOV.
RAILROADS
PUBLIC UTILITY
OTHER
4.1% PRF'D. STKS.
COMMON STOCKS 44.0%
INDUSTRIAL
OTHER
8.2%
R.E. & MORTGAGES
23.9%
4.7%
9.1%
6.0%
4.1%
31.9%
12.6%
8.2%
21.3%
3.5%
7.5%
5.2%
4.6%
31.4%
12.1%
9.7%
4.7%
19.4%
2.4%
7.3%
5.3%
3.0%
30.%
9.8%
11.8%
11.0%
28.%
2.3%
2.8%
3.9%
1.5%
32.4%
12.4%
8.2%
8.5%
29.8%
3.1%
2.1%
3.6%
1.9%
30.7%
12.4%
7.8%
6.6%
37.3%
2.5%
2.6%
3.8%
2.1%
24.7%
12.8%
6.5%
2.7%
41.5%
2.1% RAILROADS
2.2% PUB.UTIL'Y.
3.0% OTHER
2.6% PRF'D. STKS. 2.6%
22.3% INDUSTRIAL
11.4% OTHER
7.6% R.E.&MORT'S.
7.3% CASH (ADVANCED)
BONDS 48.8%
COMMON STOCKS 33.7%
7.6%
7.3%
3. ACTUAL INCOME REC'D. FOR FISCAL YEAR ENDING JUNE 30
HUNDRED THOUSANDS
15
14
13
12
11
10
YIELD AT MARKET
4.52%
4.28%
4.1%
3.8%
3.44%
2.72%
2.61%
1940
1941
1942
1943
1944
1945
1946

Investments

There was again a sharp increase in U. S. Government obligations, a decrease in other bond holdings and a 4 per cent drop in common stocks.

The book value of all of the Institute's investments (including advances for Current Operations) increased $2,890,000 to $45,989,000. The market value increased $5,480,000 to $53,301,000 or $7,300,000 in excess of book — a ratio of 116 per cent. This compares with 111 per cent last year.

Investment Income

The income allocation to funds sharing the general investments was at 3.50 per cent. Last year the allocation was at 3.25 per cent but did not include the interest on funds advanced for D. I. C. operations. The comparable figure for last year would have been approximately 3.42 per cent.

General

On the pages immediately following will be found (1) a record of the gifts and bequests received by the Institute during the year, (2) a report of the operation of the Technology Loan Fund Committee, (3) a report of the Trustees of the M. I. T. Pension Association.

Respectfully submitted,

Horace S. Ford, *Treasurer*

September 12, 1946

GIFTS AND BEQUESTS RECEIVED DURING YEAR ENDED JUNE 30, 1946

CAPITAL GIFTS

Contributions — M. I. T. Alumni Fund, 1945–46	$66,118.46
M. I. T. Alumni Fund, 1946–47	98,025.65
Boston Stein Club	14,320.00
Class of 1917 Fund	45.00
Class of 1920 (additional)	2,605.50
Class of 1921	3,972.00
Class of 1922 (additional)	630.00
Richard Chichester du Pont Mem. Fund	86,660.77
Food Technology Fund	180,000.00
Gas Turbine	500,000.00
Mitsch Memorial Fund	2,175.00
Anonymous	633,355.00
Bath Iron Works for Hydrodynamics Laboratory	15,000.00
Samuel Berkowitz for Samuel Berkowitz Fund	10,000.00
Mary A. Carleton for Mary A. Carleton Fund	14,456.48
Arthur J. Conner for Arthur J. Conner Fund	3,000.00
George Cottle for Class of 1898 Fund	1,000.00
E. G. Cutter Estate for Horace Herbert Watson Fund	1,966.00
T. C. Desmond for Hydrodynamics Laboratory	1,666.67
Louise K. Gunn Estate for Hall Scholarship Fund (additional)	4,413.71
William T. Henry Estate for W. T. Henry Fund (additional)	11,955.00
Clarence J. Hicks Estate for Memorial Fund	20,000.00
Walter W. Hodges Trust for W. W. Hodges Fund	36,797.20
Samuel P. Hunt for Scholarship Fund	7,200.00
Elizabeth Lamson Estate for Lamson-Virgin Loan Fund	5,000.00
Logan Estate for Hiram Logan Fund (additional)	240.79
Alexander G. Mercer Estate for Hall-Mercer Scholarship Fund (additional)	3,721.40
Alice Butts Metcalf Estate for Endowment	100,000.00
C. Lillian Moore Trust for J. A. Grimmons Fund (additional)	2,220.75
Newport News Shipbuilding Trust for Towing Tank	12,500.00
Emeline Roach Estate for John Roach Scholarship Fund	78.02
Minnie H. Rogers Estate for Student Loan Fund	1,195.04
Alfred P. Sloan for Professorship in Industrial Management	200,000.00
Elizabeth R. Stevens Estate for A. G. Boyden Fund (additional)	231.23
Gerard Swope for Class of 1895 Memorial Fund	220.00
Estate of Thomas Upham for Thomas Upham Fund	163.52
Marion Westcott Estate for M. Westcott Fund (additional)	1,600.00
TOTAL CAPITAL GIFTS	$2,042,533.19

MISCELLANEOUS

Contributions —	Cabot Pigment Research Fund	$6,000.00
	Cosmic Terrestrial Research Fund	5,500.00
	Food Technology Ref. Res. Fund	5,000.00
	German Chemical Documents for Library Fund	3,300.00
	Group Dynamics Fund	40,000.00
	Group No. 52 Rad. Scholarship Fund	100.00
	Group No. 55 Rad. Scholarship Fund	142.65
	Industrial Economics Graduate Fund	3,000.00
	Industrial Relations Fund	29,850.04
	Kurrelmeyer Fund	1,879.99
	Library Fellowship	12,000.00
	Theodore B. Parker Graduate Scholarship	3,000.00
	Radioactivity Center Fund	2,000.00
Anonymous		4,500.00
Aerovox Corporation for Balsbaugh Research		5,000.00
American Oncologic Hospital for Oncologic Research Fund		7,000.00
American Petroleum Institute for Research Fund		15,050.00
American Smelting, Refining & Mining Co. for Grad. Schp. Fund		2,500.00
American Society of Mechanical Engineers for Research Fund		2,400.00
E. B. Badger Company for E. B. Badger Fund		20,000.00
J. W. M. Bunker for Graduate Student Fund		200.00
V. Bush for Research Fund		115.00
Consolidated Vultee Aircraft for Scholarships and Fellowships Fund		7,500.00
W. S. B. Dana for general purposes		500.00
Frederick Dewey for general purposes		200.00
E. I. du Pont de Nemours & Co. for Fellowship Fund		1,000.00
Eastman Kodak Company for Fellowships Fund		1,750.00
Fabric Res. Lab. for Textile Equipment Fund		500.00
Forbes Lithograph Co. for New Library Fund		1,000.00
Clark Goodman for Geophysical Research		500.00
Goodyear Tire & Rubber for Aero. Eng. Fellowship Fund		6,000.00
Gray Iron Founders Society for Research		2,000.00
Gulf Oil Company for Physics Fellowship Fund		1,100.00
R. C. Hockett for Hockett Fund		500.00
Godfrey Hyams for Hyams Research Fund		11,000.00
International Tel. & Tel. for Indus. Fell. in Elec. Eng.		10,000.00
Frank B. Jewett for Fellowship		1,500.00
W. Kniesner for Amelia S. Kniesner Scholarship Fund		4,000.00
Joe Lowe Corporation for Research		1,500.00
Lever Bros. Co. for Fellowship		3,000.00
Arthur D. Little, Inc. for Sp. Fellowship		1,500.00
E. Lorenz for A. Norton Kent Fund		100.00
John R. Macomber for John R. Macomber Fund		487.67
N. M. Marsilius for Marsilius Fund		1,000.00

J. C. Melvin Trust for Melvin Trust Scholarship Fund	$5,000.00
T. H. McConica III, for Thomas Midgeley, Jr. Fellowship	500.00
The Murray Printing Company for Industrial Fund	1,000.00
National Academy of Sciences for Welch Fund	1,000.00
National Lime Association for Dept. of Bldg. Eng. & Constr.	5,000.00
New England Carbide Tool for Research	2,000.00
Edwin M. Newton for Class of 1918 Organ Fund	250.00
Nutrition Foundation for Vitamin K. Research	2,400.00
Oilgear Company for Research	3,000.00
Owens-Illinois Glass for Research	5,000.00
Plastics Materials Mfers'. Assoc. for Research	30,000.00
Polaroid Corporation for General Library	150.00
Quaker Oats Company for Quaker Nutrition Fund	4,900.00
W. W. Reeves Estate for Scholarship Fund	1,500.00
Republic Steel for Research	10,000.00
Research Corporation for Research	18,600.00
Revere Copper & Brass Co. for Research	1,600.00
Reynolds Metals Co. for Research	2,000.00
Rockefeller Foundation for Research	50,577.71
Sharpe & Dohme, Inc. for Chemistry Dept.	2,400.00
Sheffield Foundation for Sheffield Foundation, Metallurgy	5,000.00
S. Slater & Sons, Inc. for Slater Memorial Laboratory	25,000.00
Slater Mfg. Co. for Slater Fund	10,000.00
G. A. Sloan for G. A. Sloan Fund	500.00
Mrs. G. B. Smith, G. H. Miller Smith Fund	10,000.00
Spool Cotton Co. for Clark Fellowship	5,400.00
Standard Brands, Inc. for Biology Department	2,200.00
Standard Oil of Indiana for Chem. Eng. Department	1,800.00
Standard Oil of California for Research	500.00
Sugar Research Foundation for Sugar Research Fund	25,000.00
Taft-Peirce Co. for Mach. Tool Lab. M. E.	1,933.00
Teagle Foundation for Scholarship	600.00
Towle Mfg. Co. for Towle Fund	2,500.00
Unexcelled Mfg. Co. for Metallurgy	800.00
United Fruit Company for Biological Research	40,000.00
Vanadium Corporation for Fellowship	2,325.00
Ralph Walker for Arch. Dept. Prize Essay	150.00
Welding Res. Council for Metallurgy	1,600.00
TOTAL MISCELLANEOUS GIFTS	$507,361.06
TOTAL CAPITAL AND MISCELLANEOUS GIFTS	$2,549,894.25

REPORT OF THE TRUSTEES OF THE M. I. T. PENSION ASSOCIATION COMPARATIVE BALANCE SHEET

ASSETS

	June 30, 1945	*June 30, 1946*
Cash	$48,629.64	$18,314.67
Investments (page 167)	1,818,386.05	[1]1,860,261.35
Total	$1,867,015.69	$1,878,576.02

[1] Market Value June 30, 1946, $2,122,893.82

LIABILITIES

Teachers' Annuity Fund (5% salary deduction, plus interest)	$1,102,304.00	$1,109,945.78
*M. I. T. Pension Fund (3% appropriation, plus interest)	705,276.03	727,675.62
Special Reserves for Annuity Payments	34,967.38	29,783.27
Total Liabilities	$1,842,547.41	$1,867,404.67
Reserve Fund (including undistributed income)	24,468.28	11,171.35
Total	$1,867,015.69	$1,878,576.02

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

RECEIPTS AND EXPENDITURES FOR 1945–1946

RECEIPTS

5% salary deductions added to Teachers' Annuity Fund	$99,277.71
3% appropriations added to M. I. T. Pension Fund	59,685.04
Income from investments (Net)	63,173.56
Profits on sales of securities	8,117.80
Total Receipts	$230,254.11

EXPENDITURES

Paid on account of withdrawal or decease of members	$66,913.27
Used to purchase annuities for retiring members	144,427.97
Pensions paid directly to former retired members	6,215.61
Losses on sales of securities	67.86
Amortization of Bond Premiums	1,069.07
Total Expenditures	$218,693.78
Net Increase of Ledger Assets	$11,560.33

TRUSTEES OF THE M. I. T. PENSION ASSOCIATION

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

A Record of Investments Held for Account of the Trustees of the M. I. T. Pension Association

Par Value or Shares				*Book Value*	*Net Income*
$100,000	U. S. Treasury	2s	1951–53	$100,000.00	$2,000.00
90,000	U. S. Treasury	2½s	1968	90,000.00	2,250.00
75,000	U. S. Treasury	2½s	1964–69	75,000.00	1,875.00
60,000	U. S. Treasury	2½s	1967–72	60,000.00	799.50
460,000	United States, G	2½s	1954–58	460,000.00	9,000.00
33,000	Dom. of Canada	2½s	1948	33,000.00	825.00
35,000	Alabama Power	3½s	1972	35,000.00	1,225.00
50,000	Am. Tel. & Tel.	2¾s	1980	50,400.00	683.68
49,000	Brooklyn Union Gas	3½s	1969	52,874.00	1,715.00
50,000	Com'th Edison	3s	1977	52,800.00	1,500.00
34,000	Detroit Edison	4s	1965	34,748.00	1,360.00
50,000	Louisiana Pr. & Lgt.	3s	1974	51,600.00	1,500.00
50,000	Pac. Gas & Elec.	3s	1974	51,900.00	1,500.00
50,000	Philadelphia Electric	2¾s	1974	50,600.00	1,375.00
35,000	So. California Edison	3s	1965	37,000.00	1,050.00
25,000	Balt. & Ohio	4s	1948	24,987.50	1,000.00
200	du Pont			29,504.20	1,150.00
200	Eastman Kodak			28,500.00	1,400.00
1,200	General Electric Co.			52,597.76	1,920.00
600	General Motors			29,332.24	1,650.00
260	Int. Business Machines			26,401.93	1,401.00
1600	Sears Roebuck			29,391.89	1,900.00
800	Standard Oil, N. J.			39,798.13	2,200.00
500	Union Carbide and Carbon			41,575.54	1,500.00
1500	United Fruit			38,575.21	2,000.00
500	United Shoe Machinery			35,910.62	1,562.50
200	Am. Tel. & Tel. Co.			34,184.26	1,800.00
480	Bankers Trust Co., N. Y.			23,687.50	720.00
625	Chemical Bank and Trust, N. Y.			25,187.50	1,012.50
500	First National Bank, Boston			27,500.00	1,000.00
50	Guaranty Trust, N. Y.			12,550.00	600.00
225	Firemans Fund Insurance			15,300.00	675.00
200	Hartford Fire			18,300.00	500.00
250	Insurance Co. of N. A.			16,000.00	687.50
200	Phoenix Insurance			16,900.00	600.00
	Real Estate, Albany, N. Y.			59,155.07	2,718.00
	Income from investments sold or called				6,518.88
	Total Pension Association			$1,860,261.35	$63,173.56

REPORT OF THE TECHNOLOGY LOAN FUND COMMITTEE

COMPARATIVE BALANCE SHEET

Assets

	June 30, 1945		*June 30, 1946*	
Cash	$165,039.85		$173,108.33	
Investments (Schedule A-2)	1,056,048.02	$1,221,087.87	1,229,253.82	$1,402,362.15
Student Notes Receivable:				
Loans 1930 to date	$1,886,515.75		$1,902,832.75	
Less Repayments (including $5,611.31 written off) to date	1,358,533.73	527,982.02	1,480,268.55	422,564.20
Total Assets		$1,749,069.89		$1,824,926.35

Liabilities

Technology Loan Fund:				
Total Subscriptions		$1,450,785.18		$1,450,785.18
Add:				
Investment Income (net)	$375,069.81		$409,364.99	
Interest from Loans	193,887.17	568,956.98	203,935.76	613,300.75
		$2,019,742.16		$2,064,085.93
Office Expense	.....		$8,725.05	
Net Loss on Securities	$197,385.52		192,582.23	
Written off, Deceased Borrowers	2,397.35		2,579.85	
Legal Settlements	2,796.64		3,033.36	
Life Insurance Premiums	68,092.76	270,672.27	32,239.09	239,159.58
		$1,749,069.89		$1,824,926.35

RECEIPTS AND EXPENDITURES FOR 1945–46

Receipts

Income (Investments)		$34,295.18
Interest (Loans)		10,048.59
Net Gain on Sales of Securities		4,803.29
Premium Refunds — John Hancock Mut. Life Ins. Co.		35,853.67
Repayments on Loans (plus charge-offs)	$121,734.82	
Less: Loans Made	16,317.00	105,417.82
		$190,418.55

Expenditures

Loan Fund Office Operating Expense	$8,725.05	
Written off, Deceased	182.50	
Legal Settlements	236.72	9,144.27
Net Increase in Cash and Investments		$181,274.28

Technology Loan Fund Committee

Karl T. Compton, *Chairman*

Gerard Swope — Pierre S. du Pont

Edwin S. Webster — Horace S. Ford

BURSAR'S STATEMENT

To the Treasurer:

The following principal Schedules

BALANCE SHEET	(A)
EDUCATIONAL AND ADMINISTRATIVE OPERATIONS	(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 at June 30, 1946, as well as the transactions during the year.

D. L. RHIND, *Bursar.*

W. A. HOKANSON, *Assistant Bursar.*

September 12, 1946

SCHEDULE A

BALANCE SHEET
JUNE 30, 1946

INVESTMENTS

GENERAL INVESTMENTS:

U. S. Government Bonds		$20,012,932.25
Other Bonds		3,401,507.88
Preferred Stocks		1,075,654.08
Common Stocks		10,763,826.41
Real Estate and Mortgages (including $1,501,781.49 Campus properties)		3,761,546.53
Total General Investments	(A-1)	$39,015,467.15
Investments of Funds Separately Invested	(A-2)	3,276,723.14
Advances for Current Operations (per contra)		3,696,318.20
		$45,988,508.49

STUDENT LOANS

Notes Receivable	(A-6)	$435,624.69

CURRENT AND DEFERRED ASSETS

Cash: For General Purposes			$1,939,576.39
Advance by U.S. Government for Research (per contra)			286,000.00
For Students' Safe-Keeping Deposits			92,461.70
Accounts Receivable, U. S. Government and Other (less $988,081.90 advances)	(A-7)		1,921,022.00
Contracts in Progress—Unbilled Costs:			
Costs disbursed at June 30, 1946 (less $274,405.58 advances)	(A-8)	$1,776,390.69	
Costs represented by Accounts Payable and Accrued Wages		394,197.62	2,170,588.31
Inventories, Prepaid Expenses and Deferred Charges	(A-9)		400,629.91
			$6,810,278.31

EDUCATIONAL PLANT

Land, Buildings and Equipment	(A-13)	$17,310,171.43
Total		$70,544,582.92

SCHEDULE A

BALANCE SHEET

JUNE 30, 1946

ENDOWMENT AND OTHER FUNDS

Endowment and Other Funds for General Purposes	(A-3)	$27,339,864.33
Funds for Designated Purposes and Unexpended Income thereof	(A-4)	12,462,988.52
Special Funds, Deposits and Reserves — Invested	(A-5)	6,185,655.64
		$45,988,508.49

STUDENT LOANS, CAPITAL

Total	(A-6)	$435,624.69

CURRENT LIABILITIES, FUNDS AND SURPLUS

Advance on Radiation Research Contract (per contra)		$286,000.00
Borrowed from Endowment and Other Funds (per contra)		3,696,318.20
Accounts Payable and Accrued Wages		526,280.19
Students' Advance Fees and Deposits	(A-10)	234,924.08
Students' Safe-Keeping Deposits		92,461.70
Federal Tax Withholdings, War Bond and Other Deposits	(A-11)	147,671.97
Unexpended Current Funds, Appropriations and Reserves	(A-12)	1,897,501.89
Current Surplus (Deficit)	(Schedule C)	*70,879.72*
(Contingent Liability — Possible Refund to U. S. Government on Final Settlement of Certain Army Research Contracts)		
		$6,810,278.31

EDUCATIONAL PLANT CAPITAL

Endowment for Educational Plant	(A-14)	$17,310,171.43
Total		$70,544,582.92

SCHEDULE B

EDUCATIONAL AND ADMINISTRATIVE OPERATIONS

INCOME FOR YEAR ENDED JUNE 30, 1946

EDUCATIONAL AND GENERAL			
STUDENTS:			
Tuition Fees	$1,159,976.70		
Scholarship Awards	133,318.75		
Student Loans	13,242.00		
NAVY V-12 PROGRAM	124,534.66		
VETERANS ADMINISTRATION	466,996.48		
Total Tuition Fees		$1,898,068.59	
Locker, Examinations and Other Fees		7,693.37	
			$1,905,761.96
INVESTMENTS:			
Income from General Investments (including $75,514.00 Interest on Funds Advanced for Research Contracts) (A-1)		$1,378,720.27	
Income from Special Investments (A-2)		124,384.69	
		$1,503,104.96	
Less Income Added to Funds (A-3)(A-4)(A-5)		541,723.30	
			961,381.66
OTHER SOURCES:			
Receipts from Research Contracts for administrative and plant expenses and for use of the Institute facilities and funds:			
Government Contracts		$1,294,025.15	
Industrial Contracts		253,075.83	
		$1,547,100.98	
Less appropriations therefrom:			
Non-reimbursable items and contract losses	$76,521.10		
To Reserve for Use of Facilities	168,019.00		
To Investment Income, interest on funds advanced	75,514.00		
To Industrial Fund, from Industrial Contract revenues	168,000.00	488,054.10	
Balance		$1,059,046.88	
Federal Aid		22,088.35	
Rentals and Other Income (B-1)		102,985.89	1,184,121.12
Total Educational and General			$4,051,264.74
AUXILIARY ACTIVITIES			
Dormitories — Graduate and Undergraduate (B-12)		$319,580.94	
Dining Service, Walker Memorial (B-13)		316,407.26	
Dining Service, Graduate House (B-14)		191,273.47	
Women's Dormitory (B-15)		6,818.00	
Westgate — Veterans' Housing Project (B-16)		9,177.30	
Total Auxiliary Activities			843,256.97
Total Operating Income			$4,894,521.71

Note A. Costs of research activities and the reimbursements thereof from research contracts to the amount of $22,747,423.44 (page 158) are excluded from this statement of income and expense. Current gifts and appropriations for research and expenditures therefrom, which are also excluded, are reflected in Schedule A-12, current funds.

SCHEDULE B

EDUCATIONAL AND ADMINISTRATIVE OPERATIONS

EXPENSE FOR YEAR ENDED JUNE 30, 1946

EDUCATIONAL AND GENERAL		
EDUCATIONAL EXPENSES		
Salaries and Wages (B-2)	$2,896,377.27	
Less portion appropriated from Current and Special Funds for Research (B-3)	977,867.80	
	$1,918,509.47	
Departmental Expenses (B-4)	131,906.25	
Library and Museum Expenses (B-5)	110,355.97	
		$2,160,771 69
GENERAL EXPENSES		
Salaries of Officers	$212,065.29	
Clerical and Office Expense, Administration (B-6)	267,171.36	
General Administration Expense (B-7)	424,807.84	
Division of Industrial Coöperation (B-8)	292,673.49	
		1,196,717.98
PLANT OPERATION		
Department of Buildings and Power (B-9)		626.425.22
OTHER EXPENSES		
Medical Department (B-10)	$79,985.36	
Undergraduate Budget Board (B-11)	112,597.96	
		192,583.32
Total Educational and General		$4,176,498.21
AUXILIARY ACTIVITIES		
Dormitories — Graduate and Undergraduate (B-12)	$303,651.62	
Dining Service, Walker Memorial (B-13)	316,407.26	
Dining Service, Graduate House (B-14)	191,273.47	
Women's Dormitory (B-15)	6,818.00	
Westgate — Veterans' Housing Project (B-16)	9,177.30	
Total Auxiliary Activities		827,327.65
Total Operating Expenses		$5,003,825.86
Deficiency of Income (Schedule C)		109,304.15
		$4,894,521.71

SCHEDULE C

CURRENT SURPLUS — YEAR ENDED JUNE 30, 1946

BALANCE June 30, 1945	$38,424.43
Deficiency of Income for the Year Ended June 30, 1946	109,304.15
DEFICIT June 30, 1946	$70,879.72

SCHEDULE A-1

GENERAL INVESTMENTS

U. S. Government Bonds

Par Value				*Book Value*	*Net Income*
$2,000,000	U. S. Treasury.....	2s	1954–52	$2,000,000.00	$40,000.00
500,000	U. S. Treasury.....	2s	1953–51	500,000.00	10,000.00
3,000,000	U. S. Treasury.....	2¼s	1959–56	3,082,343.75	60,468.75
7,500,000	U. S. Treasury.....	2¼s	1962–59	7,504,200.00	145,826.33
1,000,000	U. S. Treasury.....	2½s	1954–52	1,004,000.00	25,000.00
5,500,000	U. S. Treasury.....	2½s	1972–67	5,505,000.00	72,226.18
417,000	U. S. Savings "G" .	2½s	1953–56	417,000.00	10,425.00
525	U. S. Savings "F"..		1957	388.50	.....
	Income from bonds sold.....				74,367.28
	Total U. S. Government Bonds.....			$20,012,932.25	$438,313.54

Canadian Bonds

$100,000	CanadianNat.Ry...	4½s	1956	$113,500.00	$4,500.00
100,000	CanadianNat.Ry...	4½s	1957	113,000.00	4,500.00
300,000	Dominion of Canada	3s	1960	275,790.00	7,395.34
67,000	Gatineau Power...	3¾s	1969	65,831.60	2,512.50
200,000	ShawiniganWat.&P	3½s	1970	181,856.24	3,201.42
	Income from bonds matured.....				875.00
	Total Canadian Bonds.....			$749,977.84	$22,984.26

Industrial and Other Bonds

$194,000	American Tobacco .	3s	1969	$194,000.00	$5,820.00
96,000	Central Soya.....	3¼s	1959	96,000.00	3,120.00
200,000	Eastern Gas and Fuel	3½s	1965	204,000.00	2,627.40
45,000	National Oil Prod...	3¼s	1955	45,000.00	1,462.50
33,000	National Oil Prod...	3¼s	1957	33,000.00	1,072.50
96,000	Ry. and Light Sec. .	3¼s	1955	96,000.00	3,120.00
	Income from bonds called or matured				29,441.19
	Total Industrial Bonds.....			$668,000.00	$46,663.59

SCHEDULE A-1 — (Continued)

PUBLIC UTILITY BONDS

Par Value				*Book Value*	*Net Income*
$250,000	American&For.Power	5s	2030	$246,478.00	$9,686.40
200,000	Am. Tel. & Tel.....	2¾s	1975	200,000.00	2,734.72
100,000	Florida Power & Light	3½s	1974	103,800.00	3,500.00
97,000	Florida Power & Light	4⅛s	1979	97,000.00	4,001.25
198,000	Puget Sound Pwr. & Lt.	4¼s	1972	203,600.00	8,415.00
188,000	United Gas Corp.....	3s	1962	188,000.00	5,640.00
	Income from bonds called.....				15,621.14
	Total Public Utility Bonds.....			$1,038,878.00	$49,598.51

RAILROAD BONDS

$15,000	Baltimore & Ohio....	4s	1948	$14,992.50	$600.00
50,000	B.&O.,P.,L.E.&W.Va.	4s	1951	48,643.75	2,000.00
100,000	Boston & Maine.....	5s	1955	90,000.00	5,000.00
128,000	Delaware & Hudson..	4s	1963	128,000.00	5,120.00
115,000	Northern Pacific.....	4s	1997	105,228.29	4,600.00
200,000	Northern Pacific.....	4½s	1975	200,000.00	3,849.37
150,000	Southern Pacific.....	4½s	1981	147,787.50	6,750.00
110,000	Union Pacific.....	4s	1947	110,000.00	4,400.00
100,000	Virginian Corp.....	5s	1952	100,000.00	5,000.00
	Income from bonds called or matured..				14,264.90
	Total Railroad Bonds.....			$944,652.04	$51,584.27

INDUSTRIAL PREFERRED STOCKS

Shares				
2,000	American Air Lines Cum. Conv..3½%	$204,000.00	*$267.37*
1,000	Columbia Pictures Cum..... $4.25	103,000.00	1,250.32
961	Cornell-Dubilier Electric..... $5.25	96,100.00	5,045.25
300	Johns-Manville Cum..... $3.50	35,250.00	762.00
1,500	Railway & Light Securities.....4%	83,250.00	210.00
500	U. S. Steel.....7%	51,706.42	3,500.00
	Income from stocks sold or called.....		2,379.17
	Total Industrial Preferred Stocks.....	$573,306.42	$12,879.37

PUBLIC UTILITY PREFERRED STOCKS

900	Columbia Gas & Elec. A.....6%	$84,916.85	$5,400.00
1,000	Niagara Hudson Power.....5%	95,852.27	2,500.00
1,000	Public Service N. J.....5%	101,926.84	5,000.00
	Total Public Utility Preferred Stocks...	$282,695.96	$12,900.00

SCHEDULE A-1 — (Continued)

Shares		*Book Value*	*Net Income*
	RAILROAD PREFERRED STOCKS		
2,000	Atch., Top. & Santa Fe.....5%	$139,627.30	$10,000.00
1,000	Pere Marquette, Pr. Pref.....5%	80,024.40	5,000.00
	Total Railroad Preferred Stocks.....	$219,651.70	$15,000.00
	INDUSTRIAL COMMON STOCKS		
2,500	American Can.....	$254,123.66	$7,500.00
2,000	Caterpillar Tractor.....	92,194.13	6,000.00
212	Christiana Securities.....	550,994.35	21,758.00
1,600	Chrysler Corp.....	87,992.05	4,800.00
2,000	Draper Corp.....	96,132.10	6,000.00
45	E. I. du Pont de Nemours.....	8,505.00	135.00
7,000	Eastman Kodak.....	614,545.21	49,000.00
8,900	General Electric.....	231,292.47	15,680.00
4,000	General Motors.....	146,161.96	11,000.00
900	General Radio.....	57,150.00	.....
2,500	Gulf Oil.....	130,025.05	5,000.00
3,680	Hercules Powder.....	149,159.94	4,090.00
8,000	Humble Oil & Refining.....	259,621.24	12,000.00
6,000	Inland Steel.....	199,974.49	9,400.00
1,050	International Business Machines.....	90,888.68	5,655.00
2,000	International Harvester.....	79,912.25	6,000.00
3,000	International Nickel, Canada.....	106,254.33	4,080.00
1,500	Johns Manville.....	126,518.70	5,250.00
1,500	Liggett & Myers Tobacco.....	103,445.82	5,250.00
3,000	Liquid Carbonic.....	53,551.11	3,500.00
3,000	Merck & Co.....	109,633.44	3,000.00
2,000	Monsanto Chemical.....	132,927.64	4,500.00
4,000	National Lead.....	118,093.64	5,000.00
2,000	National Steel.....	149,488.34	6,000.00
3,000	Owens Illinois Glass.....	175,697.57	9,000.00
4,500	J. C. Penney.....	135,143.28	8,400.00
6,000	Pittsburgh Plate Glass.....	83,197.11	6,375.00
3,000	Procter & Gamble.....	138,588.86	6,000.00
2,500	St. Joseph Lead.....	109,995.10	5,000.00
6,000	Sears Roebuck.....	116,871.79	6,000.00

SCHEDULE A-1 — (Continued)

Shares		*Book Value*	*Net Income*
	INDUSTRIAL COMMON STOCKS (*Continued*)		
1,000	Sherwin Williams	$100,988.10	$3,750.00
4,000	Standard Oil, Ind.	136,178.34	6,000.00
8,100	Standard Oil, N.J.	340,050.71	22,275.00
4,500	Union Carbide & Carbon	262,198.10	13,500.00
1,000	United Carbon	68,782.98	3,150.00
12,000	United Fruit	185,613.18	16,300.00
3,000	United Shoe Machinery	206,807.06	10,068.13
6,000	Westinghouse Electric	107,827.11	6,000.00
	Income from stocks sold		32,163.50
	Total Industrial Common Stocks	$6,116,524.89	$354,579.63
	PUBLIC UTILITY COMMON STOCKS		
5,000	Am. Gas & Elec.	$203,626.96	$9,500.00
1,400	American Tel. & Tel.	184,682.84	12,600.00
4,000	Boston Edison	144,599.74	8,000.00
8,000	Commonwealth Edison	228,272.21	11,200.00
600	Philadelphia Electric	14,075.66	720.00
	Income from stocks sold		4,096.25
	Total Public Utility Common Stocks	$775,257.41	$46,116.25
	RAILROAD COMMON STOCKS		
2,000	Atch., Top. & Santa Fe	$180,079.31	$12,000.00
2,000	Great Northern (Pfd.)	95,877.13	6,000.00
400	Norfolk & Western	58,542.78	5,200.00
	Total Railroad Common Stocks	$334,499.22	$23,200.00
	BANK AND FINANCE STOCKS		
3,750	Bankers Trust, N.Y.	$189,613.75	$5,625.00
2,000	Central Hanover Bk. & Tr., N. Y.	233,650.00	8,000.00
5,000	Chase National, N.Y.	261,212.50	7,500.00
3,750	Chemical Bank & Trust, N.Y.	190,618.75	6,075.00
2,000	Commercial Credit Corp.	85,002.58	4,000.00
2,000	Commercial Investment Trust Finance	92,782.12	4,000.00
2,400	Cont. Ill. Nat. Bank, Chicago	172,201.50	9,600.00
4,936	First National, Boston	297,874.96	9,872.00
1,025	Guaranty Trust, N. Y.	318,443.04	12,300.00

SCHEDULE A-1 — (Continued)

Shares		*Book Value*	*Net Income*
	BANK AND FINANCE STOCKS (*Continued*)		
667	Harris Trust & Savings, Chicago	$146,587.00	$8,004.00
2,000	Lincoln Rochester Trust	96,000.00	4,000.00
5,800	National City, N.Y.	252,022.08	8,540.00
100	New England Trust, Boston	40,000.00	3,000.00
6,000	Railway & Light Securities	117,750.00	1,800.00
	Total Bank and Finance Stocks	$2,493,758.28	$92,316.00
	INSURANCE AND OTHER STOCKS		
2,250	Boston Insurance Co.	$147,915.80	$5,642.50
1,700	Continental Insurance Co., N.Y.	68,383.05	3,400.00
2,500	Fireman's Fund Insurance Co.	199,600.00	7,500.00
2,400	Hartford Fire Insurance Co.	152,053.85	6,300.00
3,500	Ins. Co. of North America	212,146.66	9,875.00
500	National Union Fire Insurance Co.	80,000.00	2,500.00
2,000	Phoenix Insurance Co.	154,179.60	6,250.00
1,000	Stone & Webster, Inc.	29,507.65	1,000.00
	Income from stocks sold		400.00
	Total Insurance and Other Stocks	$1,043,786.61	$42,867.50

SCHEDULE A-1 — (Continued)

REAL ESTATE	*Book Value*	*Net Income*
111 Bay State Road, Boston	$19,000.00	$760.00
120 Bay State Road, Boston	31,041.16	404.75
Broad and High Streets, Boston (40%)	50,000.00	5,771.54
Franklin Street, Boston	150,000.00	3,978.79
80 Memorial Drive, Cambridge(c)	88,501.15	716.66
100 Memorial Drive, Cambridge(c)	189,592.21	*18,336.02*
333 Memorial Drive, Cambridge (land) (c)	40,000.00	*1,238.55*
565 Memorial Drive, Cambridge (land) (c) (p)	43,250.00	.....
Graduate House, Cambridge (c)	663,084.09	.....
Bexley Hall, Cambridge	173,256.06	7,000.00
Westgate, Veterans Housing(c)	477,354.04	7,200.00
*Gloversville, N.Y.	127,793.07	6,241.56
Harrisonburg, Va.	30,814.12	1,495.00
New Bedford, Mass.	67,272.86	4,036.64
New London, Conn.	255,736.00	12,302.31
Plattsburg, N. Y.	210,734.00	9,706.14
Taunton, Mass.	209,555.00	9,540.50
**Waltham, Mass.	186,500.00	10,310.27
Willimantic, Conn.	170,567.00	7,725.30
Worcester, Mass., Main Street	207,240.00	9,450.10
Worcester, Mass., Federal Street	203,003.45	7,870.96
Total Real Estate	$3,594,294.21	$84,935.95

* Not including first mortgage of $17,700 with Connecticut Mutual Life Insurance Co.
** Not including first mortgage of $176,000 with Metropolitan Life Insurance Company.
(c) Campus properties.
(p) Part payment.

MORTGAGE NOTES		
Edward Babb & Co.	$42,500.00	$1,980.00
Bigelow	4,200.00	210.00
Common Street, Belmont	8,250.00	385.30
Pequossett Road, Belmont	12,834.07	194.07
Alpha Tau Omega	15,500.00	805.00
Beta Theta Pi	13,500.00	675.00
Delta Kappa Epsilon	27,000.00	1,350.00
Delta Tau Delta	3,000.00	225.00
Kappa Sigma	10,850.00	475.00
Pi Lambda Phi	4,503.25	233.54
Phi Gamma Delta	4,125.00	221.89
Phi Kappa Sigma	5,000.00	250.00
Phi Mu Delta	4,990.00	62.38
Sigma Chi	3,500.00	175.00
Theta Chi	7,500.00	387.50
Income from mortgages paid		1,637.72
Total Mortgage Notes	$167,252.32	$9,267.40

SCHEDULE A-1 — (Continued)

RECAPITULATION, GENERAL INVESTMENTS	*Book Value*	*Net Income*
U. S. Government Bonds	$20,012,932.25	$438,313.54
Other Bonds		
Canadian	$749,977.84	$22,984.26
Industrial and Other	668,000.00	46,663.59
Public Utility	1,038,878.00	49,598.51
Railroad	944,652.04	51,584.27
Preferred Stocks	$3,401,507.88	$170,830.63
Industrial and Other	$573,306.42	$12,879.37
Public Utility	282,695.96	12,900.00
Railroad	219,651.70	15,000.00
Common Stocks	$1,075,654.08	$40,779.37
Industrial	$6,116,524.89	$354,579.63
Public Utility	775,257.41	46,116.25
Railroad	334,499.22	23,200.00
Bank and Finance	2,493,758.28	92,316.00
Insurance and Other	1,043,786.61	42,867.50
	$10,763,826.41	$559,079.38
Real Estate	$3,594,294.21	$84,935.95
Mortgage Notes	167,252.32	9,267.40
	$3,761,546.53	$94,203.35
Total General Investments	$39,015,467.15	$1,303,206.27
Interest on Funds Advanced for Research Contracts		75,514.00
		$1,378,720.27

(*Schedule B*)

SCHEDULE A-2

INVESTMENTS OF FUNDS SEPARATELY INVESTED

Par Value or Shares			
	INVESTMENTS, AVOCA FUND		
1,200	General Radio	$76,200.00	.....
	INVESTMENTS, BABSON FUND		
469	A. P. W. Products	$126.10	.....
80	United Stores Corpn., Cum. Conv. Pfd.	8,034.54	$560.00
80	United Stores Corpn., 2d Pfd.	1,288.56	.....
		$9,449.20	$560.00
	INVESTMENTS (Real Estate), ALBERT FARWELL BEMIS		
	Miscellaneous building lots in Wellesley and Weston carried at	$12,059.57	.....
	INVESTMENTS, MALCOLM COTTON BROWN FUND		
$2,500	United States G..... 2½s 1954	$2,500.00	$62.50
30	General Electric	1,019.70	48.00
	Total Brown Fund	$3,519.70	$110.50
	INVESTMENTS, CLASS OF 1919 FUND		
$4,650	United States Savings F..... 1956–57	$3,441.00	.....

SCHEDULE A-2 — (Continued)

Par Value or Shares				*Book Value*	[1]*Net Income*
	INVESTMENTS, CLASS OF 1920 FUND				
$3,050	United States Savings F.....		1957	$2,257.00	.....
2,175	United States Savings F.....		1958	1,609.50	.....
				$3,866.50	.....
	INVESTMENTS, DRAPER FUND				
$21,000	U. S. Treasury.....	2½s	1967–72	$21,000.00	$279.83
29,900	United States G.....	2½s	1954	29,900.00	747.50
24,000	United States G.....	2½s	1955	24,000.00	600.00
10,000	Ontario.....	5s	1959	9,950.00	500.00
5,000	Baltimore & Ohio....	4s	1948	5,147.50	43.00
5,000	Central Pacific.....	4s	1949	4,866.66	200.00
5,000	Northern Pacific.....	4s	1997	4,598.31	200.00
5,000	Southern Pacific.....	4½s	1981	5,100.00	149.25
	Income from bonds called.....				370.83
	Total Draper Fund.....			$104,562.47	$3,090.41
	INVESTMENTS SAMUEL P. HUNT FUND				
60	Conn. & Passumpsic R.R.....			$7,200.00	.....
	INVESTMENTS, ARTHUR D. LITTLE MEMORIAL FUND				
466	Arthur D. Little, Inc., Pfd.....			$ 46,600.00	$2,796.00
5,543	Arthur D. Little, Inc., Com.....			110,860.00	27,715.00
$33,000	U. S. Treasury.....	2s	1951–53	33,000.00	660.00
30,000	U. S. Treasury.....	2s	1954–52	30,000.00	600.00
20,000	U. S. Treasury.....	2s	1954–52	20,000.00	400.00
30,000	U. S. Treasury.....	2½s	1967–72	30,000.00	399.75
	Income from bonds sold.....				142.39
	Total Little Fund.....			$270,460.00	$32,713.14
	INVESTMENTS, RICHARD LEE RUSSEL FUND				
$1,000	Mortgage Note (participation).....			$1,000.00	$88.27
	INVESTMENTS, SOLAR ENERGY FUND				
5,000	Godfrey L. Cabot, Inc.....			$647,700.00	$20,803.00
$13,000	U. S. Treasury.....	2s	1949–51	13,000.00	260.00
$13,000	U. S. Treasury.....	2s	1954–52	13,000.00	260.00
238	Missouri-Kansas Pipe Line.....			5,831.00	71.40
263	United Carbon.....			20,090.50	504.00
	Income from bonds sold.....				88.13
	Total Solar Energy Fund.....			$699,621.50	$21,986.53

[1] Net after Premium Amortization.

SCHEDULE A-2 — (Continued)

Par Value or Shares				*Book Value*	[1]*Net Income*
	INVESTMENTS, FRANCES E. AND SAMUEL M. WESTON FUNDS				
$8,950	Mortgage Note, Bartlett			$8,950.00	$357.96
	INVESTMENTS, JONATHAN WHITNEY FUND				
$331,000	United States G....	2½s	1954–58	$331,000.00	$7,500.00
70,000	U. S. Treasury.....	2½s	1967–72	70,000.00	932.75
40,000	American&For.Power	5s	2030	37,178.70	2,000.00
40,000	Pacific Gas & Elec...	3s	1974	41,500.00	1,100.00
250	Boston Edison			8,250.00	500.00
300	Bankers Trust, N. Y.			14,187.50	450.00
100	du Pont			15,279.10	575.00
250	First National, Boston			11,525.00	500.00
500	General Electric			13,188.05	800.00
50	Guaranty Trust, N. Y.			14,850.00	600.00
300	Standard Oil, N. J.			12,277.35	825.00
450	United Fruit			10,690.25	600.00
	Income from bonds and stocks sold or called				4,480.41
	Total Whitney Fund			$579,925.95	$20,863.16
	INVESTMENTS, TECHNOLOGY LOAN FUND				
$500,000	United States G....	2½s	1954–58	$500,000.00	$8,750.00
100,000	U. S. Treasury.....	2s	1953–51	100,000.00	2,000.00
96,000	U. S. Treasury.....	2¼s	1962–59	96,000.00	2,160.00
80,000	U. S. Treasury.....	2½s	1958–56	80,000.00	2,000.00
80,000	U. S. Treasury.....	2½s	1954	81,000.00	1,500.00
10,000	U. S. Treasury.....	2½s	1967–72	10,000.00	133.25
35,000	American Tel. & Tel.	2¾s	1980	35,000.00	478.58
20,000	NewOrleansPub.Serv.	3⅛s	1974	20,250.00	375.00
15,000	Pacific Gas & Elec...	3s	1974	15,400.00	350.00
300	American Can			22,935.23	900.00
200	du Pont			29,304.00	1,150.00
1,000	General Electric			25,813.25	1,600.00
50	Guaranty Trust, N. Y.			12,825.00	600.00
500	Gulf Oil			26,255.80	750.00
500	National City, N. Y.			12,375.00	725.00
207	Engineers Pub. Service, Pfd.			15,000.00	1,138.52
1,000	North American			36,447.80	1,638.60
600	Standard Oil, N.J.			24,862.79	1,650.00
1,250	Stone & Webster, Inc.			36,698.75	1,250.00
400	Union Carbide and Carbon			27,726.00	1,200.00
900	United Fruit			21,360.20	1,200.00
	Income from bonds sold				2,746.23
	Total Technology Loan Fund			$1,229,253.82	$34,295.18

[1]Net after Premium Amortization.

SCHEDULE A-2 — (Continued)

Par Value or Shares				*Book Value*	[1]*Net Income*
	INVESTMENTS, JOSEPH HEWETT FUND				
$10,000	United States G.....	2½s	1958	$10,000.00	.....
50,000	United States G.....	2½s	1954	50,000.00	$1,250.00
9,000	Dom. of Canada.....	2½s	1948	9,000.00	225.00
15,000	Alabama Power.....	3½s	1972	15,000.00	525.00
15,000	Puget Sound Pr. & Lt.	4¼s	1972	15,300.00	537.50
12,000	Baltimore & Ohio....	4s	1948	12,294.00	45.70
10,000	Northern Pacific.....	4s	1997	10,575.00	379.50
10,000	Southern Pacific.....	4½s	1981	10,330.00	428.50
12,000	Texas & New Orleans.	3⅜s	1990	12,045.00	*94.50*
120	Bankers Trust, N. Y.....			4,775.00	180.00
20	Guaranty Trust, N. Y.....			5,130.00	240.00
100	American Can.....			7,520.00	300.00
50	du Pont.....			8,271.55	287.50
300	General Electric.....			8,107.50	480.00
200	Standard Oil, N. J.....			8,177.60	550.00
100	Union Carbide and Carbon.....			6,944.20	300.00
300	United Fruit.....			7,120.00	400.00
	Income from bonds matured or called...				1,704.37
	Total Hewett Fund.....			$200,589.85	$7,738.57
	INVESTMENTS, GEORGE S. WITMER FUND				
$5,800	United States G.....	2½s	1954-55	$5,800.00	$145.00
5,000	Atlantic Coast Line..	4s	1952	4,854.44	200.00
4,000	Central Pacific.....	4s	1949	4,050.00	130.00
5,000	Northern Pacific.....	4s	1997	4,903.79	200.00
4,000	Southern Pacific.....	4½s	1981	3,942.68	105.37
3,000	Capital Transit.....	4s	1964	3,000.00	120.00
4,000	Florida Power & Light	4⅛s	1979	4,088.00	149.00
50	Elec. Power & Light 6% Pfd.....			3,550.00	.....
150	Commonwealth Edison.....			5,082.43	105.00
50	General Electric.....			1,718.25	80.00
25	General Motors.....			1,310.96	68.75
100	Pacific Gas & Elec.....			4,486.43	100.00
43	Standard Oil Indiana.....			1,967.70	.....
40	Standard Oil, N. J.....			1,706.32	110.00
30	Union Carbide and Carbon.....			2,051.85	90.00
36	Bankers Trust, N. Y.....			1,665.00	54.00
15	Cont. Illinois Nat. Bank & Trust, Chicago			1,387.50	60.00
20	Guaranty Trust, N. Y.....			5,980.00	240.00
	Real Estate, Sanford, Fla.....			5,078.23	434.47
	Income from bonds sold.....				189.38
	Total Witmer Fund.....			$66,623.58	$2,580.97
	Total of Investments of Funds Separately Invested..			$3,276,723.14	$124,384.69

[1]Net after Premium Amortization.

SCHEDULE A-3

ENDOWMENT AND OTHER FUNDS FOR GENERAL PURPOSES

No.		*Balance, June 30, 1945*	*Investment Income Added to Fund*	*Other Receipts*	*Expended or Transferred from Fund*	*Balance, June 30, 1946*
	RESTRICTED FUNDS					
101	George Robert Armstrong..	$5,000.00	.....	.....	.....	$5,000.00
103	George Blackburn Mem...	961,249.84	.....	.....	.....	961,249.84
105	Clara H. Briggs.....	12,514.55	.....	.....	.....	12,514.55
107	James A. Carney.....	17,170.01	.....	.....	.....	17,170.01
109	Charles Choate.....	35,858.15	.....	.....	.....	35,858.15
111	Eben S. Draper.....	104,118.36	.....	$1,147.51	$5.86	105,260.01
113	Coleman du Pont.....	221,325.48	.....	.....	.....	221,325.48
115	Eastman Contract.....	9,498,869.55	.....	.....	.....	9,498,869.55
117	Charles W. Eaton.....	261,148.19	.....	.....	.....	261,148.19
119	Educational Endowment..	7,573,855.60	.....	.....	.....	7,573,855.60
121	Martha Ann Edwards.....	30,000.00	.....	.....	.....	30,000.00
123	William Endicott.....	25,000.00	.....	.....	.....	25,000.00
125	Francis Appleton Foster...	1,000,000.00	.....	.....	.....	1,000,000.00
127	John W. Foster.....	299,650.64	.....	.....	.....	299,650.64
129	Alexis H. French.....	5,000.00	.....	.....	.....	5,000.00
131	Jonathan French.....	25,212.48	.....	.....	.....	25,212.48
133	Henry C. Frick.....	1,831,053.42	.....	.....	.....	1,831,053.42
135	General Endowment.....	1,527,449.00	.....	.....	.....	1,527,449.00
137	Eliot Granger.....	21,568.43	.....	.....	.....	21,568.43
139	Charles Hayden.....	1,000,000.00	.....	.....	.....	1,000,000.00
141	John Marshall Hills	366,430.96	.....	.....	.....	366,430.96
142	Walter W. Hodges	.....	.....	36,797.20	.....	36,797.20
143	James Fund.....	163,654.21	.....	.....	.....	163,654.21
147	Thomas McCammon	15,000.00	.....	.....	.....	15,000.00
149	Kate M. Morse.....	25,000.00	.....	.....	.....	25,000.00
151	Everett Morss.....	25,000.00	.....	.....	.....	25,000.00
153	Richard Perkins.....	50,000.00	.....	.....	.....	50,000.00
155	J. W. and B. L. Randall ..	83,452.36	.....	.....	.....	83,452.36
157	Wm. Barton Rogers Mem..	250,225.00	.....	.....	.....	250,225.00
159	Saltonstall Fund.....	66,352.68	(1) $581.00	.....	.....	66,933.68
161	Samuel E. Sawyer.....	4,764.40	.....	.....	.....	4,764.40
163	Andrew Hastings Spring...	50,000.00	.....	.....	.....	50,000.00
165	George G. Stone.....	4,677.35	.....	.....	.....	4,677.35
167	Seth K. Sweetser.....	25,061.62	.....	.....	.....	25,061.62
169	William J. Walker.....	23,613.59	.....	.....	.....	23,613.59
171	Horace Herbert Watson...	34,076.69	.....	1,966.00	.....	36,042.69
173	Albion B. K. Welch	5,000.00	.....	.....	.....	5,000.00
175	Everett Westcott.....	171,394.00	.....	.....	.....	171,394.00
177	Marion Westcott.....	240,252.00	.....	1,600.00	.....	241,852.00
179	George Wigglesworth	26,467.53	(2) 92.75	.....	.....	26,560.28
181	Edwin A. Wyeth.....	254,703.94	.....	.....	.....	254,703.94
		$26,341,170.03	$673.75	$41,510.71	$5.86	$26,383,348.63

Note. Where no investment income is indicated the amount allocated has been carried directly to Current Income.
(1) One-fourth net income carried to Fund.
(2) One-tenth net income carried to Fund.

SCHEDULE A-3 — (Continued)

No.		*Balance, June 30, 1945*	*Investment Income Added to Fund*	*Other Receipts*	*Expended or Transferred from Fund*	*Balance, June 30, 1946*
	UNRESTRICTED FUNDS					
201	Anonymous (H)	$10,000.00	.....	.....	.....	$10,000.00
203	Anonymous (M)	1,500.00	.....	.....	.....	1,500.00
204	Anonymous (R)	.....	.....	$57,150.00	.....	57,150.00
205	E. B. Badger Co.	10,000.00	.....	.....	.....	10,000.00
207	Edmund Dana Barbour	20,736.94	.....	.....	.....	20,736.94
209	Stephen L. Bartlett	120,787.79	.....	1,076.88	$1,811.20	120,053.47
210	Mary A. Carleton	.....	.....	14,456.48	.....	14,456.48
211	Coöperative Foundation	1,577.44	.....	49.95	49.95	1,577.44
212	William S. B. Dana Fund	.....	.....	500.00	.....	500.00
213	Carbon P. Dubbs	5,000.00	.....	.....	.....	5,000.00
215	Erastus C. Gaffield	267,854.42	.....	.....	.....	267,854.42
216	William T. Henry	34,640.00	.....	11,955.00	.....	46,595.00
218	Ellis Hollingsworth	10,000.00	.....	.....	.....	10,000.00
219	Abby W. Hunt	3,400.00	.....	.....	.....	3,400.00
220	Insurance Engineering	835.13	.....	.....	.....	835.13
221	Carrie Belle Kenney	1,000.00	.....	.....	.....	1,000.00
222	Hiram H. Logan	24,500.00	.....	240.79	.....	24,740.79
223	Charles E. Merrill	2,300.00	.....	.....	.....	2,300.00
224	Alice Butts Metcalf	.....	.....	100,000.00	.....	100,000.00
225	John Wells Morss	50,000.00	.....	.....	.....	50,000.00
227	Christel Orvis	539.42	.....	.....	.....	539.42
229	Emerette O. Patch	2,276.61	.....	.....	.....	2,276.61
230	George A. Sloan	.....	.....	500.00	.....	500.00
231	Towle	8,000.00	.....	2,500.00	.....	10,500.00
233	Charles A. Tripp	100,000.00	.....	.....	.....	100,000.00
235	Grant Walker	70,000.00	.....	.....	.....	70,000.00
237	Frank G. Webster	25,000.00	.....	.....	.....	25,000.00
		$769,947.75	.....	$188,429.10	$1,861.15	$956,515.70
	Totals, Schedule A-3	$27,111,117.78	$673.75	$229,939.81	$1,867.01	$27,339,864.33

SCHEDULE A-4

FUNDS FOR DESIGNATED PURPOSES AND UNEXPENDED INCOME THEREOF

	FUNDS FOR SALARIES					
251	Samuel C. Cobb	$36,551.31	.....	.....	.....	$36,551.31
253	Sarah H. Forbes	500.00	.....	.....	.....	500.00
255	George A. Gardner	20,000.00	.....	.....	.....	20,000.00
257	James Hayward	18,800.00	.....	.....	.....	18,800.00
259	William P. Mason	18,800.00	.....	.....	.....	18,800.00
260	Alfred P. Sloan Professorship	.....	.....	$200,000.00	.....	200,000.00
261	Henry B. Rogers	25,000.00	.....	.....	.....	25,000.00
263	Nathaniel Thayer	25,000.00	.....	.....	.....	25,000.00
265	Elihu Thomson	23,680.87	.....	.....	.....	23,680.87
		$168,332.18	.....	$200,000.00	.....	$368,332.18

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

SCHEDULE A-4 — (*Continued*)

No.		Balance, June 30, 1945	Investment Income Added to Fund	Other Receipts	Expended or Transferred from Fund	Balance, June 30, 1946
	FUNDS FOR DEPARTMENTS AND RESEARCH					
300	Anonymous (S)	.....	$7,234.50	$500,000.00	$5,000.00	$502,234.50
301	Applied Mathematics	$26,651.00	927.50	1,100.00	1,100.00	27,578.50
303	William Parsons Atkinson	13,082.20	451.50	.....	451.50	13,082.20
305	Baruch Com. on Phys. Med.	40,650.00	1,410.50	1,500.00	4,726.64	38,833.86
307	Albert Farwell Bemis	345,665.28	12,099.50	4,020.85	4,500.32	357,285.31
309	A. F. Bemis Land Account	17,866.56	.....	.....	5,806.99	12,059.57
311	Biology-Rockefeller Found.	41,503.54	1,452.50	.....	11,516.83	31,439.21
313	Frank Walter Boles Mem.	36,537.35	1,256.50	.....	1,017.08	36,776.77
315	Samuel Cabot	58,200.20	2,005.50	.....	2,005.50	58,200.20
317	Center of Analysis	41,300.00	1,445.50	.....	.....	42,745.50
319	William E. Chamberlain	7,309.77	255.50	.....	255.50	7,309.77
320	Chemical Eng. — Badger	.....	350.00	20,000.00	.....	20,350.00
321	Chemical Eng. Practice	264,966.58	9,275.00	.....	4,431.03	269,810.55
323	Cosmic Terrestrial Research	8,905.68	427.00	5,000.00	.....	14,332.68
325	Crosby Honorary Fund	2,092.29	73.50	.....	73.50	2,092.29
327	Susan E. Dorr	95,955.67	3,360.00	.....	3,360.00	95,955.67
329	George Eastman	400,000.00	14,000.00	.....	14,000.00	400,000.00
331	Electronics, Special	53,302.00	1,865.50	.....	.....	55,167.50
332	Harold H. Fletcher	10,807.23	371.00	.....	371.00	10,807.23
333	Food Technology	.....	1,491.00	180,000.00	15,000.00	166,491.00
334	John A. Grimmons	9,834.81	322.00	2,220.75	3,000.00	9,377.56
335	Group Dynamics, Research	37,383.55	1,855.00	40,000.00	23,294.24	55,944.31
336	Harvey Non-Ferrous Forgings	.....	115.50	10,000.00	.....	10,115.50
337	Hayden (Dental Clinic)	8,217.84	266.00	220.74	4,120.74	4,583.84
339	Industrial-Economics, Grad.	16,509.30	591.50	3,000.00	.....	20,100.80
340	Industrial Fell. in Electronics	.....	.....	10,000.00	.....	10,000.00
341	Industrial Fund	199,621.90	5,649.00	170,705.41	90,284.44	285,691.87
342	Industrial Relations Section	230,605.52	8,547.00	31,256.94	48,977.38	221,432.08
343	Instrumentation Fund	376,137.50	13,163.50	.....	.....	389,301.00
345	William R. Kales	77,326.13	2,702.00	.....	2,085.14	77,942.99
347	Arthur E. Kennelly	77,491.21	2,670.50	.....	2,250.00	77,911.71
349	A. Norton Kent	309.75	14.00	100.00	.....	423.75
350	Arthur D. Little Memorial	270,599.29	32,713.14	550.00	63,650.00	240,212.43
351	Katherine Bigelow Lowell	5,000.00	175.00	.....	175.00	5,000.00
353	Mathematics Statistical Res	8,529.75	297.50	.....	.....	8,827.25
355	John Lawrence Mauran	3,279.74	115.50	.....	.....	3,395.24
357	George Henry May	5,000.00	175.00	.....	.....	5,175.00
359	Susan Minns	40,000.00	.....	.....	.....	40,000.00
361	Forris Jewett Moore	27,744.05	969.50	.....	64.05	28,649.50
363	F. Ward Paine	10,325.00	360.50	.....	.....	10,685.50
365	Edward D. Peters	6,378.88	220.50	.....	220.50	6,378.88
367	Pratt Naval Architectural	395,676.29	13,849.50	.....	13,849.50	395,676.29
369	Radioactivity Center	51,625.00	1,820.00	.....	.....	53,445.00
371	Ellen H. Richards	25,461.57	878.50	.....	878.50	25,461.57
373	Richards Memorial	927.55	31.50	.....	.....	959.05

SCHEDULE A-4 — (*Continued*)

No.		Balance, June 30, 1945	Investment Income Added to Fund	Other Receipts	Expended or Transferred from Fund	Balance, June 30, 1946
	FUNDS FOR DEPARTMENTS AND RESEARCH (*Continued*)					
375	Charlotte B. Richardson...	$52,753.78	$1,820.00	.....	$1,820.00	$52,753.78
377	William Barton and Emma Savage Rogers...	167,274.12	5,852.00	.....	.....	173,126.12
379	Frances E. Roper.....	2,000.00	70.00	.....	70.00	2,000.00
381	Arthur Rotch.....	25,000.00	875.00	.....	875.00	25,000.00
383	W. T. Sedgwick.....	72,467.44	2,362.50	.....	17,700.00	57,129.94
385	Servo-Mechanism Lab.....	26,651.00	934.50	.....	.....	27,585.50
387	Sloan Automotive Lab.....	4,333.15	154.00	$216.77	.....	4,703.92
389	Solar Energy.....	689,171.08	21,986.53	380.00	6,047.61	705,490.00
390	Special Research, Padelford	2,519.50	91.00	129.62	75.70	2,664.42
391	Henry N. Sweet.....	11,324.47	385.00	.....	1,000.00	10,709.47
393	Submarine Signal Co.....	25,185.70	882.00	.....	.....	26,067.70
395	Swift Protein Research....	20,984.75	735.00	.....	.....	21,719.75
397	Textile Research.....	1,829.68	63.00	.....	1,892.68	.....
399	Nellie Florence Treat.....	628.50	21.00	.....	19.00	630.50
401	Edmund K. Turner.....	280,507.77	[1]9,817.50	.....	7,363.13	282,962.14
403	William Lyman Underwood	13,447.92	465.50	.....	465.50	13,447.92
405	William R. Ware.....	15,659.39	539.00	.....	454.36	15,744.03
407	Wind Tunnel.....	100,000.00	.....	.....	100,000.00	.....
		$4,860,518.23	$194,307.67	$980,401.08	$464,248.36	$5,570,978.62
	FUNDS FOR LIBRARY					
451	Walter S. Barker.....	$10,359.36	$360.50	.....	$238.26	$10,481.60
453	Samuel Berkowitz.....	10,494.00	367.50	$10,000.00	.....	20,861.50
454	Boston Stein Club.....	1,000.00	245.00	14,320.00	.....	15,565.00
455	Frank Harvey Cilley.....	82,616.80	2,838.50	.....	3,000.00	82,455.30
457	Class of 1874.....	265.80	10.50	.....	.....	276.30
458	Arthur Elson.....	516.25	17.50	.....	.....	533.75
459	Charles Lewis Flint.....	5,747.74	199.50	.....	75.90	5,871.34
463	William Hall Kerr.....	4,520.24	157.50	.....	132.83	4,544.91
465	Library Growth.....	16,520.00	563.50	.....	4,735.00	12,348.50
467	George A. Osborne.....	12,140.64	423.50	.....	.....	12,564.14
469	Arthur Rotch, Architectural	7,064.02	245.00	.....	126.52	7,182.50
471	John Hume Tod.....	3,711.25	129.50	.....	57.89	3,782.86
473	Theodore N. Vail Memorial	70,565.33	2,471.00	.....	2,200.00	70,836.33
		$225,521.43	$8,029.00	$24,320.00	$10,566.40	$247,304.03
	FUNDS FOR GRADUATE SCHOLARSHIPS AND FELLOWSHIPS					
501	Abbott Laboratories.....	$5,081.25	$178.50	.....	$44.43	$5,215.32
503	Anonymous.....	1,339.00	63.00	$1,000.00	.....	2,402.00
505	Edward Austin.....	423,021.04	14,805.00	.....	11,000.00	426,826.04

[1] One-fourth net income carried to Fund.

SCHEDULE A-4 — (Continued)

No.		Balance, June 30, 1945	Investment Income Added to Fund	Other Receipts	Expended or Transferred from Fund	Balance, June 30, 1946
	FUNDS FOR GRADUATE SCHOLARSHIPS AND FELLOWSHIPS (*Continued*)					
507	William Sumner Boles	$30,082.27	$1,043.00	.....	$350.00	$30,775.27
509	Malcolm Cotton Brown	3,752.79	110.50	.....	.....	3,863.29
511	Francis W. Chandler	11,021.64	378.00	.....	350.00	11,049.64
512	Clark Thread	.....	87.50	$5,400.00	2,700.00	2,787.50
513	Collamore	14,837.43	518.00	.....	450.00	14,905.43
515	Dalton Graduate Chemical	7,848.79	266.00	.....	475.00	7,639.79
516	Richard du Pont Memorial	.....	1,214.50	94,660.77	8,000.00	87,875.27
517	du Pont de Nemours	.....	.....	2,000.00	2,000.00	.....
518	Eastman Kodak	.....	28.00	1,750.00	750.00	1,028.00
519	Goodyear Tire & Rubber	.....	38.50	7,500.00	750.00	6,788.50
520	Harshaw Chemical	5,081.25	.....	.....	5,081.25	.....
521	Clarence J. Hicks Memorial	.....	59.50	20,000.00	.....	20,059.50
522	Rebecca R. Joslin	11,525.58	402.50	.....	.....	11,928.08
523	Wilfred Lewis	6,773.26	238.00	.....	.....	7,011.26
524	Thomas Midgeley, Jr.	.....	7.00	500.00	.....	507.00
525	Moore	36,769.12	1,288.00	.....	.....	38,057.12
526	National Research Corp.	2,539.00	73.50	.....	1,600.00	1,012.50
527	Owens-Illinois Glass	.....	87.50	5,000.00	.....	5,087.50
528	Theodore B. Parker Mem.	.....	17.50	3,000.00	.....	3,017.50
529	Willard B. Perkins	6,701.88	234.50	.....	.....	6,936.38
531	Proprietors Locks & Canals	1,520.52	52.50	.....	.....	1,573.02
533	Henry Bromfield Rogers	26,116.08	906.50	.....	800.00	26,222.58
535	Richard Lee Russel	4,021.52	88.27	.....	.....	4,109.79
537	Henry Saltonstall	11,318.41	388.50	.....	350.00	11,356.91
539	James Savage	13,980.73	490.00	.....	450.00	14,020.73
541	Sperry Gyroscope	5,081.25	178.50	.....	.....	5,259.75
543	Susan H. Swett	11,072.80	381.50	.....	300.00	11,154.30
544	Gerard Swope	100,050.00	3,503.50	.....	.....	103,553.50
545	Frank Hall Thorp	11,184.06	378.00	.....	600.00	10,962.06
547	Thomas Upham	463,629.40	16,229.50	163.52	22,400.00	457,622.42
549	Luis Francisco Verges	10,719.72	374.50	.....	300.00	10,794.22
551	Jonathan Whitney	590,880.58	20,863.16	9,456.10	14,329.61	606,870.23
		$1,815,949.37	$64,972.93	$150,430.39	$73,080.29	$1,958,272.40
	FUNDS FOR UNDERGRADUATE SCHOLARSHIPS					
600	Am. Smelting and Refining	.....	$14.00	$2,500.00	.....	$2,514.00
601	Louie G. Applebee	$456.12	17.50	.....	.....	473.62
603	Elisha Atkins	5,034.33	175.00	.....	$150.00	5,059.33
605	Thomas Wendell Bailey	2,224.88	77.00	.....	.....	2,301.88
607	Charles Tidd Baker	37,577.86	1,316.00	.....	300.00	38,593.86

SCHEDULE A-4 — (Continued)

No.		Balance, June 30, 1945	Investment Income Added to Fund	Other Receipts	Expended or Transferred from Fund	Balance, June 30, 1946
	FUNDS FOR UNDERGRADUATE SCHOLARSHIPS (*Continued*)					
609	Billings Student	$50,303.99	$1,760.50	.....	$1,600.00	$50,464.49
611	Levi Boles	10,153.90	357.00	.....	300.00	10,210.90
613	Jonathan Bourne	10,039.60	350.00	.....	300.00	10,089.60
615	Albert G. Boyden	637,550.95	22,319.50	$462.48	8,478.81	651,854.12
617	Harriet L. Brown	6,511.50	227.50	.....	400.00	6,339.00
619	Mabel Blake Case	25,587.59	896.00	.....	800.00	25,683.59
621	Nino Tesher Catlin	2,295.28	80.50	.....	.....	2,375.78
623	Lucius Clapp	5,112.72	178.50	.....	150.00	5,141.22
624	Class of 1895 Memorial	24,780.00	871.50	220.00	.....	25,871.50
625	Class of 1896	†8,548.81	297.50	375.00	.....	†9,221.31
627	Class of 1909	3,916.45	140.00	519.32	.....	4,575.77
629	Class of 1917	1,100.31	38.50	45.00	.....	1,183.81
631	Class of 1922	3,870.63	150.50	943.25	.....	4,964.38
633	Class of 1922, Special	5,113.25	175.00	.....	313.25	4,975.00
635	Class of 1938	844.35	31.50	33.07	.....	908.92
637	Fred L. & Florence L. Coburn	5,239.76	182.00	.....	200.00	5,221.76
639	Coffin Memorial	42,145.73	1,473.50	.....	1,800.00	41,819.23
641	William A. Conant	142,471.07	4,980.50	.....	1,200.00	146,251.57
643	Albert Conro	25,564.39	896.00	.....	.....	26,460.39
645	George R. Cooke	3,584.83	126.00	.....	.....	3,710.83
647	Lucretia Crocker	78,563.33	2,751.00	.....	2,500.00	78,814.33
649	Isaac W. Danforth	5,146.48	178.50	.....	150.00	5,174.98
651	Ann White Dickinson	40,116.13	1,403.50	.....	1,300.00	40,219.63
653	Dormitory Fund	2,780.42	98.00	.....	50.00	2,828.42
655	Thomas Messinger Drown	50,344.59	1,760.50	.....	1,600.00	50,505.09
657	Frances & William Emerson	†102,221.60	3,521.00	.....	3,016.25	†102,726.35
659	Farnsworth	5,238.59	182.00	.....	166.00	5,254.59
661	Charles Lewis Flint	5,065.97	178.50	.....	150.00	5,094.47
663	Sarah S. Forbes	3,481.37	122.50	.....	100.00	3,503.87
664	Friedlander	1,016.25	35.00	.....	.....	1,051.25
665	Norman H. George	94,751.39	3,318.00	.....	3,000.00	95,069.39
667	Arthur B. Gilmore	10,113.00	353.50	.....	81.25	10,385.25
669	Barnett D. Gordon	10,247.75	357.00	.....	300.00	10,304.75
670	Lucia G. Hall	50,260.00	1,823.50	4,413.71	1,600.00	54,897.21
671	Hall-Mercer	69,604.20	2,457.00	3,721.40	2,200.00	73,582.60
673	James H. Haste	263,729.66	9.229.50	.....	8,600.00	264,359.16
675	Charles Hayden Memorial	96,211.36	3,367.00	.....	.....	99,578.36
677	George Hollingsworth	5,046.98	175.00	.....	150.00	5,071.98
678	Samuel P. Hunt	.....	.....	7,200.00	4.20	7,195.80
679	T. Sterry Hunt	3,034.01	105.00	.....	100.00	3,039.01
681	William F. Huntington	5,207.83	182.00	.....	175.00	5,214.83
683	David L. Jewell	27,083.49	948.50	.....	800.00	27,231.99
685	Joy Scholarships	17,143.60	598.50	.....	900.00	16,842.10
686	Amelia S. Kneisner	6,097.50	283.50	4,000.00	300.00	10,081.00
687	Llora Culver Krueger	2,660.86	94.50	.....	600.00	2,155.36
689	William Litchfield	5,185.41	182.00	.....	200.00	5,167.41
691	Elisha T. Loring	5,053.63	178.50	.....	150.00	5,082.13

† Exclusive of students' notes receivable. (See Schedule A-6.)

SCHEDULE A-4 — (*Continued*)

No.		Balance, June 30, 1945	Investment Income Added to Fund	Other Receipts	Expended or Transferred from Fund	Balance, June 30, 1946
	FUNDS FOR UNDERGRADUATE SCHOLARSHIPS (*Continued*)					
693	Lowell Institute	$3,356.40	$119.00	.....	.....	$3,475.40
695	Rupert A. Marden	2,257.48	80.50	.....	.....	2,337.98
697	George Henry May	†10,924.88	378.00	$600.00	$460.00	†11,442.88
699	Robert W. Milne	76,294.22	2,670.50	.....	2,400.00	76,564.72
701	James H. Mirrlees	2,609.73	91.00	.....	75.00	2,625.73
703	Fred W. Morrill	2,062.55	73.50	.....	.....	2,136.05
705	Nichols	5,034.02	175.00	.....	150.00	5,059.02
707	Charles C. Nichols	5,218.15	182.00	.....	150.00	5,250.15
709	John Felt Osgood	5,291.13	185.50	.....	167.00	5,309.63
711	George L. Parmelee	17,212.41	602.00	.....	550.00	17,264.41
713	Richard Perkins	50,204.21	1,757.00	.....	1,600.00	50,361.21
715	Florence E. Prince	7,908.53	276.50	.....	250.00	7,935.03
717	Thomas Adelbert Read	21,131.42	738.50	.....	650.00	21,219.92
718	Willis Ward Reeves	.....	35.00	1,500.00	.....	1,535.00
719	Charles A. Richards	31,926.79	1,116.50	.....	950.00	32,093.29
721	John Roach	6,410.69	224.00	78.02	125.00	6,587.71
723	William P. Ryan Memorial	†$4,837.57	168.00	.....	.....	†5,005.57
725	John P. Schenkl	43,923.13	1,536.50	.....	.....	45,459.63
727	Thomas Sherwin	5,217.73	182.00	.....	50.00	5,349.73
728	G. H. Miller Smith	.....	122.50	10,000.00	.....	10,122.50
729	Horace T. Smith	34,345.20	1,200.50	.....	600.00	34,945.70
731	Sons and Daughters of New England Puritan Colony	731.38	24.50	.....	.....	755.88
733	Anna Spooner	11,053.51	388.50	.....	350.00	11,092.01
735	Tech Club of Chicago	6,214.50	217.00	.....	.....	6,431.50
737	Samuel E. Tinkham	2,415.11	84.00	.....	.....	2,499.11
739	F. B. Tough	826.64	28.00	.....	.....	854.64
741	Susan Upham	1,054.25	38.50	.....	.....	1,092.75
743	Samson R. Urbino	1,069.35	38.50	.....	50.00	1,057.85
745	Vermont Scholarship	26,415.30	924.00	.....	.....	27,339.30
747	Ann White Vose	60,012.27	2,100.00	.....	1,950.00	60,162.27
749	Arthur M. Waitt	9,724.79	339.50	.....	300.00	9,764.29
751	Grant Walker	55,497.25	1,942.50	.....	1,700.00	55,739.75
753	James Watt	13,925.53	486.50	.....	400.00	14,012.03
755	Herman E. Weihmiller	677.90	24.50	.....	.....	702.40
757	Louis Weisbein	4,098.86	143.50	.....	100.00	4,142.36
759	Frances Erving Weston	8,322.95	311.98	.....	250.00	8,384.93
761	Samuel Martin Weston	5,546.22	213.98	.....	150.00	5,610.20
763	Amasa J. Whiting	4,528.52	157.50	.....	100.00	4,586.02
765	Granger Whitney	206.50	7.00	.....	200.00	13.50
767	Elizabeth Babcock Willmann	5,345.99	185.50	.....	.....	5,531.49
769	Morrill Wyman	71,219.46	2,492.00	.....	2,325.00	71,386.46
		$2,650,486.22	$93,076.46	$36,611.25	$60,236.76	$2,719,937.17

† Exclusive of students' notes receivable. (See Schedule A-6.)

SCHEDULE A-4 — (Continued)

No.		Balance, June 30, 1945	Investment Income Added to Fund	Other Receipts	Expended or Transferred from Fund	Balance, June 30, 1946
	STUDENT LOAN FUNDS					
801	Bursar's Fund	†$29,590.96	$1,039.50	$1,167.54	$300.00	†$31,498.00
802	Class of 1898 Loan	11,547.08	402.50	.....	.....	11,949.58
803	Dean's Fund	†9,183.14	322.00	984.48	1,000.00	†9,489.62
805	Carl P. Dennett	†1,353.28	49.00	7.05	.....	†1,409.33
806	Nathan R. George	30,815.87	1,078.00	.....	.....	31,893.87
807	Lamson-Virgin	.....	14.00	5,000.00	.....	5,014.00
808	Minnie Hempel Rogers	.....	31.50	1,195.04	.....	1,226.54
809	Summer Surveying Camp	†2,575.20	91.00	100.00	.....	2,766.20
811	Technology Loan Fund	†1,221,087.87	34,295.18	172,567.49	25,588.39	†1,402,362.15
		$1,306,153.40	$37,322.68	$181,021.60	$26,888.39	$1,497,609.29
	FUNDS FOR PRIZES					
819	American Soc'y of Tool Eng.	$500.00	$17.50	.....	.....	$517.50
821	Babson	10,712.50	560.00	$6.59	$0.41	11,278.68
823	Robert A. Boit	6,193.91	217.00	.....	.....	6,410.91
825	Class of 1904	716.96	24.50	.....	.....	741.46
827	William Emerson	2,382.70	80.50	.....	.....	2,463.20
829	Roger Defriez Hunneman	998.19	35.00	.....	25.00	1,008.19
831	James Means	3,826.13	133.00	.....	.....	3,959.13
833	William B. Rogers	†47,121.67	1,648.50	147.23	.....	†48,917.40
835	Arthur Rotch	8,335.47	290.50	.....	200.00	8,425.97
837	Arthur Rotch, Special	13,170.63	462.00	.....	.....	13,632.63
839	Henry Webb Salisbury	1,230.89	42.00	.....	.....	1,272.89
841	Samuel W. Stratton	1,860.37	66.50	.....	.....	1,926.87
		$97,049.42	$3,577.00	$153.82	$225.41	$100,554.83
	Totals, Schedule A-4	$11,124,010.25	$401,285.74	$1,572,938.14	$635,245.61	$12,462,988.52

† Exclusive of students' notes receivable. (See Schedule A-6.)

SCHEDULE A-5

SPECIAL FUNDS, DEPOSITS AND RESERVES — INVESTED

	ALUMNI AND CLASS FUNDS					
851	Class of 1887	$2,858.07	$112.00	$1,054.79	.....	$4,024.86
855	Class of 1914	911.37	31.50	.....	.....	942.87
856	Class of 1918, Organ	1,553.13	59.50	250.00	.....	1,862.63
857	Class of 1919, Special	3,404.00	.....	37.00	.....	3,441.00
858	Class of 1920	1,447.75	.....	2,605.50	.....	4,053.25
859	Class of 1921	.....	3.50	3,972.00	.....	3,975.50
860	Class of 1923	15,372.42	549.50	855.67	$150.15	16,627.44
861	Class of 1924, Anonymous	2,708.52	94.50	.....	.....	2,803.02
862	Class of 1924	27,596.27	966.00	142.04	88.98	28,615.33
863	Class of 1925	16,874.74	602.00	392.52	160.06	17,709.20

SCHEDULE A-5 — (*Continued*)

No.		*Balance, June 30, 1945*	*Investment Income Added to Fund*	*Other Receipts*	*Expended or Transferred from Funds*	*Balance, June 30, 1946*
	ALUMNI AND CLASS FUNDS (*Continued*)					
864	Class of 1926	$23,230.28	$826.00	$1,153.30	.....	$25,209.58
865	Class of 1927	21,146.81	738.50	.....	.....	21,885.31
866	Class of 1928	41,992.65	1,470.00	.....	.....	43,462.65
867	Class of 1929	17,030.95	595.00	4.09	.....	17,630.04
868	Class of 1930	13,787.88	483.00	300.00	.....	14,570.88
869	Class of 1934	545.14	21.00	56.15	.....	622.29
870	Class of 1934, Special	727.50	24.50	.....	.....	752.00
871	Class of 1935	445.20	14.00	.....	.....	459.20
872	Class of 1936	613.80	21.00	87.62	.....	722.42
873	Class of 1939	934.11	31.50	.....	.....	965.61
874	Class of 1945	25.00	.....	.....	.....	25.00
875	Class of 1946	.....	.....	25.00	.....	25.00
876	Assn. of Class Secretaries	2,677.33	94.50	.....	.....	2,771.83
877	M.I.T. Alumni Assn. Perm.	100,858.87	3,563.00	3,000.00	2,397.00	105,024.87
879	M.I.T. Alumni Assn., Sp. Gift	2,000.00	93.15	1,000.00	93.15	3,000.00
881	M.I.T. Alumni, 1940–46	344,101.47	12,827.50	77,992.40	39,484.90	395,436.47
883	M.I.T. Alumni, 1946–47	.....	577.50	98,025.65	20,529.81	78,073.34
		$642,843.26	$23,798.65	$190,953.73	$62,904.05	$794,691.59
	FUNDS FOR BUILDINGS					
901	Anonymous	$1,250,140.00	$43,753.50	.....	.....	$1,293,893.50
903	Arthur J. Conner	25,688.01	955.50	$3,000.00	.....	29,643.51
905	George Eastman Buildings	147,994.79	4,011.00	.....	$73,771.07	78,234.72
907	Matilda A. Fraser	951.48	35.00	.....	.....	986.48
908	Gas Turbine Laboratory	.....	5,834.50	500,000.00	300,000.00	205,834.50
909	Hydrodynamics Laboratory	.....	150.50	16,666.67	.....	16,817.17
910	Library Building	.....	14.00	1,000.00	.....	1,014.00
911	Towing Tank	.....	217.00	12,500.00	.....	12,717.00
912	Charles D. Waterbury	15,437.65	539.00	.....	.....	15,976.65
		$1,440,211.93	$55,510.00	$533,166.67	$373,771.07	$1,655,117.53
	FUNDS AND DEPOSITS FOR STUDENT ACTIVITIES					
921	Major Briggs	$35,728.17	$1,249.50	.....	.....	$36,977.67
923	Ednah Dow Cheney	17,983.89	623.00	.....	$758.58	17,848.31
925	Edward F. and Mary R. Miller	11,219.40	392.00	.....	.....	11,611.40
927	Henry A. Morss Nautical	2,365.90	84.00	.....	.....	2,449.90
929	W. B. S. Thomas	2,506.14	87.50	.....	.....	2,593.64
931	Alice Brown Tyler	1,921.59	66.50	.....	14.82	1,973.27
933	Undergrad. Activities Trust	1,645.12	56.00	.....	.....	1,701.12
935	Undergrad. Publications Trust	11,693.68	343.00	.....	3,500.00	8,536.68
937	Undergrad. Dues, Athletics	18,124.15	637.00	$400.00	.....	19,161.15
939	Undergrad. Dues, Res. & Cont.	18,284.50	640.50	.....	.....	18,925.00
		$121,472.54	$4,179.00	$400.00	$4,273.40	$121,778.14

SCHEDULE A-5—(Continued)

No.		Balance, June 30, 1945	Investment Income Added to Fund	Other Receipts	Expended or Transferred from Fund	Balance, June 30, 1946
	MISCELLANEOUS FUNDS AND DEPOSITS					
1001	Albert	$4,310.25	$119.00	.....	$2,148.75	$2,280.50
1003	Alpha Chi Sigma House	4,513.52	157.50	$210.00	100.00	4,781.02
1004	Anonymous (Q)	1,593.74	77.00	1,756.26	.....	3,427.00
1005	Anonymous (X)	18,317.12	640.50	.....	.....	18,957.62
1006	Avoca	.....	.....	76,200.00	.....	76,200.00
1007	Bess Bigelow	33,855.24	1,186.50	.....	.....	35,041.74
1009	Davis R. Dewey Memorial	539.70	17.50	.....	.....	557.20
1011	Drama Club Theatre	516.14	17.50	.....	.....	533.64
1013	Joseph Hewett	212,906.21	7,738.57	725.00	8,008.34	213,361.44
1014	Kurrelmeyer	.....	49.00	1,889.99	.70	1,938.29
1015	Jacob and Jennie Lichter	5,097.50	178.50	.....	.....	5,276.00
1016	Arthur D. Little Lectureship	6,197.50	217.00	.....	.....	6,414.50
1017	M. I. T. Teachers Insurance	108,395.99	3,479.00	49,382.72	42,225.06	119,032.65
1018	John D. Mitsch Memorial	.....	17.50	2,175.00	.....	2,192.50
1019	President's Fund, Special	11,537.11	399.00	.....	900.00	11,036.11
1021	William Patrick Ryan Special	1,609.06	52.50	.....	300.00	1,361.56
1023	Sedgwick Memorial Lecture	14,659.44	521.50	332.13	.....	15,513.07
1025	Lillie C. Smith	6,102.46	213.50	.....	54.95	6,261.01
1026	Walter G. Snow	14,325.79	500.50	.....	.....	14,826.29
1027	Teachers' Fund	124,327.03	4,301.50	.....	3,166.64	125,461.89
1029	Technology Matrons' Teas	9,046.12	311.50	.....	292.50	9,065.12
1030	Technology Press	.....	1,669.50	47,677.59	.....	49,347.09
1031	George S. Witmer	58,484.53	2,580.97	9,820.12	2,407.14	68,478.48
		$636,334.45	$24,445.54	$190,168.81	$59,604.08	$791,344.72
	RESERVES					
1051	Army & Navy Tr. Res.	$27,806.80	$973.00	.....	.....	$28,779.80
1053	Endowment Reserve	1,193,210.12	10,113.12	$1,127,272.76	$44,453.51	2,286,142.49
1057	Photo Service Reserve	21,390.00	749.00	.....	.....	22,139.00
1059	Reserve for Use of Facilities	713,984.50	17,622.50	168,019.00	469,588.73	430,037.27
1063	Walker Mem., Reserve	12,195.00	427.00	.....	.....	12,622.00
1065	W. M. Dining Serv., Res.	53,999.95	1,946.00	234.60	13,177.45	43,003.10
		$2,022,586.37	$31,830.62	$1,295,526.36	$527,219.69	$2,822,723.66
	Totals, Schedule A-5	$4,863,448.55	$139,763.81	$2,210,215.57	$1,027,772.29	$6,185,655.64
	Totals, Endowment and Other Funds	$43,098,576.58	$541,723.30	$4,013,093.52	$1,664,884.91	$45,988,508.49
			(*Schedule B*)			(*Schedule A*)

SCHEDULE A-6

STUDENTS' NOTES RECEIVABLE

Fund	*Notes Receivable June 30, 1945*	*Loans Made 1945–46*	*Loans Repaid 1945–46*	*Notes Receivable June 30, 1946*	*Interest Received 1945–46*
Technology Loan Fund	$527,982.02	$16,317.00	$121,734.82*	$422,564.20	$10,048.59
Bursar's Fund	2,781.30	300.00	1,044.20	2,037.10	123.34
Rogers' Fund	1,948.00	.....	146.25	1,801.75	.98
Dean's Fund	1,630.06	1,000.00	975.00	1,655.06	9.48
C. E. Summer Camp Fund	100.00	.....	100.00	.....	22.52
Dennett Fund	465.00	.....	.....	465.00	7.05
G. H. May Scholarship Fund	3,500.00	300.00	600.00	3,200.00	.....
Hygiene Special Fund	3,144.44	.....	373.55	2,770.89	4.28
Class of 1896 Fund	1,000.00	.....	375.00	625.00	.....
Emerson Fund	300.00	.....	.....	300.00	.....
Wm. P. Ryan Memorial Fund	205.69	.....	.....	205.69	.....
Totals	$543,056.51	$17,917.00	$125,348.82	$435,624.69	$10,216.24

* Including write-offs.

SCHEDULE A-7

ACCOUNTS RECEIVABLE

United States Government:		
O.S.R.D. — Radiation Laboratory	$988,081.90	
Less Advance Payments thereon	988,081.90	
All Other O.S.R.D. Contracts		$370,252.40*
Army, Navy and N.A.C.A. Research Contracts		867,227.67*
Veterans Administration		386,754.36
Navy — Radar School		107,482.00
Weather Bureau		4,875.00
Other Tuition Fees		51,810.00
Other Governmental Departments or Agencies		3,104.36
Total United States Government		$1,791,505.79
Industrial Corporations — Research Contracts		94,845.43*
Others:		
Aeronautical Engineering Department — Wind Tunnel Accounts	$6,653.00	
Physics Department—Cyclotron Rental	3,633.89	
Students' Fees and Deposits	1,919.22	
Miscellaneous Accounts	22,464.67	34,670.78
Total (Schedule A)		$1,921,022.00

* Total under direction of Division of Industrial Coöperation $1,332,325.50.

SCHEDULE A-8

CONTRACTS IN PROGRESS

United States Government:		
O.S.R.D. — Radiation Laboratory	$309,888.58	
Less: Advance Payments thereon	292,332.47	
		$17,556.11*
All Other O.S.R.D. Contracts		5,307.88*
Army, Navy and N.A.C.A. Research Contracts		1,659,265.12*
Veterans Administration		2,035.53
Weather Bureau Research Program		2,363.85
Navy — Radar School		7,242.69
Total United States Government		$1,693,771.18
Industrial Corporations — Research Contracts		64,964.48*
Other		17,655.03
Total (Schedule A)		$1,776,390.69

* Total under direction of Division of Industrial Coöperation $1,747.093,59.

SCHEDULE A-9

INVENTORIES, PREPAID EXPENSES AND DEFERRED CHARGES

Inventories:		
Department of Buildings and Power:		
Maintenance Supplies	$35,927.52	
Coal	23,670.67	
Oil	2,646.25	
	$62,244.44	
Laboratory Supplies	12,653.98	
Dining Halls, Food and Supplies including Games Dept.	20,166.80	
Photographic Merchandise and Supplies	6,286.95	
Dormitories, Room Service Supplies	6,799.49	
Stationery and Stamps	1,728.19	
Technology Store, Lecture Notes	796.00	
Total Inventories		$110,675.85
Prepaid Expenses and Deferred Charges:		
Deposits with Mutual Fire Insurance Companies	$40,331.55	
Unexpired Insurance Premiums	8,692.45	
Coöperative Foundation Plan — Insurance Premiums	3,347.74	
Building 18 used by Radar School, less Amortization	23,452.75	
Construction in Progress:		
Hydrodynamics Laboratory Building	870.00	
Navy and Army Building	21,970.05	
Barracks Dormitories	28,514.94	
Federal Public Housing Administration	370.00	
New Senior Dormitories	5,338.04	
New Library Building	1,941.71	
Nuclear Physics Building	562.61	
Faculty Club Building	1,679.43	
Equipment acquired by Division of Industrial Coöperation, less Depreciation	81,919.33	
Division of Industrial Coöperation:		
Due from Vendors $17,620.52		
Deferred Charges to Operations 6,080.53		
	23,701.05	
Other Deferred Charges	47,262.41	
Total Prepaid Expenses and Deferred Charges		289,954.06
Total (Schedule A)		$400,629.91

SCHEDULE A-10

STUDENTS' ADVANCE FEES AND DEPOSITS

1946 Summer Term:		
Tuition Fees	$125,608.00	
Students' Deposits	11,974.59	
Dormitory Rentals	83,430.00	
		$221,012.59
1945–46 Students' Deposits, Returnable		13,411.49
1946–47 Tuition Fees		500.00
Total (Schedule A)		$234,924.08

SCHEDULE A-11

FEDERAL TAX WITHHOLDINGS, WAR BOND AND OTHER DEPOSIT ACCOUNTS

	Balance June 30, 1945	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 194*
Additional Group Insurance	$93.70	$11,982.22	$11,387.38	$688.54
Blue Cross Hospitalization Program	14,230.85	43,463.29	52,076.34	5,617.80
Boat House Equipment Account	992.94	1,626.00	29.92	2,589.02
Building Key Account	3,391.84	1,721.00	2,330.16	2,782.68
Carnegie Foundation Pension Account	.....	58,602.27	58,602.27	.....
Consolidated Vultee Aircraft Corporation	.....	7,500.00	1,240.00	6,260.00
Corporation Flower Fund	60.00	.....	.....	60.00
Division of Industrial Coöperazion A.M.P. Royalty Account	5,822.03	1,978.81	.....	7,800.84
Division of Industrial Coöperation No. 5973 Key Account	565.93	75.00	375.00	265.93
Division of Industrial Coöperation B.B.R.L. Staff Salary Suspense	913.43	.....	913.43	.....
Employees' Fund	85.35	.....	.....	85.35
Faculty Flower Fund	280.25	2.00	53.00	229.25
Greater Boston United War Fund	44.06	1,338.50	1,382.56	.....
Greater Boston United War Fund and Red Cross — Radiation	57.00	.....	57.00	.....
I.C.Y.R.A. Deposit Account	.....	1,968.99	.....	1,968.99
Iraqi Education Directorate Account	8,162.99	9,000.00	14,537.42	2,625.57
Junior Prom Committee	.....	101.60	101.60	.....
Lowell Institute	.....	1,560.00	1,560.00	.....
Leon M. Mack Memorial	.....	1,152.54	.....	1,152.54
Melvin Trust Scholarships	2,320.00	5,000.00	5,750.00	1,570.00
Nautical Association	583.00	1,321.00	1,538.00	366.00
Radar School Harbor Building Book Account	.....	569.42	569.42	.....
Rockefeller Foundation Emergency O.F.S. Expense Account	1,632.01	97.41	524.90	1,204.52
Teagle Foundation, Inc. Scholarships	.....	1,350.00	975.00	375.00
Technique	43.00	9.50	52.50	.....
Technology Christian Association	.....	635.75	632.75	3.00
Undergraduate Dues	1,647.00	23,362.50	20,708.80	4,300.70
United States War Savings Bonds	76,664.72	400,493.94	458,168.56	18,990.10
United States Withholding Tax	233,180.32	1,634,027.63	1,778,471.81	88,736.14
	$350,770.42	$2,208,939.37	$2,412,037.82	$147,671.97

(Schedule A)

SCHEDULE A-12

UNEXPENDED CURRENT FUNDS, APPROPRIATIONS AND RESERVES

Department Accounts	*Balance June 30, 1945*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1946*
Aeronautical Engineering:				
Aerodynamic Research	$267.88	$25,000.00	.....	$25,267.88
C. A. A. Pilot Training Program	11,640.34	.....	$5,640.34	6,000.00
Five Foot Wind Tunnel	.....	30,000.00	.....	30,000.00
Goodyear Fellowship	1,500.00	6,000.00	7,500.00	.....
Instrument Lab. — Maintenance	935.41	1,150.56	2,085.97	.....
Special 500–762 Acct., Draper	1,468.51	.....	.....	1,468.51
Special Apparatus Wright Tunnel	.....	10,000.00	.....	10,000.00
Special Appro. No. 1938	6,693.83	176.56	6,684.40	185.99
Special Appro. No. 1990	4,345.71	.....	46.26	4,299.45
Special Appro. No. 2065	17,810.88	.....	13,564.62	4,246.26
Structural Lab. Equipment	525.34	.....	525.34	.....
Summer Shop Course, Markham	65.67	.....	65.67	.....
Vibration Research No. 1333	654.95	10.00	507.49	157.46
Wind Tunnel	126,118.54	139,821.09	184,789.04	81,150.59
Wright Tunnel Balance	.....	30,000.00	.....	30,000.00
Architecture:				
City Planning Conf. Account	982.94	1,250.00	2,232.94	.....
Housing Res. Special No. 1899	3,499.34	.....	193.00	3,306.34
Traveling Fellowship	1,975.00	.....	475.00	1,500.00
Biology and Biological Engineering:				
Baruch Fund	7,175.61	3,268.40	10,444.01	.....
Baruch Committee on Physical Medicine Fellowship	1,050.00	2,411.73	3,300.00	161.73
Biological Shop Account	1,176.32	488.27	1,664.59	.....
Biological Shop Sp. Appro. 1648	2,517.19	.....	1,871.06	646.13
Corn Industries Research Foundation	509.22	.....	137.97	371.25
Diversey Corp. Fellowship	852.67	.....	852.67	.....
du Pont Cell. Research Fund	471.04	15.99	487.03	.....
Electron Microscope Research	.....	11,559.83	11,559.83	.....
Gillette Safety Razor Co.	15,000.00	.....	.....	15,000.00
Haskins Fellowship	1,666.64	.....	1,666.64	.....
Hoffmann La Roche Fund	2,497.94	.....	.....	2,497.94
A. C. Lawrence Fund	4,878.18	6.15	675.25	4,209.08
Lilly P. I. Fund	4,992.50	.....	1,606.59	3,385.91
Moore, Emma B., Ration Research	339.81	.....	26.64	313.17
Penicillin Special	618.70	361.21	979.91	.....
Rockefeller Fd., Biological Engineering	25,422.29	14,601.77	32,402.90	7,621.16
Royalty Receipts Pat. 665135	1,961.39	889.54	651.32	2,199.61
Rubber Research Special 1915	4,001.59	.....	3,467.78	533.81
Building Engineering and Construction:				
Cabot Pigment Research	.....	6,000.00	5,458.06	541.94
National Lime Association	1,940.70	5,165.93	6,353.25	753.38
Plastic Materials Mfgrs. Association	.....	30,002.86	12,152.80	17,850.06
Research Corp. Build. Material	2,502.42	.....	149.08	2,353.34
Reynalite Research	.....	27.17	27.17	.....
Reynolds Metals Co.	.....	2,000.00	333.63	1,666.37
Tucker (Ross Francis) Memorial Fund	133.73	.....	51.97	81.76

SCHEDULE A-12 — (Continued)

Department Accounts (Continued)	*Balance June 30, 1945*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1946*
Bus. and Eng. Administration:				
Case Research	$29.35	.....	.....	$29.35
Human Relationships Account	61.53	.....	$30.51	31.02
John R. Macomber Fund	11.21	$487.67	.....	498.88
Newman M. Marsilius Fund	25.70	1,000.00	230.52	795.18
Office of Emergency Manage., Special A-35	295.63	.....	.....	295.63
Puerto Rico Fellowships	298.55	.....	.....	298.55
Sloan Book Account	231.65	.....	.....	231.65
Special Appropriation No. 1850	428.60	21.60	.....	450.20
Special Appropriation 1931	323.51	.....	.....	323.51
Sponsored Fellow., Operating	2,612.10	.....	.....	2,612.10
Sponsored Fellow., Research	2,344.54	7.00	.....	2,351.54
Work Simplification Course	.....	1,260.00	1,260.00	.....
Chemical Engineering:				
Alsifilm Research	199.86	.....	.....	199.86
Colloid Chemistry Special 1207	281.28	.....	.....	281.28
Equipment Special	.....	215.00	.....	215.00
Fuels Research	2,354.26	.....	.....	2,354.26
S. C. Johnson & Son, Inc. Colloid Chemistry Fellowship	5,000.00	.....	747.50	4,252.50
Paint Films Special No. 1992	2,772.35	.....	12.33	2,760.02
Research Corp. Spec. Adams	.....	3,600.00	766.64	2,833.36
Special Research No. 1421	250.00	.....	.....	250.00
Special No. 2131 Building 12 Changes	.....	17,496.28	17,496.28	.....
Chemistry:				
Anonymous	.....	3,500.00	.....	3,500.00
Cope Research	.....	6,000.00	250.00	5,750.00
Davis Special Account	161.38	2,105.88	2,267.26	.....
Diamond Alkali Library Fellowship Spec. No. 2126	.....	6,100.00	5,090.96	1,009.04
Harshaw Chemical Fund	.....	5,081.25	794.57	4,286.68
Hockett Fund	.....	1,773.70	1,773.70	.....
Inorganic Equipment Account	931.30	.....	208.51	722.79
Arthur D. Little Spec. Fellowship	.....	1,500.00	500.00	1,000.00
Physical Chemistry Royalties	5,341.04	988.20	745.49	5,583.75
Polymerization Research	1,915.25	.....	250.00	1,665.25
Research Corp. Morton Fund	.....	10,000.00	1,369.56	8,630.44
Research Corp. Vitamins A and D Research	819.06	5,000.00	4,888.87	930.19
Rockefeller Research Grant 45107	.....	20,100.00	363.35	19,736.65
Royalty Receipts Pat. 665135	3,774.26	593.03	737.58	3,629.71
Sharpe and Dohme, Inc.	800.00	2,400.00	3,200.00	.....
Sugar Research Fund	4,578.31	27,839.32	30,292.87	2,124.76
Special Appro. No. 2048 — Freshman Laboratory	14,540.68	.....	4,218.00	10,322.68
Special No. 2100	.....	131,000.00	125,445.13	5,554.87
Special No. 2170A	.....	138,000.00	62,039.45	75,960.55
Special No. 2170B	.....	42,000.00	508.37	41,491.63
Welch Fund	996.00	1,000.00	1,884.22	111.78
Alterations Special No. 2195	.....	1,825.89	1,825.89	.....
American Academy of Arts and Sciences	.....	300.00	.....	300.00
Civil Engineering:				
Cement Research Special 1056	1,397.44	.....	.....	1,397.44
Civil Welding Research	.....	1,600.00	.....	1,600.00

SCHEDULE A-12 — (Continued)

Department Accounts (Continued)	*Balance June 30, 1945*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1946*
Civil Engineering (*Continued*)				
Equipment Special 1326	$338.82	.....	.....	$338.82
Freeman Hydraulic Research	800.00	.....	.....	800.00
Hydraulics Laboratory Special No. 2155	.....	$12,000.00	$5,780.69	6,219.31
Laboratory Special No. 2032	.....	792.47	792.47	.....
Retaining Wall Laboratory Special	200.00	.....	.....	200.00
River Hydraulic Laboratory	1,185.14	.....	.75	1,184.39
Sanitary Science Laboratory Special No. 2087	15,000.00	291.12	6,845.95	8,445.17
Soil Mechanics Laboratory	464.80	847.05	847.05	464.80
Special Appro. No. 2173	.....	15,000.00	.....	15,000.00
Special Research No. 1364	2,581.42	.....	.....	2,581.42
Standard Oil Co. of California Fellowship	.....	1,000.00	.....	1,000.00
Standard Oil Co. of Indiana Fellowship	.....	1,800.00	900.00	900.00
Structural Laboratory	58.00	587.68	645.68	.....
Summer Camp Construction Reserve	5,282.43	.....	.....	5,282.43
Wallace and Tiernan Grant	5,000.00	.....	.....	5,000.00
Economics:				
Experimental Statistics Spec. Course	.....	405.00	405.00	.....
Experiments Statistics	.....	333.00	.....	333.00
Post War Science Survey	.....	6,978.64	6,978.64	.....
Rockefeller Foundation Grant 41042	411.81	8,089.16	8,500.97	.....
Rockefeller Foundation Grant 45082	.....	5,000.00	711.00	4,289.00
Electrical Engineering:				
Balsbaugh Research	830.03	7,996.60	3,364.35	5,462.28
Balsbaugh Research Special	2,750.00	.....	1,182.26	1,567.74
Center of Analysis	16,177.80	109,295.46	115,889.77	9,583.49
Coating Metals Special No. 1946	598.00	.....	.....	598.00
Communications Laboratory, U.H.F. Research	1,874.94	.....	.....	1,874.94
Course Revision Special No. 1250	682.86	33.29	136.24	579.91
Course VI-A Travel Account	618.43	.....	462.02	156.41
Edgerton Film Research	1,186.30	28.00	51.62	1,162.68
Electronics Special	659.00	.....	.30	658.70
High Voltage Special 2114	54.67	12,692.89	12,747.56	.....
Hyams Radiation Research	.....	13,024.68	5,764.75	7,259.93
Int. Tel. and Tel. Research 1940–41	399.38	.....	.....	399.38
Int. Tel. and Tel. Research	865.70	.....	.....	865.70
Micro Calibration Research	120.90	.....	.....	120.90
Micro Wave Research	6,357.06	.....	.....	6,357.06
Network Analyzer	17,174.31	6,116.13	3,711.39	19,579.05
Oil Gear Research	6,000.00	3,000.00	.....	9,000.00
Oncologic Research	.....	9,815.12	8,963.20	851.92
Photoelectric Cells Research Special 1874A	4,157.98	.....	.....	4,157.98
Radio Research Special 1550	1,724.15	.....	.....	1,724.15
Rapid Selection Research	6,981.62	.....	.....	6,981.62
Research Corp. Arithmetical Machine Special	417.53	.....	4.56	412.97
Round Hill Research	117.13	.....	.....	117.13
Servos Royalty Account	823.47	.....	.....	823.47
Servos Special, Brown	2,456.93	5,142.42	4,336.76	3,262.59
Shop Equip. Special (Lathe)	800.00	.....	.....	800.00
Special Appropriation No. 1986	5,000.00	.....	5,000.00	.....
Special Appropriation No. 2134	.....	250.00	83.40	166.60
U. H. F. Dielectrics Research Special 1874B	6,000.00	.....	.....	6,000.00
U. S. Navy Fire Control Research	.....	403.92	403.92	.....
von Hippel Research Sp. 1219	118.89	.....	.....	118.89

SCHEDULE A-12 — (Continued)

Department Accounts (Continued)	*Balance June 30, 1945*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1946*
English and History:				
International Relations Library	$91.89	.....	.....	$91.89
Food Technology:				
Apple Fellowship	4,971.50	.....	$296.72	4,674.78
Bartlett Arkell Fund	65.68	$309.32	375.00	.....
Bruce's Juices Inc. Fellowship	6,000.00	.....	.....	6,000.00
Campbell Special	.....	4,060.96	3,865.90	195.06
Food Research	151.55	20,737.82	20,889.37	.....
Joe Lowe Corp. Research	1,500.00	1,500.00	40.05	2,959.95
Kroger Grocery and Baking Co. Fellowship	817.10	.....	817.10	.....
Lever Bros. Fellowship	418.91	3,356.81	3,775.72	.....
Moore, Emma B., Ration Research	500.00	.....	.....	500.00
Nutrition Research	64.11	2,646.61	1,197.49	1,513.23
Pan American Fund	1,071.04	3,771.35	4,842.39	.....
Proctor Special Fund	24.84	.....	24.84	.....
Quaker Nutrition Fund	.....	4,968.34	2,746.95	2,221.39
Standard Brands Fellowship	.....	2,200.00	900.00	1,300.00
Swift Nutrition Fund	.....	3,136.15	3,136.15	.....
T. R. R. F. Research	.....	5,150.00	1,134.80	4,015.20
Underwood, William, Fellowship	427.28	.....	427.28	.....
United Fruit Fund	.....	40,280.97	4,541.63	35,739.34
Vitamin K Fund	1,823.66	2,475.20	2,965.82	1,333.04
Geology:				
Geological Research Special 1863	4,551.38	.....	.....	4,551.38
National Research Council, Research	143.60	.....	14.00	129.60
Geophysical Research	211.38	1,217.00	1,276.33	152.05
G. S. A. 452-45	.....	2,300.00	1,907.17	392.83
G. S. A. 466-45	.....	8,003.80	2,998.49	5,005.31
Graphics:				
National Research Council, Grant	184.21	15.79	200.00	.....
Special Appro. No. 2117	.....	1,588.27	1,588.27	.....
Industrial Relations Section:				
Special Appropriation No. 1955	676.59	.....	.....	676.59
Mathematics:				
Applied Mathematics Program	11,700.00	416.66	6,524.62	5,592.04
Journal of Mathematics and Physics	3,018.99	2,964.70	824.03	5,159.66
Putnam Fund	290.52	.....	20.00	270.52
Mechanical Engineering:				
A. S. M. E. Research	123.63	3,150.00	1.33	3,272.30
Automotive Laboratory Special 1953	20.80	850.00	870.80	.....
Cavitation Research	2,232.73	.....	224.88	2,007.85
deForest Research Special 1254	6,217.87	.....	3,965.15	2,252.72
A. S. R. E. Research	498.70	500.00	132.29	866.41
Gas Turbine Construction and Equipment	.....	302,800.00	11,592.47	291,207.53
Gas Turbine Research	19,622.89	72,180.70	81,428.41	10,375.18
Harvey — Nonferrous Forgings Fund	10,000.00	.....	10,000.00	.....
Keenan Research	8.75	.....	8.75	.....
Laboratories Revision Spec. 2095	.....	2,404.33	2,404.33	.....
Magnaflux Research Fund	9,952.64	.....	.....	9,952.64
Mechanics of Materials Special No. 2041	25,000.00	.....	1,535.15	23,464.85

SCHEDULE A-12 — (Continued)

Department Accounts (Continued)	Balance June 30, 1945	Receipts or Transfers	Expenditures or Transfers	Balance June 30, 1946
Mechanical Engineering (Continued)				
Shop Maintenance Account	$9,349.90	$4,565.06	$6,733.52	$7,181.44
S. Slater & Sons Inc. Fund	15,768.66	39,516.31	32,186.65	23,098.32
Sloan Bldg. Special No. 2056	3,079.14	.....	3,079.14	.....
Special Appro. No. 2099	.....	12,000.00	1,416.74	10,583.26
Special Appro. No. 2123	.....	1,200.00	1,200.00	.....
Special Appro. No. 2132	.....	30,000.00	26,841.29	3,158.71
Special Appro. No. 2160	.....	100,797.74	18,936.35	81,861.39
Special Appro. No. 2169A	.....	11,000.00	855.06	10,144.94
Special Appro. No. 2169B	.....	14,000.00	12.76	13,987.24
Special Appro. No. 2176	.....	5,000.00	1,864.47	3,135.53
Special Research	355.93	.....	244.07	111.86
Testing Machine Special 1624	89.81	.....	89.81	.....
Testing Machine Special 1963	200.77	.....	200.77	.....
Testing Materials Laboratory Special	2,678.51	3.24	168.74	2,513.01
Testing Materials Laboratory Sp. 1523	347.22	.....	347.22	.....
Textile Equipment Special	543.51	509.90	639.15	414.26
Textile Foundation Research	2,502.72	.30	5.25	2,497.77
Thermodynamic Research	.....	1,500.00	24.92	1,475.08
U. S. Navy Torpedo Research	.....	609.25	609.25	.....
Medical:				
Homberg Infirmary Alterations	2,571.51	.....	1,640.49	931.02
Special — Needy Student Fund	†2,112.53	377.83	.....	†2,490.36
Metallurgy:				
Cates Equipment Special	243.34	.....	.....	243.34
Chipman Research Special 1337	179.99	500.00	264.13	415.86
Clay Research	623.08	352.00	192.00	783.08
Dust Removal Special 1945	44.95	.....	.....	44.95
Engineering Foundation Welding Research	2,238.95	7,550.00	8,179.82	1,609.13
Equipment Special No. 1234	2,130.46	165.00	.....	2,295.46
Equipment Special No. 1259	4,056.16	1,514.66	1,401.75	4,169.07
Equipment Special, Hayward	49.25	.....	.....	49.25
Gray Iron Founders Society, Inc.	.....	2,000.00	1,297.00	703.00
Magnet Generator Purchase Account	14,260.00	.....	.....	14,260.00
Mineral Dressing Research	392.66	652.78	320.02	725.42
New England Carbide Research Associateship at M.I.T.	1,166.63	4,290.39	5,457.02	.....
Republic Steel Corp. Fund	.....	10,000.00	1,298.92	8,701.08
Revere Copper and Brass Co. Research	3,113.11	1,600.00	.....	4,713.11
Sheffield Foundation Research	620.78	5,397.28	6,018.06	.....
Special Research No. 1354	478.53	.....	.....	478.53
Special Research No. 1818	413.30	1,644.35	2,057.65	.....
Unexcelled Mfg. Co. Research	.....	1,701.82	1,701.82	.....
Vanadium Corp. Fellowship	603.13	2,600.00	3,118.28	84.85
Wellman, S. K., Fellowship	7,500.00	.....	1,738.71	5,761.29
Meteorology:				
Pamphlets Deposit Special	164.00	.....	.....	164.00
Weather Bureau Research	.....	12,258.41	12,258.41	.....
Special Appro. No. 2182	.....	1,500.00	1,500.00	.....
Military Science:				
Freshman Uniform Account	936.05	2,585.02	1,502.86	2,018.21
Senior Uniform Upkeep Account	134.97	.....	.....	134.97

† Exclusive of students' notes receivable. (See Schedule A-6.)

SCHEDULE A-12 — (Continued)

Department Accounts (Continued)	*Balance June 30, 1945*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1946*
Naval Architecture:				
Propeller Tunnel Special 1548A	$2,829.41	$367.47	$259.79	$2,937.09
Special Fund (Anonymous)	2,189.81	.....	.....	2,189.81
Physics:				
Acoustics Laboratory	.....	23,208.79	.....	23,208.79
American Petroleum Institute Fund	138.44	15,284.17	15,422.61	.....
Cabot X-Ray Fund	6,000.00	.....	.....	6,000.00
Carnegie Institution of Washington, Boyce	1,767.23	.....	1,767.23	.....
Carnegie Institution of Washington, Vallarta	860.00	.....	.....	860.00
Crystal Research	824.98	118.78	327.06	616.70
Evans Research	796.46	326.00	534.27	588.19
Frank B. Jewett Fellowship	.....	1,500.00	52.93	1,447.07
Glass Industry Fellowship	250.00	.....	.....	250.00
Gulf Oil Corp. Research	550.00	1,100.00	550.00	1,100.00
Magnetic Laboratory Special No. 1222	359.32	8,500.00	3,829.35	5,029.97
National Co. Electronics Fund	1,500.00	.....	.....	1,500.00
Nuclear Research	9,872.62	16.51	465.46	9,423.67
Nuclear Special	.....	13.51	13.51	.....
Radioactivity Center	22,717.23	102,714.28	77,958.17	47,473.34
Roentgen Ray Research	232.26	.....	.....	232.26
Rockefeller Foundation Grant No. 45050	49,921.33	2,485.85	34,599.05	17,808.13
Special Appropriation No. 2047	29,226.30	.....	1,846.37	27,379.93
Special Appro. No. 2133	.....	600.00	.....	600.00
Special Appro. No. 2146	.....	1,139.03	1,139.03	.....
Special Appro. No. 2171	.....	600.00	.....	600.00
Spectroscopy Special	10,644.52	120.00	869.12	9,895.40
Zeeman Effect Program Special 1755	660.25	.....	193.60	466.65
Solar Energy Research:				
Building Engineering and Construction	.....	612.90	612.90	.....
Chemistry	801.92	.....	134.61	667.31
Electrical Engineering	656.44	.....	.....	656.44
Geology	485.83	.....	.....	485.83
Headquarters Account	1,129.10	883.28	2,012.38	.....
Metallurgy	585.48	1,951.43	2,536.91	.....
	$763,567.34	$1,905,842.63	$1,254,358.21	$1,415,051.76
Other Accounts				
Library:				
Crafts Library	$479.53	.....	.....	$479.53
Dewey Library	13.85	$4.00	.....	17.85
German Chemical Documents	.....	3,300.00	$404.85	2,895.15
Humanities Library	184.69	1,750.00	1,061.52	873.17
Library Growth	1,410.90	4,035.74	2,604.56	2,842.08
Rockefeller Foundation Grant 46037	.....	3,500.00	2,391.05	1,108.95
Schenley Library Fellowship	.....	8,000.00	4,868.21	3,131.79
Special No. 1	100.16	486.70	143.89	442.97
Special No. 1853	1,079.09	.....	137.36	941.73
Special Appro. No. 2073	.....	864.00	864.00	.....
Walker Memorial Library	2,641.90	3,015.67	3,042.12	2,615.45
	$5,910.12	$24,956.11	$15,517.56	$15,348.67

SCHEDULE A-12 — (Concluded)

Other Accounts (Continued)	*Balance June 30, 1945*	*Receipts or Transfers*	*Expenditures or Transfers*	*Balance June 30, 1946*
Research (other than those under Department Accounts):				
All American Aviation, Inc. Richard G. duPont Memorial	$5,000.00	.....	.....	$5,000.00
Bush Research Fund	.....	$115.00	.....	115.00
Chemical Warfare Service Development Laboratory "G"	.....	223,646.97	$223,545.21	101.76
Cosmic Terrestrial Research	6,683.31	5,777.85	12,439.76	21.40
Division of Industrial Coöperation	42,536.19	60,007.68	42,536.19	60,007.68
General Radio Company Fund	2,000.00	.....	.....	2,000.00
Radar School, Harbor Building	30,202.95	453,310.84	483,513.79	.....
Research Associates 1943	3,000.00	.....	3,000.00	.....
	$89,422.45	$742,858.34	$765,034.95	$67,245.84
Miscellaneous:				
Alterations Spec. 2086	.....	$23,439.55	$23,439.55	.....
Alumni Fund, Bulletin Special 1560	$845.57	.....	845.57	.....
Emma Rogers Room — Social Account	76.29	454.52	530.81	.....
Graduate Student Fund	.....	200.00	.....	$200.00
Guide Service Special 1558	169.80	.....	.....	169.80
Gymnasium Special	915.53	.....	.....	915.53
Historic Memorials	476.03	78.18	554.21	.....
Kasch Fellowships	180.00	.....	.....	180.00
Kurrelmeyer Fund	10.00	85.00	95.00	.....
Lecture Fund	860.00	.....	72.80	787.20
Patent Committee	77.51	.....	.....	77.20
Photographic Service	317.45	155,125.53	154,036.68	1,406.51
President's Fund	883.15	.....	750.95	132.30
President's Portrait Fund	230.40	.....	.....	230.20
President's Special Fund "L"	2,839.55	649.46	1,769.90	1,719.41
Radiation Luncheon Club Scholarship Fund	.....	345.71	.....	345.11
Sailing Trophy Fund	3.52	.....	.....	3.57
Salvage Fund	802.45	.....	802.45	.....
Special Approp. 2139	.....	475.00	394.50	80.50
Technology Press	24,979.00	22,698.59	47,677.59	.....
Tech War Record Spec. 2116	.....	1,466.71	1,466.71	.....
Travel Suspense Account	202.38	34,221.40	34,423.78	.....
U. S. Navy V-12 Program	.....	415,582.71	415,582.71	.....
Veterans' Administration Account No. 16	.....	72,313.69	70,922.44	1,391.25
Veterans' Administration Account No. 346	.....	433,063.24	433,063.24	.....
Veterans' Special	.....	2,723.14	2,723.14	.....
Visiting Committees Reports, Special	99.59	222.50	322.09	.....
	$33,968.22	$1,163,144.93	$1,189,474.12	$7,639.03
Reserves:				
Alterations Special No. 2091	$1,743.50	$285.12	$2,028.62	.....
Bemis Real Estate	938.11	1,651.85	89.00	$2,500.96
Building 8 New Electric Lines Spec. No. 2022	1,132.45	.....	.....	1,132.45
Division of Industrial Coöperation	116,575.86	56,372.02	116,575.86	56,372.02
Graduate House Dining Service	14,899.72	.....	14,899.72	.....
Graduate House Equipment	1,189.00	4.00	.....	1,193.00
Radar School, Harbor Building	35,449.46	10,827.59	40,252.50	6,024.55
Space Changes Special No. 2053	3,998.78	.....	3,998.78	.....
Special War Reserve Fund 1941–42	324,993.61	.....	.....	324,993.61
	$500,920.49	$69,140.58	$177,844.48	$392,216.59
Total	$1,393,788.62	$3,905,942.59	$3,402,229.32	$1,897,501.89

(Schedule A)

SCHEDULE A-13

[1]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	536,268.99	
Guggenheim Aeronautical Laboratory	293,637.46	
Wright Brothers Memorial Wind Tunnel...	217,506.25	
Magnetic Substation	76,272.73	
Sloan Automotive Laboratories	300,639.22	
Mechanic Arts Building	83,658.89	
Nuclear Research Laboratory	42,891.27	
Cyclotron Laboratory	20,247.92	
Solar Energy Laboratory	10,500.00	
Hyams Radiation Laboratory	13,500.00	
Research Building (Servo-mechanisms)	104,589.55	
Hydraulic Laboratories	11,000.00	
Chemical Engineering Laboratory (Bldg. 38)	31,000.00	
		9,275,202.18
Educational Equipment		2,039,953.60
Undergraduate Dormitories		1,458,923.79
Infirmary, Recreational and Athletic Buildings:		
Homberg Memorial Infirmary	$188,441.60	
Walker Memorial	714,587.02	
Alumni Swimming Pool	377,992.93	
Boat House	54,244.13	
Barbour Field House	84,042.54	
Sailing Pavilion	28,849.09	
Briggs Field House and Track	121,197.99	
		1,569,355.30
Summer Camp:		
East Machias, Maine	$120,558.00	
		120,558.00
Miscellaneous:		
Power Plant	$389,064.17	
Steam and Electrical Distribution System..	154,055.24	
Service Building and Garages	55,369.74	
Other Plant Assets	271,907.92	
		870,397.07
Total, June 30, 1946 (Schedule A)		$17,310,171.43

[1]Not including the Graduate House, Westgate Veterans Housing, Women's Dormitory, 120 Bay State Road, Boston and M.I.T. Student House, 111 Bay State Road, Boston (see investments, page 180), nor Buildings 20, 22 and 24, built for and used by U. S. Government Research.

SCHEDULE A-14
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 President's House, Power Plant and buildings other than Dormitories and those used for Student Recreational and Athletic Purposes):		
*George Eastman	$5,851,993.93	
T. C. and P. S. du Pont, 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 Automotive Laboratory	152,464.35	
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., $10,500; Anonymous, $1,000, Bldg. 6, Industrial Fund for Bldg. 32, $27,753.67	81,001.59	
†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–14 — (Continued)

For Educational Buildings (*Continued*):		
Miscellaneous Appropriations from Current Income for: Compression Lab., $31,000; Tractor Garage, $6,400	$37,400.00	
		$8,903,532.55
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	193,576.34	
Miscellaneous Contributions	14,429.80	
		2,039,953.60
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	
Erastus C. Gaffield Fund	120,000.00	
Appropriations from Funds — Robb, $28,750; Thorndike, $15,000; Hodges, $57,316.26; Wood, $28,750	129,816.26	
Appropriated, Current Income	22,369.92	
		1,458,923.79
For Summer Camp:		
Edward Cunningham Fund	$15,000.00	
Charles W. Eaton Fund	15,501.45	
Appropriations from Current Income	90,056.55	
		120,558.00
For Infirmary, Recreational and Athletic Buildings:		
Julius Rosenwald and family — Homberg Infirmary	$110,225.00	
Appropriations from Funds — Homberg Infirmary — 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	67,163.47	
Appropriation for Homberg Infirmary from Current Funds	11,500.00	
Walker Memorial Fund	167,303.96	
Improvement Fund, for Walker Memorial	24,491.34	
Alumni Fund, for Walker Memorial	490,000.00	

SCHEDULE A-14— (Continued)

For Recreational and Athletic Buildings (*Continued*):		
Edmund D. Barbour Fund, for Field House.	$55,000.00	
Alumni Fund, for Swimming Pool.....	228,479.15	
Stephen Bartlett Fund, for Swimming Pool.	117,071.64	
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	
		$1,533,295.32
Miscellaneous:		
From Sale of Land and Buildings in Boston 1916.....	$656,919.45	
Other Contributions, Appropriations, etc....	1,150,798.73	
		1,807,718.18
Total June 30, 1946 (Schedule A).....		$17,310,171.43

SCHEDULE B-1

RENTALS AND OTHER INCOME

Anonymous for Chemical Engineering		$1,000.00
Photographic Service, Rental		5,000.00
Land Rentals, etc.		2,958.81
Lecture Notes		249.91
General Electric Company for Course VI-A		7,000.00
General Radio Company for Course VI-A		1,200.00
Boston Edison Company for Course VI-A		1,200.00
Philco Corporation for Course VI-A		5,000.00
Recoveries of Student Fees Prior Years (Net)		372.01
Frederick A. Dewey — For General Operating Expenses		200.00
Architectural City Planning Conference		130.62
Economics Experimental Statistics Course		405.00
Godfrey L. Cabot — Research Associates Fund		3,000.00
Salvage Fund		802.45
Radar School Harbor Building Reserve Fund		40,000.00
Building Key Account		1,000.00
Salary Refund 1944–45		504.00
Equipment Sales Mechanical Engineering Dept.		500.00
Appropriation Recoveries Prior Years:		
Aeronautical Summer Shop Course Special	$65.67	
Aeronautical Laboratory Equipment	525.34	
Alumni Bulletin Special 1560	845.57	
Space Changes Special 2053	3,998.78	
		5,435.36
Trustees of H. C. Frick Estate		4,404.59
United States Navy Fire Control Research		1,150.00
United States Navy Torpedo Research		750.00
U. S. Government — Chemical Warfare Service		18,000.00
U. S. Government — Veterans Administration		2,723.14
Total (Schedule B)		$102,985.89

SCHEDULE B-2

SALARIES AND WAGES OF STAFF, ACCESSORY TO TEACHING AND LABORATORY SERVICE

Department	*Staff Salaries*	*Wages Accessory to Teaching*	*Wages Laboratory Service*	*Total*
Aeronautical Engineering	$139,240.91	$19,055.57	$15,519.55	$173,816.03
Architecture	77,762.12	10,255.95	1,184.25	89,202.32
Bemis Research	4,299.20	.....	.....	4,299.20
Biology	92,548.60	6,172.11	15,198.99	113,919.70
Building Eng. and Construction	27,026.42	1,470.00	2,961.01	31,457.43
Business and Eng. Adminis.	58,766.05	6,840.05	.....	65,606.10
Chemical Engineering	118,680.75	7,879.33	16,360.89	142,920.97
Chemical Eng. Practice School	5,420.82	.....	.....	5,420.82
Chemistry	248,658.50	13,715.16	26,828.24	289,201.90
Civil Engineering	102,723.42	3,482.90	8,194.60	114,400.92
Division of Laboratory Supplies	.....	.....	29,051.64	29,051.64
Economics	65,843.88	4,189.67	.....	70,033.55
Electrical Engineering	306,693.87	18,119.73	57,295.78	382,109.38
English and History	79,235.03	2,141.83	.....	81,376.86
Food Technology	34,712.55	4,643.53	738.06	40,094.14
Gen. Eng. and General Science	4,000.00	1,350.00	.....	5,350.00
Geology	44,338.81	3,663.33	5,955.30	53,957.44
Graphics	41,340.00	963.98	.....	42,303.98
Group Dynamics	15,343.24	3,888.46	.....	19,231.70
Industrial Relations Section	39,170.00	4,754.03	.....	43,924.03
Lantern Operation	.....	.....	1,491.69	1,491.69
Mathematics	99,717.65	3,270.00	.....	102,987.65
Mechanical Engineering	320,366.21	15,236.23	36,797.64	372,400.08
Metallurgy	114,766.36	6,138.68	12,843.17	133,748.21
Meteorology	62,335.46	8,921.45	2,540.00	73,796.91
Military Science	3,042.74	1,591.10	.....	4,633.84
Modern Languages	22,626.67	239.03	.....	22,865.70
Naval Architecture	54,112.72	3,206.45	2,387.40	59,706.57
Physics	259,338.23	12,199.96	51,930.32	323,468.51
Solar Energy Research	3,600.00	.....	.....	3,600.00
Totals	$2,445,710.21	$163,388.53	$287,278.53	$2,896,377.27

(Schedule B)

SCHEDULE B-3

APPROPRIATIONS FROM FUNDS AND OTHER CREDITS FOR SALARIES AND WAGES OF STAFF, ACCESSORY TO TEACHING AND LABORATORY SERVICE

	D. I. C. Credits	*Other Credits*		*Total*
Aeronautical Engineering				$89,331.50
Staff Salaries	$20,344.19	Staff Salaries:		
		Wind Tunnel	$37,264.75	
		Pilot Training Acct.	5,638.63	
		Lab. Service Salaries:		
		Wind Tunnel	9,371.25	
		Misc. Accounts	419.00	
		Acc. to Teaching Salaries:		
		Wind Tunnel	16,293.68	
Architecture				4,278.02
Staff Salaries	266.65	Staff Salaries:		
		Rockefeller Grant	900.00	
		City Planning Conf.	1,540.59	
		Rotch Fund	875.00	
		Chamberlain Fund	255.50	
		Lab. Service Salaries:		
		Special 1899	177.00	
		Acc. to Teaching Salaries:		
		Misc. Accounts	263.28	
Bemis Research				4,299.20
		Staff Salaries:		
		Bemis Research Fund	4,299.20	
Biology				61,259.84
Staff Salaries	10,004.04	Staff Salaries:		
Acc. to Teaching Salaries	152.10	Sedgwick Fund	2,719.00	
		Baruch Fund	2,633.31	
		A. C. Lawrence Fund	500.00	
		Electron Microscope	9,700.00	
		Rockefeller Research	18,128.33	
		Schenley Library Fell.	4,000.00	
		Special 1915	1,856.58	
		Lilly P. I. Research	1,322.24	
		Lab. Service Salaries:		
		Cabot Electronic Microscope	775.10	
		Baruch Fund	1,482.64	
		Special 1915	834.90	
		Electron Microscope	30.23	
		Rockefeller Research	3,925.22	
		Lilly P. I. Research	7.05	
		Acc. to Teaching Salaries:		
		Schenley Library Fell.	738.91	
		Penicillin Research	840.00	
		du Pont Cell. Research	450.00	
		Baruch Fund	319.00	
		Rockefeller Res.	841.19	

SCHEDULE B-3 — (Continued)

	D. I. C. Credits	*Other Credits*		*Total*
Building Construction				$12,290.14
Staff Salaries	$4,744.42	Staff Salaries:		
		National Lime Assoc.	$1,650.00	
		Solar Energy Fund	862.90	
		Plastic Materials Res.	1,303.52	
		Lab. Service Salaries:		
		National Lime Assoc.	1,971.03	
		Cabot Research	989.98	
		Acc. to Teaching Salaries:		
		Plastic Materials Res.	768.29	
Business and Engineering Administration				6,328.46
Staff Salaries	5,583.38	Staff Salaries:		
Acc. to Teaching Salaries	15.08	Work Simplification Course	730.00	
Chemical Engineering				69,251.90
Staff Salaries	23,448.84	Staff Salaries:		
Lab. Service Salaries	1,068.31	N. D. R. C. (Hottel)	5,600.85	
Acc. to Teaching Salaries	162.00	Chemical Warfare Service	7,971.90	
		Arthur D. Little Fund	31,000.00	
Chemical Engineering Practice				5,420.82
Staff Salaries	1,800.00	Staff Salaries:		
		C. E. P. Fund	3,620.82	
Chemistry				143,014.68
Staff Salaries	51,908.18	Staff Salaries:		
Lab. Service Salaries	6,032.27	Eastman Fund	7,000.00	
Acc. to Teaching Salaries	551.76	Sugar Research	20,800.85	
		Welch Fund	1,740.00	
		Research Corp. — Adams	666.64	
		Hockett Fund	1,773.70	
		Diamond Alkali Fund	3,666.64	
		Harshaw Fund	427.73	
		Cope Research	250.00	
		Research Corp. — Morton	352.55	
		Sharpe & Dohme Res.	3,200.00	
		Harvard University	4,725.82	
		Vitamin Research	3,575.00	
		Arthur D. Little Fund	31,700.00	
		Lab. Service Salaries:		
		Sugar Research	2,352.30	
		Misc. Accounts	18.00	
		Acc. to Teaching Salaries:		
		Diamond Alkali Fund	944.00	
		Phy. Chem. Royalties Fund	404.52	
		Sugar Research	348.25	
		Vitamin Research	576.47	
Civil Engineering				13,153.05
Staff Salaries	3,600.00	Staff Salaries:		
Acc. to Teaching Salaries	625.92	Turner Fund	7,363.13	
		Lab. Service Salaries:		
		Special 2155	1,564.00	
Economics				6,182.56
Acc. to Teaching Salaries	5.24	Staff Salaries:		
		Rockefeller Grants	6,177.32	

SCHEDULE B-3 — (Continued)

	D.I.C. Credits	*Other Credits*		*Total*
Electrical Engineering				$172,544.05
Staff Salaries	$91,198.96	Staff Salaries:		
Lab. Service Salaries	6,632.65	High Voltage Res.	$2,905.60	
Acc. to Teaching Salaries	26.71	Harbor Bldg. Navy	17,094.70	
		Center of Analysis	13,205.00	
		Hyams Research	2,042.40	
		Network Analyzer	2,522.17	
		Oncologic Research	1,856.57	
		Lab. Service Salaries:		
		High Voltage Res.	4,666.71	
		Center of Analysis	22,496.39	
		Hyams Research	1,817.23	
		Network Analyzer	637.38	
		Oncologic Research	1,465.33	
		Misc. Accounts	573.33	
		Acc. to Teaching Salaries:		
		High Voltage Res.	1,020.00	
		Center of Analysis	1,723.00	
		Misc. Accounts	659.92	
English and History				259.86
		Staff Salaries:		
		Cash	259.86	
Food Technology				21,297.84
Staff Salaries	4,943.07	Staff Salaries:		
		Pan-American Fund	3,133.35	
		Underwood Fund	465.50	
		Food Tech Res. Fund	916.00	
		Lever Bros. Fell.	1,900.00	
		Refrigeration Res.	1,125.00	
		Swift Nutrition Res.	1,800.00	
		United Fruit Co. Res.	813.33	
		Vitamin K Res.	1,600.00	
		Lab. Service Salaries:		
		Misc. Accounts	738.06	
		Acc. to Teaching Salaries:		
		Misc. Accounts	3,863.53	
Geology				4,260.30
		Staff Salaries:		
		Geophysical Research	1,805.10	
		Lab. Service Salaries:		
		Geophysical Research	1,045.20	
		Acc. to Teaching Salaries:		
		Cash	1,410.00	
Group Dynamics				19,231.70
		Staff Salaries:		
		Group Dynamics Res.	19,231.70	
Industrial Relations Section				43,924.03
		Staff Salaries:		
		Industrial Rel. Fund	43,924.03	
Mathematics				20,868.39
Staff Salaries	15,413.44	Staff Salaries:		
		Harvard University	1,080.01	
		Applied Math. Program	2,708.29	
		Center of Analysis	1,666.65	

Schedule B-3 — (Continued)

	D.I.C. Credits	*Other Credits*		*Total*
Mechanical Engineering				$60,978.88
Staff Salaries	$25,923.94	Staff Salaries:		
Lab. Service Salaries	51.31	Gas Turbine Res.	$2,933.28	
		Special 2041	1,100.00	
		Special 2060	70.00	
		Slater Fund	15,500.00	
		Textile Fund	1,892.68	
		deForest Fund	3,600.00	
		Lab. Service Salaries:		
		Slater Fund	245.80	
		Shop Account	1,434.03	
		Misc. Accounts	3,406.54	
		Acc. to Teaching Salaries:		
		Slater Fund	1,590.00	
		Misc. Accounts	1,666.30	
		Cash	1,565.00	
Metallurgy				58,030.11
Staff Salaries	31,629.96	Staff Salaries:		
Acc. to Teaching Salaries	1,506.60	Republic Steel Res.	600.00	
		S. K. Wellman Res.	800.00	
		Gray Iron Res.	1,000.00	
		Solar Energy Res.	1,100.00	
		N. E. Carbide Res.	3,666.66	
		Sheffield Foundation	2,820.00	
		Special 1818	800.00	
		Vanadium Alloys Co., Res.	2,433.28	
		Welding Research	6,800.00	
		Lab. Service Salaries:		
		Special 1818	270.25	
		Misc. Accounts	4,204.36	
		Acc. to Teaching Salaries:		
		Cash	399.00	
Meteorology				12,916.60
Staff Salaries	3,716.60	Staff Salaries:		
		Weather Bureau Res.	9,200.00	
Naval Architecture				13,082.76
		Staff Salaries:		
		Pratt Fund	13,082.76	
Physics				132,063.11
Staff Salaries	74,742.82	Staff Salaries:		
Lab. Service Salaries	2,927.47	K. B. Lowell Fund	175.00	
Acc. to Teaching Salaries	690.00	Am. Pet. Inst. Res.	5,550.02	
		Eastman Fund	7,000.00	
		Radioactivity Res.	17,432.88	
		Lab. Service Salaries:		
		Am. Pet. Inst. Res.	2,625.65	
		Nuclear Res.	50.00	
		Radioactivity Res.	18,660.91	
		Acc. to Teaching Salaries:		
		Radioactivity Res.	1,069.33	
		Special 2146	1,139.03	
Solar Energy Research				3,600.00
		Staff Salaries:		
		Solar Energy Fund	3,600.00	
Total D. I. C.	$389,715.91	*Total Other*	$588,151.89	$977,867.80
				(Schedule B)

SCHEDULE B-4

DEPARTMENTAL EXPENSES

Aeronautical Engineering				$4,743.26
General	$2,732.70	Aero. Inst. Lab.	$1,150.56	
Staff Scholarships	860.00			
Architecture				3,003.39
General	2,433.74	Staff Scholarships	100.00	
Lecture Special 2031 City Planning	469.65			
Bemis Research				549.75
General	549.75			
Biology				8,000.97
General	3,153.50	Biol. Eng. Equip.	3,826.13	
Staff Scholarships	550.00	Biol. Shop	471.34	
Building Engineering and Construction				1,235.28
General	833.88	Special 1985	401.40	
Business and Engineering Administration				2,916.14
General	2,916.14			
Chemical Engineering				17,971.10
General	12,926.35	Practice School	810.21	
Staff Scholarships	4,234.54			
Chemistry				25,604.91
General	12,225.91	Staff Scholarships	7,379.00	
		Cope Special 2161	6,000.00	
Civil Engineering				10,742.86
General	3,858.25	Structural Laboratory	487.68	
Staff Scholarships	1,386.00	Summer Camp	3,429.60	
Soil Mechanics Laboratory	788.86	San. Eng. Laboratory	792.47	
Economics and Social Sciences				4,133.75
General	3,361.75	Staff Scholarships	772.00	
Electrical Engineering				14,926.54
General	11,266.29	Staff Scholarships	3,362.00	
		Teaching Assistants	298.25	
Electronics Laboratory				131.30
General	131.30			
English and History				617.49
General	617.49			
General Science and Engineering				38.24
General	38.24			
General Studies				67.05
General	67.05			
Geology				1,992.44
General	1,992.44			
Graphics				2,202.66
General	489.39	Special 2117	1,588.27	
		Staff Scholarships	125.00	
Group Dynamics				4,062.54
General	4,062.54			
Humanics				181.73
General	181.73			
Industrial Relations Section				5,053.35
General	5,053.35			
Mathematics				3,488.70
General	1,888.70	Journal Math. & Physics	1,600.00	
Mechanical Engineering				19,686.15
General	15,249.82	Staff Scholarships	2,225.00	
Special 2095	2*211.33			

SCHEDULE B-4 — (Continued)

Metallurgy				$4,509.27
General	$3,373.27	Physical Met. Research	$1,000.00	
Staff Scholarships	136.00			
Meteorology				7,886.34
General	5,586.34	Staff Scholarships	800.00	
		Special 2182	1,500.00	
Military Science				808.38
General	808.38			
Modern Languages				1,090.34
General	1,090.34			
Naval Architecture				2,436.67
General	1,789.62	Special 2079	647.05	
Nuclear Science & Engineering				1,206.53
General	1,206.53			
Physics				30,534.47
General	14,611.90	Staff Scholarships	6,502.00	
Equipment Special	1,760.42	Research	7,660.15	
Total				$179,821.60
Less Credits from Funds:				
Bemis Research			$549.75	
Group Dynamics			4,062.54	
Industrial Relations			5,053.35	
Kennelly Fund for Electrical Engineering			2,000.00	
Grimmons Fund for Electrical Engineering			3,000.00	
Richards Fund for Civil Engineering			878.50	
May Fund for Chemistry			160.00	
Cabot Fund for Chemical Engineering			2,005.50	
Richardson Fund for Chemical Engineering			1,820.00	
Atkinson Fund for English and History			451.50	
Crosby Fund for Geology			73.50	
Peters Fund for Geology			220.50	
Roper Fund for Mechanical Engineering			70.00	
N. E. Shop Maintenance Fund for Mechanical Engineering			1,000.00	
Dorr Fund for Physics			3,360.00	
Chemical Engineering Practice Fund			810.21	
Upham Fund for Staff Scholarships			22,400.00	47,915.35
Total (Schedule B)				$131,906.25

Departmental Expenses include certain appropriations carried to Current Funds not fully expended at June 30, 1946.

SCHEDULE B-5

LIBRARY AND MUSEUM EXPENSES

Library		$93,444.86
Salaries of Officers	$28,652.00	
Wages, Office and Clerical	44,220.04	
Expenses — General	18,630.00	
Expenses — Office of Director	1,528.82	
Special Appropriation No. 2073	864.00	
Special Appropriation No. 2103	1,750.00	
	$95,644.86	
Less Credits — Vail Fund	2,200.00	
Museum		16,911.11
Museum Committee	11,911.11	
Dard Hunter Museum	5,000.00	
Total (Schedule B)		$110,355.97

SCHEDULE B-6

CLERICAL AND OFFICE EXPENSE — ADMINISTRATION

	Salaries	*Expense*	*Total*
President	$10,013.67	$9,596.50	$19,610.17
Dean of Engineering	1,950.00	332.53	2,282.53
Dean of Science (Net)	1,179.66	320.30	1,499.96
Dean of Humanities	.....	496.64	496.64
Dean of Students	5,241.42	1,689.32	6,930.74
Dean of Graduate School	1,440.00	613.34	2,053.34
Registrar	36,682.63	18,692.35	55,374.98
Director of Admissions	38,509.64	22,115.43	60,625.07
Treasurer and Bursar	58,619.03	12,441.91	71,060.94
Superintendent	11,595.20	1,742.12	13,337.32
News Service	2,958.71	1,629.72	4,588.43
Undergraduate Scholarship and Loan Fund Board	6,862.19	1,862.86	8,725.05
New Student Publicity	.....	1,321.14	1,321.14
Placement Bureau	12,747.55	3,257.98	16,005.53
Register of Former Students	.....	6,553.52	6,553.52
Personnel Office	3,784.49	1,646.56	5,431.05
	$191,584.19	$84,312.22	$275,896.41
Less Credit—Technology Loan Fund	6,862.19	1,862.86	8,725.05
Total	$184,722.00	$82,449.36	$267,171.36

(Schedule B)

SCHEDULE B-7

GENERAL ADMINISTRATIVE EXPENSE

Bulletins				$12,598.07
President's Report	$4,975.12	General Catalogue	$7,118.95	
Directory	504.00			
Other Publicity				2,643.33
Honoraria	750.00	Tech Review to Tech Clubs	560.00	
Tech Review to Schools	1,333.33			
General Expense				310,337.42
Allowances	6,166.62	Employees' Pensions and Insurance	69,583.24	
Pensions	19,717.60	Commencement, etc.	7,252.75	
[1]Insurance, etc.	29,836.36	Travel	11,709.27	
Taxes, Cambridge	2,340.66	Telephone Service	48,109.89	
Auditing	13,700.00	Dues, Fees, etc.	2,864.90	
Staff Pensions	98,089.30	Services (net)	966.83	
Special Expense				99,229.02
Special 2122 and 2139	700.00	President's Ent. Fd.	4,057.40	
Visiting Comm. Reports	222.50	Group Air Insurance	1,383.63	
New Equipment	7,143.36	Victory in Science	24,553.95	
		Surplus Prop. Comm.	40,937.51	
Space Rental	6,575.39	Foreign Travel Insurance	173.75	
Historic Mem. Comm.	78.18			
War Record	1,466.71	Safety Committee Expense	10,061.70	
Society of Arts	1,874.94			
Total (Schedule B)				$424,807.84

[1] Includes Workmen's Compensation, General Liability and all coverages except Fire Insurance (see Schedule B-9)

SCHEDULE B-8

DIVISION OF INDUSTRIAL COOPERATION

Direct Expenses:	
Salaries and Wages	$156,957.56
Auditing and Professional Services	30,952.80
Depreciation	28,249.41
Space Rentals	16,499.67
Materials and Services	13,985.09
Insurance	13,745.32
Servomechanisms Laboratory Alterations	11,776.61
Guards' Wages	7,348.26
Servomechanisms Laboratory	5,575.87
Radiation Visitors' Account	1,975.22
Travel	1,423.35
Physics Shop Replacement Account	1,019.77
Miscellaneous	3,164.56
Total (Schedule B)	$292,673.49

SCHEDULE B-9

DEPARTMENT OF BUILDINGS AND POWER

Building Service				$191,821.83
Janitors	$67,425.62	Heat'g and Vent'g	$19,957.07	
Night Cleaners	55,763.13	Shop Foreman (net)	4,524.32	
Watchmen	20,742.91	Mail and Elevators	10,807.92	
Window Clean.	3,604.42	Shipper, Stock Room, Matron, Messenger	8,996.44	
Power Plant and Electric Power				233,120.81
Fuel Oil			75,375.81	
Coal			38,724.64	
Cambridge Electric Light Co., Power			122,389.28	
Salaries			31,951.30	
Repairs			21,434.94	
Water, Supplies, etc.			4,772.22	
Total Operating Cost			$294,648.19	
[1]Less: Credits — Electric Power		$21,428.78		
Steam		40,098.60	61,527.38	
Repairs, Alterations and Maintenance				191,162.82
Buildings	*$60,514.56	Water and Gas	$22,092.07	
President's House	9,848.09	Furniture	5,391.77	
Grounds, Roads, etc.	27,816.36	Elevators	3,386.91	
Mains and Conduits	11,893.89	Special Alterations 2086	23,430.42	
Special Alterations 2195	1,825.89	Miscellaneous (net)	18,146.70	
Special Alterations 2091	285.12			
Main Court Alterations	6,531.04			
Fire Insurance				10,319.76
Total (Schedule B)				$626,425.22

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

* Reduced by $8,490.46 deferred painting costs, charged to Use of Facilities Reserve.

SCHEDULE B-10

MEDICAL DEPARTMENT

Salaries, Staff				$26,598.85
Expense of Clinic				27,659.97
Salaries	$17,449.63	X-Ray Operation	$1,430.41	
Supplies, etc.	2,200.21	Physical Examinations	6,579.72	
Expense of Infirmary				29,997.54
Salaries	23,171.48	Food (net)	4,216.07	
Equipment	694.22	Laundry	1,915.77	
				$84,256.36
Less Credits — Hayden and Fletcher Funds				4,271.00
Total (Schedule B)				$79,985.36

SCHEDULE B-11

UNDERGRADUATE BUDGET BOARD

Athletic Coaches' Salaries	$21,425.00	
Undergraduate Dues	23,362.50	
Walker Memorial (excluding Dining Service) (net)	14,308.36	
Athletic Fields, Maintenance	27,891.76	
Sailing Pavilion and Activities (net)	6,044.29	
Boat House and Launches, Maintenance	11,133.19	
Musical Clubs	666.00	
Swimming Pool (Excluding Wages)	7,103.84	
Publicity and Administration Expense	663.02	
Total (Schedule B)		$112,597.96

SCHEDULE B-12

GRADUATE HOUSE OPERATION

Income:			
Rentals (Net)		$117,325.00	
Miscellaneous		1,452.47	
Total			$118,777.47
Expense:			
Salaries	$58,785.89		
Real Estate Tax	6,826.11		
Light, Heat, Power and Water	16,071.01		
Repairs	9,176.04		
Supplies (net)	2,256.23		
Laundry	2,872.75		
Administration	4,265.73		
Dining Service Deficit	5,693.34		
Depreciation	12,830.37		
Total		$118,777.47	
Balance — Income (Schedule A-1)		0.00	
Total			$118,777.47

UNDERGRADUATE DORMITORY OPERATION

Income:			
Rentals (net)		$197,101.56	
Miscellaneous		3,701.91	
Total			$200,803.47
Expense:			
Salaries	$83,294.19		
Light, Heat, Power, Water	23,063.00		
Repairs	14,053.08		
Supplies (net)	4,217.43		
Equipment	12,268.50		
Laundry	5,550.25		
Administration	4,295.51		
Senior House Alterations	35,532.19		
House Tax Allowance	2,600.00		
Total		$184,874.15	
Balance		15,929.32	
Total			$200,803.47

Summary

Graduate House Income	$118,777.47	
Undergraduate Dormitory Income	200,803.47	
Total (Schedule B)		$319,580.94
Graduate House Expenditures	$118,777.47	
Undergraduate Dormitory Expenditures	184,874.15	
Total (Schedule B)		$303,651.62

SCHEDULE B-13

WALKER MEMORIAL DINING SERVICE

Income:			
Cash		$316,407.26	
Total (Schedule B)			$316,407.26
Expense:			
Food	$188,642.55		
Salaries	90,519.35		
Light, Heat, Power, Water	8,551.68		
Laundry	3,105.21		
Equipment	7,540.82		
Repairs	4,300.62		
Administration	3,249.29		
Occupancy	12,000.00		
Total Expense		$317,909.52	
Deduct Increase in Inventory at June 30, 1946		1,736.86	
		$316,172.66	
Transferred to Walker Memorial Dining Service Reserve		234.60	
Total (Schedule B)			$316,407.26

SCHEDULE B-14

GRADUATE HOUSE DINING SERVICE

Income:			
Cash		$191,273.47	
Total (Schedule B)			$191,273.47
Expense:			
Food	$120,204.83		
Salaries	65,082.29		
Light, Heat, Power, Water	3,522.17		
Laundry	931.98		
Equipment and Supplies	1,115.52		
Repairs	4,846.92		
Administration	1,974.18		
Total Expense		$197,677.89	
Add: Decrease in Inventory at June 30, 1946		1,034.84	
		$198,712.73	
Deficit — Charged To:			
Graduate House Operations	$5,693.34		
Graduate House Dining Service Reserve	1,745.92	7,439.26	
Total (Schedule B)			$191,273.47

SCHEDULE B-15

WOMEN'S DORMITORY OPERATION

Income:		
Rentals	$6,818.00	
Total (Schedule B)		$6,818.00
Expense:		
Salaries	$2,149.00	
Food	2,114.35	
Real Estate Taxes	484.75	
Light, Heat, Power, Water	630.88	
Repairs	126.28	
Supplies	197.34	
Equipment	98.55	
Laundry	111.22	
Administration	200.88	
Depreciation	300.00	
Total		$6,413.25
Balance — Income (Schedule A-1)		404.75
Total (Schedule B)		$6,818.00

SCHEDULE B-16

WESTGATE — VETERANS' HOUSING PROJECT OPERATION

Income:		
Rentals	$9,177.30	
Total (Schedule B)		$9,177.30
Expense:		
Agency Commission	$458.87	
Gas	18.40	
Insurance	558.84	
Administration	265.17	
Depreciation	676.02	
Total		$1,977.30
Balance — Income (Schedule A-1)		7,200.00
Total (Schedule B)		$9,177.30

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. 185–194, Schedules A-3, A-4 and A-5.

501 ABBOTT LABORATORIES FUND, 1944, $5,000. Postwar Fellowship in Organic Chemistry.

1001 ALBERT FUND, 1930–44. Balance $2,280.50. Gifts from anonymous donor covering seventeen years' rental of M. I. T. Student House on Bay State Road, Boston.

1003 ALPHA CHI SIGMA HOUSE FUND (Alpha Zeta Chapter), 1935–1946. Balance $4,781.02. Deposited for investment purposes only.

600 AMERICAN SMELTING AND REFINING CO. FUND, 1946, $2,500. For Graduate Scholarship.

819 AMERICAN SOCIETY OF TOOL ENGINEERS, 1945, $500. Gift of Boston Chapter of the Society for a prize of $100 to be offered annually for the best graduation thesis on a subject related to Tool Engineering.

201 ANONYMOUS (H), 1942–43, $10,000. For general purposes of the Institute.

203 ANONYMOUS (M), 1941, $1,500. For general purposes of the Institute.

1004 ANONYMOUS (Q), 1945–46. Balance $3,427.00. Subject to special annuity provisions.

300 ANONYMOUS (S), 1946, $500,000. For Research.

204 ANONYMOUS (R), 1946, $57,150. Principal and income for general purposes of the Institute.

1005 ANONYMOUS (X), 1944–45. Balance $18,957.62. Subject to special annuity provisions.

861 ANONYMOUS, 1924, $1,052.50. Gift of member of Class of 1924 to accumulate until twenty-fifth reunion of Class in 1949. Balance, $2,803.02.

503 ANONYMOUS, 1944–46, $2,300. For fellowship.

601 LOUIE G. APPLEBEE, 1941–42, $400. Bequest for assisting deserving students.

301 APPLIED MATHEMATICS FUND, 1943. Balance $27,578.50. Appropriated from surplus to provide support for postwar program.

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.

1051 ARMY AND NAVY TRAINING FUND, 1943–1944. Balance $28,779.80. Special reserve for renegotiation and possible termination expenses incidental to war training contracts.

876 ASSOCIATION OF CLASS SECRETARIES FUND, 1940–45. Balance $2,771.83. Held for investment purposes only.

603 ELISHA ATKINS SCHOLARSHIP FUND, 1894, $5,000. Bequest of Mary E. Atkins. For undergraduate scholarship.

303 WILLIAM PARSONS ATKINSON FUND, 1918, $13,082. Bequest of Charles F. Atkinson as a memorial to father — for English Department of the Institute.

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

1006 AVOCA FUND, 1946, $76,200. In trust subject to life annuities.

821 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.

205 E. B. BADGER CO. FUND, 1944, $10,000. Gift for general purposes.

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

607 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.

207 EDMUND DANA BARBOUR FUND, 1926, $847,000. Bequest. Principal and income for general purposes of Institute. Over $826,000 used for buildings and equipment. Balance $20,736.94.

451 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.

209 STEPHEN L. BARTLETT FUND, 1939–46, $370,899.28. Bequest. Principal and income unrestricted—$247,000 appropriated for educational plant including swimming pool and current purposes.

305 BARUCH COMMITTEE ON PHYSICAL MEDICINE FUND, 1944, $50,000. Gift to be used for support of five-year program in research in electronics, instrumentation in physics, as related to physical medicine.

307 ALBERT FARWELL BEMIS FUND, 1938, $270,000. Bequest. To establish and maintain the Albert Farwell Bemis Foundation for research on housing. Increased in 1941–46 through proceeds of sale of land carried under No. 309. Present balance $357,285.31.

309 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. 307. Present balance $12,059.57.

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

453 SAMUEL BERKOWITZ FUND, 1943–46, $20,000. Gifts. Income for general purposes of the Institute Library.

1007 BESS BIGELOW FUND, 1936–38, $25,000. Anonymous donation for special purposes as suggested by donor, but subject to approval of President. Present balance $35,041.74.

609 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.

311 BIOLOGY—ROCKEFELLER FUND, 1941, $70,000. For purchase of electron microscope and research thereunder. Present balance $31,439.21.

103 GEORGE BLACKBURN MEMORIAL FUND, 1931–43, $961,249.84. Bequest of Harriette A. Nevins. Income for general purposes.

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

823 ROBERT A. BOIT FUND, 1921, $5,000. Bequest. Income to stimulate students' interest in best use of English Language through annual prizes or scholarships. Present balance $6,410.91.

313 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 to supplement and strengthen instruction in architectural design and for the care and preservation of such material. Present balance $36,776.77.

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

507 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.

454 BOSTON STEIN CLUB FUND, 1945–46, $15,320. Contributions for equipment of Map Room in new library building.

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

615 ALBERT G. BOYDEN FUND, 1931–46, balance $651,854.12. Bequest. Estate of Elizabeth R. Stevens. Income for scholarships. Preference to students from Fall River and Swansea, Mass.

105 CLARA H. BRIGGS, 1941, $12,514.55. Bequest. Income for general purposes.

921 MAJOR BRIGGS FUND, 1940–42, $32,969.71. 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. Present balance $36,977.67.

617 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.

509 MALCOLM COTTON BROWN FUND, 1919. 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.

801 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. Present balance $31,498.

315 SAMUEL CABOT FUND, 1912. Present balance $58,200. Gift of Helen N. Cabot in honor of husband. Income for purchase of apparatus and supplies required in conduct of research in Industrial Chemistry.

210 MARY A. CARLETON FUND, 1946, $14,456.48. Bequest for general purposes of the Institute.

107 JAMES A. CARNEY FUND, 1944–45, $17,170.01. Bequest. Income for general purposes.

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

619 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.

621 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.

317 CENTER OF ANALYSIS FUND, 1945. Balance $42,745.50. Transferred from current operating fund as a reserve — for investment purposes only.

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

511 FRANCIS W. 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. Present balance $11,049.64.

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

320 CHEMICAL ENGINEERING — BADGER FUND, 1945, $20,000. Gift for use of Department.

321 CHEMICAL ENGINEERING PRACTICE FUND, 1915–16, $300,000. Gift of George Eastman for Chemical Engineering Stations provided Institute has carried forward this plan of education for a reasonable period. Present balance, $269,810.55.

923 EDNAH DOW CHENEY FUND, 1905–06, $13,900. Bequest. Income for maintenance and care of Margaret Cheney Room for women students. Present balance, $17,848.31.

109 CHARLES CHOATE FUND, 1906–21, $35,858.15. Bequest. Income for general purposes.

455 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. Present balance, $82,455.30.

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

512 CLARK THREAD FUND, 1946, $5,400. For graduate scholarships.

457 CLASS OF 1874 FUND, 1934, $180. For purposes of the Library.

851 CLASS OF 1887 FUND, 1941–46. Balance, $4,024.86. Held for use of Class and for final distribution as provided in Declaration of Trust.

624 CLASS OF 1895 MEMORIAL, 1945–46. Balance $25,871.50. Gift of the Class on fiftieth anniversary, income only to be used to provide scholarships to suitably qualified descendants of members of the Class. Balance of unexpended income in any year to be added to Technology Loan Fund.

625 CLASS OF '96 FUND, 1923–46. Balance $9,221.31. 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.

802 CLASS OF 1898 FUND. Present balance, $11,949. By subscription of certain members of class from 1927–31. Income only for scholarship loans, as authorized by committee of Class.

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

627 CLASS OF 1909 SCHOLARSHIP FUND, 1934–46, balance, $4,575.77. 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.

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

629 CLASS OF 1917 SCHOLARSHIP FUND, 1942–46, balance $1,183.81. Established on the twenty-fifth anniversary of the Class, the income and principal to be used to assist deserving students with preference to descendants of members of Class. Scholarships to be repayable without interest.

856 CLASS OF 1918 (ORGAN) FUND. Balance $1,862.63. Subscriptions by Class members toward purchase of an organ for Walker Memorial.

857 CLASS OF 1919, SPECIAL, 1944, balance, $3,441. Contributions from Class members toward gift to M. I. T. on the occasion of the twenty-fifth reunion of Class.

858 CLASS OF 1920 FUND, 1945–46, $4,053.25. Gift of U. S. Savings "F" Bonds and cash on the twenty-fifth reunion of the Class.

859 CLASS OF 1921 FUND, 1946, $3,972. Contributed for Class Twenty-fifth Year Memorial Fund.

631 CLASS OF 1922 SCHOLARSHIP FUND, 1942–46, balance, $4,964.38. For scholarships.

633 CLASS OF 1922 SPECIAL SCHOLARSHIP FUND, 1944–46, balance, $5,113.25. For special scholarships.

870 CLASS OF 1934 FUND, SPECIAL. Balance $4,975. Held for investment purposes only.

635 CLASS OF 1938 SCHOLARSHIP FUND, 1938–46, balance $908.92. Gift of Class of 1938. Income for scholarships.

874 CLASS OF 1945 FUND, 1945, $25. Token payment toward Class Fund.

875 CLASS OF 1946 FUND, 1946, $25. Token payment toward Class Fund.

860–875 inc.

CLASS ENDOWMENT 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.

251 SAMUEL C. COBB FUND, 1916, $36,000. Bequest. Income for salaries of President and professors.

637 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.

639 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. Present balance, $41,819.

513 COLLAMORE FUND, 1916, $10,000. Bequest of Helen Collamore. Income primarily to aid women students in post-graduate courses, and 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.

641 WILLIAM A. CONANT FUND, 1943–44. Present balance, $146,251.57. Bequest. The income to provide for scholarship carrying annual stipend of $800 for New England Protestant boy of Protestant parents, preference to be given to graduates of the public schools of Brookline.

903 ARTHUR J. CONNER, 1941–46, balance $29,643.51. Gifts in anticipation of and for ultimate addition to residue of a trust for construction of a dormitory.

643 ALBERT CONRO FUND, 1943, $25,000. Bequest for scholarship.

645 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.

211 COÖPERATIVE FOUNDATION FUND, 1945, $1,577.44. Cash surrender value of first insurance policy taken under Plan. Use of fund not yet determined.

323 COSMIC TERRESTRIAL RESEARCH FUND, 1938–46, $78,600. Gifts (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.

647 LUCRETIA CROCKER FUND, 1916, $50,000. Bequest of Matilda H. Crocker. Income for establishment of scholarships for women in memory of sister. Present balance, $78,814.33.

325 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.

515 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.

212 WILLIAM S. B. DANA FUND, 1946, $500. Bequest for general purposes.

649 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.

803 DEAN'S FUND, 1924, $3,350. Contributions. To be loaned by Dean to needy students. Present balance $9,489.62.

805 CARL P. DENNETT FUND, 1926, $500. Gift. To be loaned to students, preferably Freshmen, at discretion of President.

1009 DAVIS R. DEWEY MEMORIAL FUND, 1943, $500. To provide a suitable memorial for the late Professor Dewey.

651 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.

653 DORMITORY FUND, 1903, $2,700. Contributions. Income for scholarship purposes.

GEORGE B. DORR FUND, 1890, $49,573.47. Bequest. Appropriated for educational plant, 1918.

327 SUSAN E. DORR FUND, 1914, $95,955. Bequest. Income for use and benefit of Rogers Physical Laboratory.

1011 DRAMA CLUB THEATRE FUND, 1938, $400. Deposited by Drama Club of M.I.T. toward future purchase of theatrical equipment.

111 EBEN S. DRAPER FUND, 1915, $100,000. Bequest. Specially invested. Income used for general purposes of the Institute.

CHARLES C. DREW FUND, 1920, $305,171.52. Bequest. Appropriation to educational plant, 1921–24.

655 THOMAS MESSINGER DROWN FUND, 1928, $50,000. Bequest of Mary Frances Drown. Income to establish scholarships for deserving undergraduate students.

213 CARBON P. DUBBS FUND, 1943, $5,000. Gift. For general purposes.

113 COLEMAN DU PONT FUND, 1931–38, $221,325. Bequest. Income for support and maintenance of the Institute.

PIERRE DU PONT FUND, 1938, $25,000. Gift. Used for new equipment.

516 RICHARD CHICHESTER DU PONT MEMORIAL FUND, 1946, $94,660.77. Contributions by members of his family to establish Memorial Fellowship in Aerodynamics.

517 DU PONT DE NEMOURS FUND. For graduate scholarship in Chemical Engineering.

115 EASTMAN CONTRACT FUND, 1924, $9,499,000. Gift of George Eastman. Income for general purposes of the Institute.

518 EASTMAN KODAK FUND, 1946, $1,750. For graduate scholarship.

905 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 Rogers Building and Wind Tunnel in 1939, $268,700 for one-half of building No. 12 in 1943, $80,000 for Medical Department alterations in 1943. Present balance, $78,234.72.

329 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.

The total of the gifts of GEORGE EASTMAN to the Institute for both buildings and endowments was $20,500,000.

117 CHARLES W. EATON FUND, 1929–43, $261,148. Bequest. Income for advancement of general purposes of Institute. (From 1911 to 1923 Mr. Eaton gave $15,501.45 for Civil Engineering Summer Camp in Maine.)

119 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.

121 MARTHA ANN EDWARDS FUND, 1890, $30,000. Bequest. Income for general purposes.

331 ELECTRONICS SPECIAL FUND, 1943, balance, $55,167. Appropriations from surplus for postwar research.

458 ARTHUR ELSON FUND, 1944, $500. For the purpose of special book purchases for the Library.

657 FRANCES AND WILLIAM EMERSON FUND, 1930, $100,000. Gift. Income for aid of regular and special students in Department of Architecture.

827 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.

123 WILLIAM ENDICOTT FUND, 1916, $25,000. Bequest. Income for general purposes.

1053 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. (Page 159, this report.)

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.

659 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.

332 HAROLD H. FLETCHER FUND, 1942, $10,000. Bequest under will of Herbert H. Fletcher. To endow a bed in the Institute's Infirmary.

661 CHARLES LEWIS FLINT FUND, 1889, $5,000. Bequest. Income for support of worthy student, preference given graduate of English High School, Boston.

459 CHARLES LEWIS FLINT FUND, 1889, $5,000. Bequest. Income for purchase of books and scientific publications for Library.

333 FOOD TECHNOLOGY FUND, 1945–46, $180,000. Contribution for research.

253 SARAH H. FORBES FUND, 1901, $500. Gift of Malcolm Forbes as memorial to mother. Income for salaries.

663 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.

125 FRANCIS APPLETON FOSTER FUND, 1922, $1,000,000. Bequest. Income for purposes of Institute.

127 JOHN W. FOSTER FUND, 1938, $299,650. Bequest. Income for purposes of the Institute.

907 MATILDA A. FRASER FUND, 1942, $859.89. Bequest. Towards construction of a women's dormitory.

129 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.

131 JONATHAN FRENCH FUND, 1915–16, $25,212.48. Bequest of Caroline L. W. French. For purposes of the Institute.

133 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.

664 PHILIP JACOB FRIEDLANDER FUND, 1945, $1,000. Gift. Income to be used to aid qualified students in need of assistance.

WALTER L. FRISBIE FUND, 1923, $7,614.98. Bequest. Used for educational plant, 1928.

215 ERASTUS C. GAFFIELD FUND, 1944–45, $387,854. Bequest. Principal and income available for general purposes. In 1945, $120,000 was applied to retirement of Dormitory mortgages.

255 GEORGE A. GARDNER FUND, 1898, $20,000. Gift. Income for salaries of instructors.

908 GAS TURBINE LABORATORY FUND, 1946, $500,000. Contributions from five industrial corporations for construction and operation of new laboratory.

135 GENERAL ENDOWMENT FUND, 1921, $1,527,449. Contributions by alumni and others to meet George Eastman's condition relative to gift of $2,500,000, his building fund (No. 905).

806 NATHAN R. GEORGE FUND, 1943, $29,197.37. Bequest. Income to be loaned to undergraduates under certain administrative conditions.

665 NORMAN H. GEORGE FUND, 1919–25, $93,400. Bequest. Income for assistance of worthy and needy students.

667 ARTHUR B. GILMORE FUND, $10,000, 1941. Bequest. Net income to assist needy students, members of Beta Theta Pi — not more than two students in any one year.

CHARLES W. GOODALE FUND, 1929, $50,000. Bequest. Used for new dormitory, 1930.

519 GOODYEAR TIRE & RUBBER FELLOWSHIP FUND, 1946, $7,500. Gift for graduate scholarships.

669 BARNETT D. GORDON FUND, 1942–44, $10,000. The income to be used as scholarships for deserving students.

137 ELIOT GRANGER FUND, 1936, $21,568.43. Bequest under will of Mary Granger in memory of deceased son. Income for the general purposes of the Institute.

334 JOHN A. GRIMMONS FUND, 1930–46, balance, $9,377.56. Bequest of C. Lillian Moore of Malden. Principal held by Old Colony Trust Co., Trustee. Income for loans to undergraduates in Electrical Engineering. Unused balances available for purchase of apparatus and equipment in Department of Electrical Engineering.

335 GROUP DYNAMICS RESEARCH FUND, 1945–46, balance $55,944.31. Gift. For conduct of research in this field.

670 LUCIA G. HALL SCHOLARSHIP FUND, 1945–46, balance $54,897.21. Bequest of Louise K. Gunn. The income only used for aid of worthy students.

671 HALL-MERCER SCHOLARSHIP FUND, 1940–46, balance, $73,582.60. 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.

520 HARSHAW CHEMICAL FUND, 1944, $5,000. Gift. For Fellowship in Chemistry.

336 HARVEY NON-FERROUS FORGING FUND, 1946, $10,000. For research.

673 JAMES H. HASTE FUND, 1930–45, balance $264,359. Bequest. Income for aid of deserving students of insufficient means.

139 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.

675 CHARLES HAYDEN MEMORIAL SCHOLARSHIP FUND, 1940–43, $100,000. From the Charles Hayden Foundation. For entrance scholarships. Preference given to students from Boston and New York.

337 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, faculty and employees.

257 JAMES HAYWARD FUND, 1866, $18,800. Bequest. Income for salaries.

JAMES W. HENRY FUND, 1935, $8,226. Bequest. Used for new equipment.

216 WILLIAM T. HENRY FUND, 1943–46, present balance, $46,595. Income from Trust Fund held outside M. I. T. Fund and income for general purposes.

1013 JOSEPH HEWETT FUND, 1921–24, $200,000. In Trust subject to special annuity provisions. Present balance $213,361.44.

521 CLARENCE J. HICKS MEMORIAL FUND, 1946, $20,000. For fellowship in Industrial Relations.

141 JOHN MARSHALL HILLS, 1941–42, $366,430.96. Bequest. Income for general purposes of M. I. T.

FREDERICK S. HODGES FUND, 1928, $57,316.26. Bequest. Appropriated for new dormitories.

142 WALTER W. HODGES FUND, 1946, $36,797.20. Bequest. Income only for general purposes.

218 ELLIS HOLLINGSWORTH FUND, 1940, $10,000. Bequest for unrestricted use.

677 GEORGE HOLLINGSWORTH FUND, 1916, $5,000. Bequest of Rose Hollingsworth. Income used for scholarship.

829 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.

219 ABBY W. HUNT FUND, 1936–44, $79,400. Bequest. For general purposes. $60,000 used for alterations, 1937. $16,000 for new equipment, 1938. Balance $3,400.

678 SAMUEL P. HUNT FUND, 1946, $7,200. Gift. For undergraduate scholarships.

679 T. STERRY HUNT FUND, 1894, $3,000. Bequest. Income to a student in Chemistry.

681 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.

909 HYDRODYNAMICS LABORATORY FUND, 1946, $16,666.67. Gifts toward construction of new building.

341 INDUSTRIAL FUND, 1924–46. This fund succeeded "Tech Plan" Contracts, payments under which went to the Educational Endowment Fund. Now receives surplus from industrially sponsored operations of Division of Industrial Coöperation and Research. Used for purchase of new equipment and support of special research. (Page 159 this report.)

339 INDUSTRIAL ECONOMICS FUND, 1940–46. Balance $20,100.80. Contributions in support of Graduate Program in Economics.

340 INDUSTRIAL FELLOWSHIPS IN ELECTRONICS FUND, 1946, $10,000. For research.

342 INDUSTRIAL RELATIONS FUND, 1938–46. Balance $221,432.08. Contributions in support of the Industrial Relations Section of the Department of Economics.

343 INSTRUMENTATION FUND, 1943–45, balance $389,301. For research in the field of instrument design.

220 INSURANCE ENGINEERING FUND, 1944, $835.13. Established by private subscriptions and donated to M. I. T. through the Boston Manufacturers Mutual Fire Insurance Co. For unrestricted use.

CHARLES C. JACKSON, 1912, $25,000 Gift. Used for purchase of new site.

143 JAMES FUND, 1898–99, $163,654. Bequest of Julia B. H. James. Income for development of M. I. T.

683 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.

522 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.

685 JOY SCHOLARSHIPS, 1886, $7,500. Gift of Nabby Joy. Income for scholarships for one or more women studying natural science at M. I. T.

345 WILLIAM R. KALES FUND, 1944, $75,001.48. Gift of Mrs. Kales and family. To establish and maintain Eye Clinic in Medical Department.

WILLIAM R. KALES, 1925–27, $11,000. Gift for new dormitories.

347 ARTHUR E. KENNELLY FUND, 1940–44, $66,883.09. Bequest. Income only to be used for the study of mathematics directed toward physics or physical applications.

221 CARRIE BELLE KENNEY FUND, 1945, $1,000. Bequest. No restrictions as to use.

349 A. NORTON KENT FUND, 1944–46, $400. Gift. For research in Physics.

463 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.

686 AMELIA S. KNEISNER SCHOLARSHIP FUND, 1945–46, $10,000. Gift of the family. Income only to provide scholarship and to meritorious or needy students — preference to students from Danbury (Conn.).

687 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.

1014 KURRELMEYER FUND, 1945–46, $1,889.99. Contributions toward Memorial Fund.

807 LAMSON-VIRGIN LOAN FUND, 1946, $5,000. Bequest. Income to be used in aiding worthy students, with provision for repayment.

523 WILFRED LEWIS FUND, 1930, $5,000. Gift of Emily Sargent Lewis. Income for maintenance of graduate student in Mechanical Engineering.

910 LIBRARY BUILDING FUND, 1946, $1,000. Gift toward new building.

1015 JACOB AND JENNIE LICHTER, 1944, $5,000. Gift. To accumulate income and ultimately added to bequest.

689 WILLIAM LITCHFIELD FUND, 1910, $5,000. Bequest. Income for scholarship on competitive examination.

350 ARTHUR DEHON LITTLE MEMORIAL FUND, 1937, balance $240,212.43. Bequest under will of Dr. Arthur D. Little. Income to be used in Departments of Chemistry and Chemical Engineering. (The income from 5,543 shares of common stock of Arthur 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.)

1016 ARTHUR D. LITTLE MEMORIAL LECTURESHIP FUND, 1944, $6,100. Gift of Arthur D. Little, Inc., for purpose indicated.

222 HIRAM H. LOGAN FUND, 1933–46, $44,195.79. Bequest. Principal and income for general purposes of M. I. T. Sum of $19,455 appropriated for educational plant, 1940.

JOHN M. LONGYEAR, 1915–16, $30,000. Gift. Used for land and equipment, 1916.

691 ELISHA T. LORING FUND, 1890, $5,000. Bequest. Income for assistance of needy and deserving pupils.

693 LOWELL INSTITUTE FUND, 1923, $2,300. Gift from alumni of Lowell Institute to establish scholarship for its graduates.

351 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.

695 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).

259 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.

M. I. T. ALUMNI GYMNASIUM FUND, 1938–42. Total subscription $400,000. Appropriated for Briggs Field House, Athletic Field and for new swimming pool unit of the proposed alumni gymnasium.

879 M. I. T. ALUMNI SPECIAL GIFTS, 1944–46, $3,000. Gifts to provide annual contribution to Alumni Fund from earned income.

881 M. I. T. ALUMNI FUND, 1940–46. 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. Balance $395,436.47.

883 M. I. T. ALUMNI FUND, 1946–47. Subscriptions to date of the seventh year of operation. Balance $78,073.34.

877 M. I. T. ALUMNI ASSOCIATION PERMANENT FUND, 1929–46. Balance $105,024.87. Deposited with M. I. T. for investment purposes only.

1017 M. I. T. TEACHERS' INSURANCE FUND, 1928–46. 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 only. Balance $119,032.65.

353 MATHEMATICS, STATISTICAL RESEARCH FUND, 1943, $8,000. Appropriated from Industrial Fund to finance postwar objectives.

355 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. Balance $3,395.

357 GEORGE HENRY MAY FUND, 1914, $4,250. Gift. Income for benefit of Chemical Department.

697 GEORGE HENRY MAY FUND, 1914, Balance $11,442.88. 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.

523 GEORGE S. MAY FUND, 1944, $2,000. Gift. For Fellowship.

147 THOMAS MCCAMMON FUND, 1930, $15,000. Bequest in honor of father, James Elder McCammon. Income available for general purposes.

831 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.

223 CHARLES E. MERRILL FUND, 1943, $2,300. Not restricted but suggested for use of maimed or wounded boys on their return after the war.

METALLURGY, SPECIAL FUND, 1938, $10,000. Subscription (anonymous) used for special equipment for Department of Metallurgy.

224 ALICE BUTTS METCALF FUND, 1945, $100,000. Bequest for unrestricted use.

524 THOMAS MIDGELEY JR. FUND, 1945, $500. Gift. For memorial fellowship.

925 EDWARD F. and MARY R. MILLER FUND, 1941, $10,000. Bequest. To be used at discretion of Bursar as a fund in assisting needy students who have been found by the medical director to require special medical or surgical treatment.

HIRAM F. MILLS FUND, 1923, $10,175. Bequest. Appropriated for educational plant, 1937.

699 ROBERT W. MILNE, 1943, $70,000. Bequest. Income for assistance of worthy and needy students.

359 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.

701 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.

1018 JOHN D. MITSCH MEMORIAL FUND, 1946, $2,175. Contributions toward memorial and children of the late Professor Mitsch.

361 FORRIS JEWETT MOORE FUND, 1927-31, $32,000. Gift of Mrs. F. Jewett Moore as a memorial to husband. Income or principal (under special conditions) expendable 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.

525 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. Present balance, $38,057.

703 FRED W. MORRILL FUND, 1941, $2,000. Bequest. Income for financial assistance to students.

149 KATE M. MORSE FUND, 1925, $25,000. Bequest. Income for general purposes of M. I. T.

151 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 by E. H. Blashfield.

927 HENRY A. MORSS NAUTICAL FUND, 1937, $3,500. Gift for maintenance of sailing activities and sailing pavilion.

225 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.

526 NATIONAL RESEARCH CORPORATION FUND, 1945. Gift. Balance, $1,012.50. For graduate scholarship.

705 NICHOLS FUND, 1895, $5,000. Bequest of Betsy F. W. Nichols. Income for scholarship to student in Chemistry.

707 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.

227 CHRISTEL ORVIS FUND, 1942, $539.42. Bequest. For general purposes

467 GEORGE A. OSBORNE FUND, 1928, $10,000. Bequest. Income for benefit of mathematical library.

709 JOHN FELT OSGOOD FUND, 1909, $5,000. Bequest of Elizabeth P. Osgood in memory of husband. Income for scholarship in Electricity.

527 OWENS ILLINOIS GLASS FELLOWSHIPS, 1946, $5,000. For graduate scholarships.

363 F. WARD PAINE, 1944, $10,000. Bequest. For special research in Geology.

528 THEODORE B. PARKER MEMORIAL FUND, 1945–46, $3,000. For special graduate scholarships.

711 GEORGE L. PARMELEE FUND, 1921, $17,000. Bequest. Income for tuition of either special or regular worthy students.

229 EMERETTE O. PATCH FUND, 1935–38, $8,240.84. Bequest. $5,964 used for special expenditures, 1938–40.

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.

153 RICHARD PERKINS FUND, 1887, $50,000. Bequest. Income for general purposes.

713 RICHARD PERKINS FUND, 1887, $50,000. Bequest. Income for scholarships.

529 WILLARD B. PERKINS FUND, 1898, $6,000. Bequest. Income to be expended every fourth year for travelling scholarships in architecture.

365 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.

1057 PHOTO SERVICE RESERVE, 1945. Present balance, $22,139. Transferred for investment purposes.

PRESTON PLAYER FUND, 1933, $20,000. Bequest. Used for educational plant, 1938.

367 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, $395,676, held in trust. Income to support said school.

1019 PRESIDENT'S FUND, SPECIAL, 1941–44, $10,500. Gifts. 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.

715 FLORENCE E. PRINCE, 1943, $7,537.50. Bequest. Income for aid to worthy students.

531 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.

369 RADIOACTIVITY CENTER FUND, 1945. Balance, $53,445. Appropriation for postwar research.

155 J. W. & B. L. RANDALL FUND, 1897, $83,452. Bequest of Belinda L. Randall as a permanent fund or in erecting a building with those names.

717 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.

718 WILLIS WARD REEVES FUND, 1946, $1,500. For undergraduate scholarships.

1059 RESERVE FOR USE OF FACILITIES FUND, 1945–46. Balance $424,000. Appropriated for reëstablishment or improvement of physical plant and facilities. (See Page 159 of this Report.)

719 CHARLES A. RICHARDS, 1939, $31,719.32. Bequest. Income only to be used for assistance of poor Protestant students in the Institute.

371 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.

373 RICHARDS MEMORIAL FUND, 1929. Balance of subscriptions from friends for portrait of Professor Richards available for the Department of Metallurgy.

375 CHARLOTTE B. RICHARDSON FUND, 1891, $30,000. Bequest. Income to support of Industrial Chemical School. Present balance $52,753.78.

721 JOHN ROACH SCHOLARSHIP FUND, 1937. Balance $6,587.71. 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.

261 HENRY B. ROGERS FUND, 1873, $25,000. Gift. Income for salaries of one or more professors or instructors.

533 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.

808 MINNIE HEMPEL ROGERS FUND, 1945, $1,195.04. Bequest for student loans.

ROBERT E. ROGERS FUND, 1886, $7,600. Bequest in memory of his brother, William B. Rogers. Used for new equipment, 1940.

833 WILLIAM BARTON ROGERS FUND. Present, $48,917. 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.

157 WILLIAM BARTON ROGERS MEMORIAL FUND, 1883–84–85, $250,225. Contributions from 91 persons. Income for support of Institute.

377 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. Present balance $173,126.

379 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.

381 ARTHUR ROTCH FUND, 1895, $25,000. Bequest. Income for general purposes of Department of Architecture.

835 ARTHUR ROTCH FUND, 1895, $5,000. Bequest. Income for annual prize to student in regular course in Architecture graduating highest in class.

837 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.

535 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.

723 WILLIAM PATRICK RYAN MEMORIAL FUND, 1935, $3,637. Contributed by friends of Professor Ryan. Income for scholarship in Chemical Engineering.

1021 WILLIAM PATRICK RYAN SPECIAL FUND, 1933. Balance $1,361. Appropriation. Educational fund for three children of late Prof. W. P. Ryan.

839 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.)

159 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. Present balance $66,933.

537 HENRY SALTONSTALL FUND, 1901, $10,000. Bequest. Income to aid one or more needy students.

539 JAMES SAVAGE FUND, 1873, $10,000. Bequest. Income for scholarships in institution "where my son-in-law, William B. Rogers, is President."

161 SAMUEL E. SAWYER FUND, 1895, $4,764. Bequest. Income to be used in such manner as will best promote interests of M. I. T.

725 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.

1023 SEDGWICK MEMORIAL LECTURE FUND, 1930–46, balance, $15,513.07. Bequest of Mary Katrine Sedgwick in memory of husband. Proceeds of interest in copyrights and from contracts with publishers for benefit of Department of Biology and Public Health.

383 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.

385 SERVO-MECHANISM LABORATORY FUND, 1943, $25,000. Appropriation from Industrial Fund for postwar research.

RICHARD B. SEWALL FUND, 1919, $30,000. Bequest. Used for educational plant, 1924.

727 THOMAS SHERWIN FUND, 1871, $5,000. Gift of Committee on Sherwin Memorial Fund for free scholarship to graduate of English High School.

260 ALFRED P. SLOAN PROFESSORSHIP FUND, 1945, $200,000. For endowment of Professorship in Industrial Management.

387 ALFRED P. SLOAN, JR., 1929–41, $165,000. Gift. Largely expended for automotive laboratory. Balance $4,703.

230 GEORGE A. SLOAN FUND, 1945, $500. Gift. To be used as needed.

ELLEN VOSE SMITH FUND, 1930, $25,000. Bequest. Used for new equipment.

728 G. H. MILLER SMITH FUND, 1946, $10,000. For undergraduate scholarships.

729 HORACE T. SMITH FUND, 1930, $32,988.76. Bequest. Income for scholarships. Preference to graduates of East Bridgewater (Mass.) and Bridgeport (Conn.) High Schools.

1025 LILLIE C. SMITH FUND, 1937, $4,800. Bequest to M. I. T. Women's Association for purposes of the Association.

1026 WALTER B. SNOW, 1938–46, balance $14,826. Reserve funds of Technology Christian Association. Deposited for investment purposes.

389 SOLAR ENERGY FUND, 1938. Present balance $705,490. 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.

731 SONS AND DAUGHTERS OF NEW ENGLAND PURITAN COLONY SCHOLARSHIP FUND, 1931, $600. Gift. Income for scholarship aid to a boy of New England ancestry.

737 ANNA SPOONER FUND, 1939–41, $10,896.14. Bequest. Income to be used in assisting meritorious students.

163 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.

165 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.

841 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.

393 SUBMARINE SIGNAL COMPANY FUND, 1945, $25,000. Gift. To be used for fundamental studies relating to application of ultrasonics to Biological problems.

809 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. Present balance $2,766.20.

391 HENRY N. SWEET, 1936, $8,036.50. Bequest. For industrial research.

167 SETH K. SWEETSER FUND, 1915, $25,061. Bequest as a permanent fund. Income for general purposes.

543 SUSAN H. SWETT FUND, 1888, $10,000. Bequest. Income to support a graduate scholarship.

395 SWIFT PROTEIN FUND, 1944, $20,000. Gift. For research.

544 GERARD SWOPE GRADUATE FELLOWSHIPS FUND, 1945, $100,050. Gift. Income annually or from time to time to be granted as Gerard Swope Scholarships under certain conditions and with certain preferences. Principal to be maintained except under conditions presented.

1027 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. Present balance $125,461.

735 Tech Club of Chicago, 1944, $5,000. Gift. For scholarships.

811 TECHNOLOGY LOAN FUND, 1930–41. Present balance $1,402,362.15. Contributed by eighteen alumni to provide loans for students.

1029 TECHNOLOGY MATRONS TEAS FUND, 1916–22–31, $8,500. Gifts of Mrs. F. Jewett Moore. Income for social activities of Technology Matrons.

1030 TECHNOLOGY PRESS FUND, 1946, $47,677.59. Royalties on books published.

STURGIS H. THORNDIKE FUND, 1928, $15,000. Bequest. Appropriated for new dormitories, 1930.

NATHANIEL THAYER, 1906, $25,000. Gift. Used for educational plant.

263 NATHANIEL THAYER FUND, 1868, $25,000. Gift. Income for professorship of Physics.

929 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.

265 ELIHU THOMSON FUND, 1933–37, $23,680. Contributed toward fund for Professorship in Electrical Engineering.

ELIHU THOMSON, 1912, $25,000; 1924, $5,000. Gift. Used for purchase of land.

545 FRANK HALL THORP FUND, 1932, $10,000. Anonymous gift. Income for fellowship in Industrial Chemistry.

737 SAMUEL E. TINKHAM FUND, 1924, $2,400. Gift of Boston Society of Civil Engineers. Income to assist worthy student in Civil Engineering.

471 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.

739 F. B. TOUGH FUND, 1924, $465. Gift to extend financial assistance to worthy students in mining or oil production.

911 TOWING TANK FUND, 1946, $12,500. Gift toward construction of new building.

231 TOWLE FUND, 1944–46, $10,500. Gift. For general purposes.

399 NELLIE FLORENCE TREAT, 1944, $609. Bequest. For use in the field of Food Technology.

233 CHARLES A. TRIPP FUND, 1943, $100,000. Bequest. For dormitory construction — or such other use of all or part as may seem advisable.

401 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. Present balance $282,962.

LUCIUS TUTTLE FUND, 1916, $50,000. Bequest. Used for educational plant, 1918.

931 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.

933 UNDERGRADUATE ACTIVITIES TRUST FUND, 1935. Balance $1,701. Established by 1915 Technique Board from which recognized student activities may borrow if deemed necessary and desirable, at a low rate.

935 UNDERGRADUATE PUBLICATIONS TRUST FUND, 1935. Balance $8,536. Deposited by Alumni Advisory Council on Publications for investment purposes only.

937 UNDERGRADUATE DUES RESERVE FUND, ATHLETICS. Present balance $19,161. Transferred from Undergraduate Dues (current operating account) to secure investment income.

939 UNDERGRADUATE DUES RESERVE FUND, CONTINGENT. Present balance, $18,925. Transferred from Undergraduate Dues (current operating account) to secure investment income.

403 WILLIAM LYMAN UNDERWOOD FUND, 1932, $16,252. Bequest. For benefit of Biological Department or otherwise for general purposes.

741 SUSAN UPHAM FUND, 1892, $1,000. Gift. Income to assist students deserving financial aid.

547 THOMAS UPHAM FUND, 1939–46. Balance $457,622.42. 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.

743 SAMSON R. URBINO FUND, 1927, $1,000. Bequest. Income for students who need assistance, Germans preferred.

473 THEODORE N. VAIL FUND, 1925–42, $68,800. Bequest. For benefit of Vail Library.

549 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.

745 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.

747 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.

749 ARTHUR M. WAITT FUND, 1925, $9,700. Bequest. Income for deserving students in second, third and fourth year classes in Mechanical Engineering.

235 GRANT WALKER, 1943, $70,000. Bequest. For general purposes.

751 GRANT WALKER, 1944. $55,000. Bequest. Income for scholarships.

169 WILLIAM J. WALKER FUND, 1915–17, $23,613. Bequest. Income for general purposes.

1063 WALKER MEMORIAL RESERVE FUND. Present balance $12,622. For purposes of repair and renovation.

1065 WALKER MEMORIAL DINING SERVICE RESERVE FUND. Present balance $43,000. For repair and replacement of Dining Service Equipment.

405 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.

912 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.

171 HORACE HERBERT WATSON FUND, 1930–46, $36,042.69. Bequest of Elizabeth Watson Cutter as a permanent fund. Income for general purposes.

753 JAMES WATT SCHOLARSHIP FUND, 1942, $13,259.72. Bequest under will of Jennie A. Douglas. For scholarships in Mechanical Engineering.

EDWIN S. WEBSTER FUND, 1912–24, $15,000. Gift. Used toward purchase of land.

237 FRANK G. WEBSTER FUND, 1931, $25,000. Bequest. For general purposes.

755 HERMAN E. WEIHMILLER, 1942, $1,000. Gift. For assistance to deserving students in aeronautical engineering with approval of Dr. E. P. Warner.

757 LOUIS WEISBEIN FUND, 1915, $4,000. Bequest. Income for scholarship for student in Architectural Department, preference to be given to a Jewish boy.

173 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.

175 EVERETT WESTCOTT FUND, 1935–38, $171,394. Bequest as a permanent fund. Income for general purposes.

177 MARION WESTCOTT FUND, 1938–46, $241,852. Bequest for endowment. Income for general purposes.

759 FRANCES ERVING WESTON FUND, 1912–31, $5,000. Bequest. Income to aid a native-born American Protestant girl of Massachusetts.

761 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.

763 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.

765 GRANGER WHITNEY FUND, 1942. For scholarship.

551 JONATHAN WHITNEY FUND, 1912. Present balance, $606,870.23. Bequest of Mrs. Francis B. Green. Income to assist poor and deserving young men and women in obtaining an education at M. I. T.

179 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.

767 ELIZABETH BABCOCK WILLMANN FUND, 1935, $5,065. Bequest. Income to be used toward tuition of young women students taking Chemistry courses.

1031 GEORGE S. WITMER FUND, 1938–46, balance, $68,478.48. In Trust subject to special annuity provisions.

KENNETH F. WOOD FUND, 1926, $25,000. Bequest. Appropriated for new dormitory, 1930.

WRIGHT MEMORIAL WIND TUNNEL, 1937–41, $95,795. Contributed by friends toward construction of new wind tunnel.

181 EDWIN A. WYETH FUND, 1913–35, $254,703. Balance of Trust Fund held by M. I. T. from1913 for itself and five other beneficiary institutions subject to annuity. Distributed January 1935. Fund separately invested until June 30, 1943. Net income available for general purposes of the Institute.

769 MORRILL WYMAN FUND, 1915–16, $66,000. Bequest. Income to aid deserving and promising students upon understanding that if in later life the person receiving aid shall find it possible, he shall reimburse said fund — not a legal obligation.

LIST OF PERIODICAL PUBLICATIONS, BOOKS AND REVIEWS BY MEMBERS OF THE STAFF

(*Persons desiring reprints of articles should apply to the Department concerned.*)

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DRAPER, CHARLES S. Detailed Theory and Computations for the A-1 Sight for the Control of Gunfire from Fixed Guns, Rocketfire and Bombing from Aircraft; prepared for the U. S. Army Air Forces, jointly by the Instrumentation Laboratory of M. I. T. and Jackson and Moreland [Engineers]. Approved by C. S. Draper, Director. Massachusetts Institute of Technology, December, 1945. 2 vols. (Confidential.)

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WURSTER, WILLIAM W. Full Freedom for the Children and Peace for Parents; House for Mr. and Mrs. Richard P. Minor, San Mateo. Wurster, Bernardi and Emmons, Architects. *Arch. Record* 99, pp. 76–81, March, 1946.

WURSTER, WILLIAM W. Two San Francisco Houses; Views and Floor Plans. Wurster, Bernardi and Emmons, Architects. *Arch. Forum* 84, pp. 88–90, May, 1946.

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