

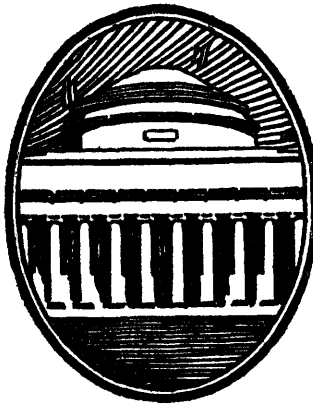
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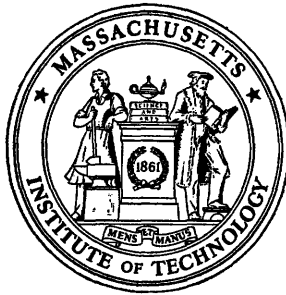
MASSACHUSETTS INSTITUTE  
OF TECHNOLOGY  
BULLETIN

# President's Report Issue

1942-1943

*Covering Period from Meeting of Corporation October, 1942  
to Meeting of Corporation October, 1943*

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## REPORT OF THE PRESIDENT

TO THE MEMBERS OF THE CORPORATION:

ONCE again I have the privilege of reporting to you the past year's operations of the Massachusetts Institute of Technology and its current status. A year ago I described in some detail the normal program and the new war activities of our institution. Since that time the normal program has further shrunk. The war activities have grown and multiplied, and actual results have been achieved which, by any criterion, have justified the effort and expense many, many fold. I am eager for the time to come, after victory, when I can describe to you in detail some of the high spots of these achievements.

In this report, after a thumbnail sketch of the year's operations, I shall discuss particularly some of the policies by which our war-service operations have been guided, some of the accompanying hazards to the institution which we have attempted with considerable success to minimize, and some of the more obvious post-war opportunities which are suggested by recent developments. Then will come my more complete report of 1942-1943 operations followed by the detailed supporting reports of other administrative officers.

### I. SUMMARIZED STATEMENT

The record for the year gives evidence that the Institute is operating on a high peak of usefulness, that these operations are financially sound, that the morale is high, and the future exciting. Day by day problems of administration have been numerous, often difficult, but never insuperable. I do not know how adequately to describe the loyalty and able performance of all members of the staff, but the record speaks for itself on that point. As many of us have been drafted into outside war

activities, the burden of administrative responsibility has fallen heavily on our colleagues, who have carried on so effectively that I have no worry over the situation except lest the physical and mental strain be too great if carried over-long without relief.

Specifically we now have enrolled a few over 4,500 students, as compared with pre-war enrollment of about 3,100. Of these, about 1,500 are Army, 1,650 are Navy, and 1,400 are civilian students. In spite of the fact that well over 100 members of our staff are on leave of absence or its equivalent, the total number of staff and employees on our payroll is now about 4,300, as compared with approximately 1,100 before the war. During the year we carried on war research and development work under 162 contracts, 49 of which were with Army, Navy or National Advisory Committee for Aeronautics, 53 with the Office of Scientific Research and Development, and 60 with industrial firms.

Our operations during the past year involved an expenditure of about \$23,000,000, as compared with the pre-war annual expenditure of about \$4,000,000. The year's operations left a surplus of about \$180,000 or  $\frac{3}{4}$  of 1 per cent of the total budget. This surplus will be helpful in meeting the very sizable expenses of post-war readjustment to normal operations.

Because of war activities we have added, or are in process of adding to our educational and research plant more than 450,000 square feet of additional floor space by new construction and an additional 260,000 square feet by rental.

## 2. SUMMARY OF WAR-TIME POLICIES

It may be useful here to record some of the principles which have guided us in handling the abnormal situations arising from the war. The first basic principle has of course been to be of maximum possible service to the Nation in this emergency. A second basic principle has been to act with



utmost expedition on any war job assigned us. A third basic principle has been to perform these war services, in so far as possible, on a "no-profit, no-loss" basis. These broad principles, however, have required refinement in many directions in order to serve as a practical guide.

*Leaves of Absence.* One hundred and sixty-two members of the regular staff have been granted leaves of absence or otherwise relieved of Institute duties in order to participate in war activities. Of these, 97 are devoting full time and 65 on the average of half time to war activities. These numbers do *not* include the many members of the staff who are engaged in teaching Army, Navy or other special war courses.

There is no case in which the Institute has refused a request for leave of absence from a member of its staff whose services have been seriously sought by any government agency. In many cases these services have been rendered without compensation from the government and in other cases such compensation has been substantially less than the man's Institute salary. Whenever the matter of income is of concern, the Institute itself is providing full or supplementary compensation to the staff member so that he may perform his war service on a personal "no-profit, no-loss" basis. Furthermore, every member of the staff on leave of absence is guaranteed continuation of appointment, after he again becomes available for service to the Institute, for an amount of time at least equal to the unexpired term of his contract at the time when he was granted leave.

*"No-Profit, No-Loss" on Government Contracts.* The government contracts for war service fall into two categories, the one providing educational programs for Army, Navy or special personnel, and the other supporting various research and development projects. The "no-profit, no-loss" principle has been meticulously applied in both categories, though the formulas or procedures for applying it have differed in the two cases.

In the educational programs for the Army and Navy the procedures have been set up by these Services on a uniform basis for the country, and provide separately for the costs of instruction, housing, mess, utilization of space, and activation. These procedures are described in detail elsewhere. Suffice it here to say that they have been applied fairly but firmly and after careful analysis of the complicated situations involved. The net result for our institution is that we are providing these instructional services at a per capita cost which is substantially lower than our normal tuition rate.

Since even our tuition rate does not normally cover the entire educational costs, it might appear at first sight that the Institute is losing money on these Army and Navy training contracts. The difference is made up, however, by a number of such factors as the "mass" type of instruction made possible by the standardized character of the Army and Navy curricula, the substantially increased teaching schedules of staff members, and the elimination of those activities which develop and maintain a progressive educational program but which, during the emergency, can be eliminated. These Army and Navy educational contracts are renegotiated at frequent intervals, with careful examination of expenditures, in order to maintain a continuous adjustment to the "no-profit, no-loss" principle.

In smaller research and development contracts a simple and sufficiently accurate formula has been arrived at whereby the Institute is reimbursed for its expenditures in purchase of supplies or equipment and for the wages paid to the people working on the contract. In order to take care of "overhead" (which includes heat, light, power, janitor service, depreciation, use of library, infirmary and similar facilities, and all administrative expense) the Institute receives an additional payment at the rate of 50 per cent of the wage item involved in the contract. Careful analysis of the overhead costs in this and other tax-exempt institutions has shown that this simple formula

conforms about as accurately to the "no-profit, no-loss" principle as any more complicated procedure.

In large research and development contracts (or a group of related contracts of large aggregate value) the above "50 per cent of wage" allowance for overhead has been found to yield a profit to the institution, principally because the administrative expenses are here a relatively smaller proportion of the total costs. In these large contracts, therefore, the overhead payment is readjusted to cover the actual legitimate expenses to which the institution has been subjected on account of the contract, in addition to its reimbursement for purchase of supplies and payment of wages. Under these contracts the financial records of the Institute are periodically examined by agents of the contracting office and the overhead payment is periodically readjusted to conform to the "no-profit, no-loss" principle.

In contracts with the Office of Scientific Research and Development, which comprise the major dollar value of our current research work, the Institute has further protected the government by having voluntarily transmitted to the Director of O.S.R.D. an agreement to pay back to the government any funds which it may have collected in excess of the amounts necessary for reimbursement of its legitimate expenses under the contracts, this final adjustment to be made after the termination of the contracts when the total costs of operating and of closing out the contracts will be definitely known.

*Patents.* In connection with government sponsored war research and development projects, inventions of patentable character are being made. Every contract provides that the government acquires royalty-free rights. Furthermore, in the large contracts which are carried on largely by staff widely recruited from outside the Institute, we have felt it improper for the Institute to attempt to acquire any special benefit from patents. In this case, therefore, all employees under the contract are required to disclose and assign their inventions to the

Institute, which in turn offers them freely to the government through the O.S.R.D. agency.

*Distribution of Research and Development Projects.* All of the government and most of the industrial projects have been set up at the Institute because of some preëxisting special research program here from which to develop the project, or because of some outstanding authority in that field on our staff. For example, we were asked to accept our first large government research contract because its prosecution required large airport and hangar facilities, a location near the sea, and some thousands of square feet of laboratory space (all of which were available here), and because we were one of the only two educational institutions in America with an already active research program and nucleus of trained staff in that field.

When this and other projects grew to the point at which new laboratories had to be built, we adopted a policy of not accepting any additional projects unless no other contractor comparably favorable in terms of personnel, equipment and experience appeared available for the job. To this same end, the principal governmental contracting agencies have coöperated through their policy of spreading work among institutions as widely as would be consistent with prompt, effective and well-coördinated action. Of influence in certain cases has been the expressed desire of the Army or Navy to have various aspects of a given job concentrated in one locality in order to maximize the efficiency of their liaison contact with its progress.

*New Buildings.* As the research activity grew and as we were requested to take on a share of the Army and Navy educational program it became necessary to erect new laboratory buildings. Since the beginning of the present war emergency we have added by new construction upwards of 450,000 square feet of laboratory space and have acquired by rental an additional 268,000 square feet. In addition to these amounts we have acquired several quite small laboratories, operated as

field stations in various parts of the country. Altogether the new space acquired by the Institute for war purposes totals approximately 700,000 square feet.

Of the newly constructed laboratories, about 270,000 square feet are of temporary type construction, built by government funds under the contracts, with the understanding that these buildings will be torn down after the war.

Of the permanent buildings, about 76,000 square feet have been built exclusively by M. I. T. funds and turned over to various war projects with the expectation of using these new laboratories for our normal educational and research purposes after the war. The largest one of these buildings is one of 52,000 square feet, now used by the Chemical Warfare Service but designed to serve as a new Chemical Engineering Laboratory after the war.

The construction of the remaining permanent laboratories, principally one of 75,000 square feet known as Building 24, was financed jointly by M. I. T. funds and government funds under the contracts. The principle here followed was to have the government pay an amount which would have erected a temporary building of equivalent essential facilities and space, and to have M. I. T. from its own funds pay the additional amount necessary to make this construction of a permanent type to be useful after the war.

*Accelerated Educational Program.* In common with practically all educational institutions of the country, the Institute has adopted the "accelerated" educational program based on curricula which are pursued continuously through the calendar year, instead of through the normal academic year of approximately nine months. This acceleration has been required of all institutions participating in the Army and Navy programs. It has furthermore been advisable for civilian students in order to train them for industrial or war services as rapidly as possible, and in order that they may proceed as far as possible with

their education before becoming subject to military service.

No one questions the advisability of this accelerated program under present war conditions. Some people are suggesting the desirability of continuing permanently on this accelerated basis after the war. For reasons outlined later in this report, we do not share this view and believe that the best interests of all concerned will be served by our returning to the normal schedule as soon as circumstances permit. Return to the normal schedule will be a financially expensive operation on account of temporary loss of tuition income during the transition stage. This transition cost to the Institute might amount to a half or three-quarters of a million dollars, though this loss may be very largely reduced as a result of the expected abnormal post-war influx of students coming for the purpose of completing an interrupted education or of better equipping themselves technically to meet the post-war competition for jobs.

### 3. ASSOCIATED HAZARDS

In spite of the satisfactory current financial situation of the Institute, there are a number of financial hazards incurred by this and other institutions largely involved in the war program. I have just mentioned the hazard of return to normal academic schedule. Other hazards involved in war research and development contracts are suggested by the following examples.

*Appointment of Research Personnel.* A large portion of the scientific and engineering staff engaged on our war contracts has been recruited from other institutions and companies. Such personnel are in high demand elsewhere and we have consequently been under pressure both from them and from the institutions from which they have come, to make adequate term commitments for their employment. During the first two years of the emergency, this situation became critical in the

late spring and early summer because Congress had not yet appropriated the funds for continuation of war contracts into the ensuing fiscal year, and yet we had to make employment commitments in advance of contract renewal in order to hold our staff.

To meet this emergency, our Executive Committee, each year, voted to underwrite the government, so to speak, to the extent of a half million dollars in order that we could, where necessary, assure our research staff of appointments in the coming fiscal year. An anonymous distinguished philanthropist, learning of our embarrassment in this matter, generously agreed to supplement our underwriting by an additional half million dollars. We were thus enabled to hold our staff, and fortunately these underwritings were not called upon because Congress ultimately voted the desired appropriations and our contracts were renewed. These underwritings, which involved a very real financial risk, were of very great importance in permitting work of highest priority to continue without interruption.

After the second year of these operations it has been possible to modify the terminal dates of most of our large government contracts so that they carry over for at least two months into the following fiscal year, and thus this particular financial hazard has been largely removed.

*Responsibility for Equipment.* Large amounts of machine tool and laboratory equipment and stocks of laboratory supplies and completed apparatus have been procured under the government contracts. The Institute is responsible for the proper use and return to the government of such equipment as is not properly considered as expendable. In spite of the most careful system of accounting and custodianship which we have been able to devise, with the aid of advice from several very competent agencies, it could have been possible for an unfriendly or uninformed investigating government agency to hold the

Institute financially accountable for items which no reasonable procedure of laboratory efficiency could have kept track of.

(I am reminded of a visit three years ago to a laboratory agency of one of the armed services, when I saw a mechanic on his hands and knees under a work bench, groping among the metal scraps accumulated in the day's work. The accompanying officer explained that he was hunting for a piece of a broken drill-point and stated that, unless he could present it as evidence, a replacement could not be secured except through charging it personally to the workman. No laboratory could operate efficiently and at high speed if subjected to such meticulous financial control.)

Fortunately the governmental contracting officers and financial agencies have been understandingly sympathetic with this problem and have agreed to a modification of our original contracts, whereby the Institute is responsible only (a) for reasonable care in the handling of equipment and (b) for the return to the government of such equipment as is found in stock at the termination of the contracts.

A careful record is maintained of all equipment turned over by our laboratories to the services, to other government contractors, or to our Allies, and these lists are periodically presented to the government's contracting officer and approved by him, after which the Institute's responsibility for this equipment ceases.

*Contract Termination.* A number of possible financial hazards are associated with the termination of a contract. All of those which we can foresee have been met by suitable modifications in the contracts, with one exception which is now under discussion and of whose satisfactory solution at an early date we are confident. This remaining hazard relates to various expenses to which the Institute will be subjected on the termination of the contract. These include commitments for salaries and wages, outstanding orders for equipment, demolition of



temporary structures, return of Institute property to its pre-war condition, where necessary, and the handling of materials returnable to the government during the process of liquidation. Although the contracts provide for these contingencies, the Institute cannot collect in advance the funds required to meet them. There would probably be no risk in the situation unless the war should end or the contract be unexpectedly terminated at a time close to the expiration of the current contract date and therefore at a time when the funds which have been appropriated for the contract are largely exhausted. In such a case, especially if the termination of the war should come just before the time of congressional appropriations for the following fiscal year, items of this type might be lost sight of in a rapid swing toward post-war economy. These items would be very small in relation to over-all government expenditures but they might still be sufficiently large to represent a serious financial setback to the institution concerned.

To meet this hazard there is under discussion a procedure whereby the governmental contracting agency may set aside and hold for terminal expenses a certain fraction of the funds authorized under each contract. This procedure has been agreed to in principle and it only remains to work out the detailed terms and phraseology. When this is accomplished we believe that the Institute will be well protected against all the financial hazards involved in its war activities, in so far as we have been able to foresee them. I take this opportunity to bear witness to the understanding and effective manner in which the governmental contracting officers, the Bureau of the Budget and the Comptroller-General's office have coöperated to bring about a situation which is both legally sound and practically satisfactory.

*Letters of Intent.* One remaining hazard which we feel to be almost too small to mention is the slowness with which contracts frequently are executed. This is probably not due to any

lack of efficiency on the part of contracting officers, but is due rather to the high speed to which the war effort is geared. The Army or Navy or other agency may decide that a certain project must be carried through with expedition. They may ask our institution or some other institution to do the job. We may be able to get the project under way in a short time and in fact in some cases we have been able to complete the project before the governmental agency has found and secured approval of just the right legal form of contract, or before the governmental agency and our institution have explored and come to agreement on all the details. In such cases we operate on a letter of intent and in a few cases have even gone into operation on the basis of a personal request to be followed by a letter of intent and eventually by a contract. Every such case involves two types of financial hazard, one being that some obstacle may eventually prevent the consummation of the contract, and the other that the Institute may have made certain types of expenditure in expediting the program which are subsequently found not to be reimbursable.

The first of these hazards we deem very slight and never encountered it. The second hazard is real but thus far has involved, all told, only a small amount per year of uncollectable items. This small loss we deem to be entirely justifiable in the interests of proceeding with a minimum of delay in carrying through the jobs assigned to us.

*Temporary Staff Appointments.* Another final hazard is the obligation which the Institute may incur to members of its staff who have been recruited to replace those on leave of absence, or to participate in temporary war projects. This hazard we have tried to minimize by making it clear in the appointment contract of all such staff members that their term of appointment is definitely limited to a specific period. Thus we should not be seriously faced with a problem of an unnecessarily large payroll when the emergency projects are terminated

and when our regular staff members on leave of absence return. Nevertheless, the situation cannot be completely protected in fairness to all concerned because inevitably, at the end of the war, there will be staff members returning to our payroll before the terms of appointment of their substitutes have expired. This, however, will be a temporary situation and not serious, and should be considered as one of the many ways in which the Institute contributes from its own resources to the war effort.

#### 4. POST-WAR PROGRAMS

The following discussion of some aspects of our post-war program is offered with an introductory note of explanation. Just as in fighting a serious conflagration in a city, so in fighting this war we should not allow thoughts of subsequent plans to interfere with bringing the current critical situation under control. No consideration which would delay or render less effective our war effort should be permitted at this time because the crisis of the war is not yet past, and because every day's delay in achieving clear-cut victory involves human and economic expenditures which are too great to be justified if by any effort of ours they can be avoided. Consequently I would make it clear that such consideration as I now give or recommend on behalf of post-war developments is predicated upon our possibility of doing so without interfering with our most effective possible contribution to the winning of the war. Within this reservation, however, there are certain plans which we can properly make in order to be prepared for opportunities which recent experiences have made rather obvious.

*Simplification of Academic Schedules.* Everyone recognizes the fact that our curriculum and assignment of class schedules is highly organized and complex. Opinions may differ on the educational justification of this complexity. It seems clear to me, however, that we should develop a somewhat simplified

program in order to be able to handle some additional complications in the inevitable aftermath of the war.

After demobilization, many young men will come to the Institute to complete their interrupted education. Others will come for training in advanced specialties in order to equip themselves better to meet post-war competition for jobs. We shall have an obligation to render the best service possible to these groups while at the same time we are readjusting our regular educational program to a post-war normal basis. The situation will therefore be temporarily complicated by a multiplicity of special schedules which will heavily tax the time of our staff and the capacity of our classrooms and laboratories.

To "clear the decks for action" so to speak, I am recommending to the faculty that it examine the possibilities of simplifying our regular undergraduate and postgraduate programs to the maximum extent consistent with maintenance of our educational standards. I believe that the emergency would justify some over-simplification of these schedules during the post-war transition period. Then, after experience with such simplified schedules, the faculty can later decide upon the most desirable type of schedule to apply after the immediate post-war period of confusion and congestion is past.

To illustrate what I mean by a simplified schedule I can quote as one extreme a prominent university in which every subject in the curriculum was scheduled for three hours per week and all classes in a given subject met at a certain hour on either Monday, Tuesday and Wednesday, or on Thursday, Friday and Saturday. It is clear that our own program, being more highly specialized and involving large amounts of laboratory work, could not be fitted into any such simple scheme. On the other hand it would be difficult to justify, under the conditions mentioned above, a program in which various subjects may have assigned to them hours for class and study represented by any possible combination of two digits from

zero to nine, which is essentially our present situation. The load on our staff and the use of our facilities will be made more favorable to the extent that simplification can be introduced without sacrifice of essential educational values.

*Added Emphasis on Specific Fields.* As a result of visiting committee and faculty studies in recent years and also as a result of developments during the war emergency, our attention is called to the desirability of increased emphasis on certain aspects of our curriculum as soon as the situation permits action to be taken. Such a move would be in line with the continuous reëvaluation of educational opportunities which the Institute has carried on from its beginning and which has led to such important educational developments as the courses in Electrical, Chemical, Aeronautical and Biological Engineering, the course in Business and Engineering Administration, the special educational procedures followed in the Practice Schools and the Coöperative Courses, and the activities of the Division of Industrial Coöperation.

*Applied Mathematics* is a field in which the Institute has always been strong, both in its mathematics and in its related engineering and scientific departments. Even before the war there was a growing nation-wide movement to strengthen applied mathematics. As part of this movement we set up an inter-departmental staff committee to promote the development of this field and set aside an initial sum of \$10,000 to provide a limited number of postgraduate or postdoctoral fellowships. As a further move the Executive Committee has recently set aside \$25,000 to be used as circumstances permit to increase the Institute's opportunities and effectiveness in applied mathematics.

*Electronics.* Without knowing much of the detail, the public is well aware that remarkable progress has been made, under the stimulus of the war, in the theories and useful applications of electronic tubes and associated electrical circuits,

which are generally, and somewhat loosely, described by the term "electronics." This has been for some years an important activity in our Departments of Physics and Electrical Engineering. It is evident that this field is rapidly growing in importance and that the Institute has for various reasons an unique opportunity to play a leading role in its further development. In order to insure our ability to take prompt steps in this matter as opportunities arise, the Executive Committee has recently set aside an initial sum of \$50,000.

*Instrumentation.* The ingenious design of special instruments along sound engineering lines is partly dependent upon native ingenuity and partly upon sound scientific and engineering training. Because we are the type of institution which we are, and because we have been unusually fortunate in having on our staff individuals who combine native ingenuity and sound training in a remarkable degree, the invention and development of instruments has been one of our lines of notable achievement. In fact, we have been given both moral and practical encouragement from a very important governmental user of highly technical instruments, in order that we may serve as a still more effective center for developing instruments and for training instrument designers. As a step to promote further progress in this field the Executive Committee has recently set aside the sum of \$25,000, again to permit prompt action on new opportunities in this direction. Furthermore, we plan, in the near future, to assign to an interdepartmental group the responsibility for the further development of our educational program in this highly important field, which is on the one hand specialized but on the other hand very wide in the scope of its applications.

*Organic Chemistry.* Several recent visiting committees of this Corporation have emphasized the rapidly growing importance and scope of organic chemistry, both in its theoretical developments and in the multiplicity of its important industrial

applications. We certainly have no need to be ashamed of our past record or present position in this field, which has been and is now one of the important branches of our undergraduate, postgraduate and research work. However, the opportunities in this field, as emphasized by our visiting committees, are so real as to justify, in my opinion, a special effort to strengthen still further this aspect of our program.

*Architecture.* M. I. T. established the first Department of Architecture in the United States and this has been one of our finest in its background of prestige and usefulness. During the past dozen years the problems of architecture and of architectural schools have been complex and difficult. It was one of the professions hardest hit by the depression. This obstacle, followed by the war, came just at the time when the "modern" or functional architecture appeared in the field as a competitor with the more classical point of view. It is impossible to predict the exact outcome of this competition, but it is abundantly clear that the new movement is having a profound effect upon architectural thinking and practice. The trends emphasize the value of a technological environment around an architectural school. Pertinent to the situation is the fact, established by the National Roster of Scientific and Specialized Personnel, that the average age of professional architects in this country is higher than that of the members of any other profession. Just what the significance of these facts may be in guiding the further development of our School of Architecture is not entirely clear, but the problem certainly requires careful study, and I would recommend that it be made a special subject of such study by the newly appointed Visiting Committee on the School of Architecture.

*Library Building.* The Visiting Committee of the Library, the Faculty Library Committee, and the Friends of the Library have independently and jointly called attention to the cramped and inappropriate quarters of our Central Library, and to our

need for a well-planned, conveniently located, and properly appointed library building. The growth of the Institute and the importance of its library demand that this new facility be on the "must" list of post-war projects.

*Facilities for Students.* In several previous reports I have called attention to the desirability of more adequate provision for living and recreational facilities for students. To some extent the objectives there set forth have been realized through actions by the Corporation and through the generous response of the alumni. Of outstanding importance have been the acquirement of the Graduate House and the construction of the Swimming Pool, Briggs Field House and track facilities.

It is an exceedingly fortunate coincidence that these added facilities were secured before the war, because without them it would have been utterly impossible for us to have undertaken anything comparable with our present program of coöperation with the Army and Navy in their special training programs, for which housing and recreational facilities have been absolute requirements.

Useful as these recent acquisitions have been, much remains still to be achieved in this direction before we can present to the student and his parents a situation which is actually, as well as competitively, in reasonably good balance with the opportunities which are available here in the more strictly educational and professional aspects. I hope very much that means may soon be found to carry out those parts of this program which are still notably lacking in providing for our students a fully healthy and inspiring environment.

The above list of special subjects for post-war planning is not intended to be exhaustive. There are many other points deserving special attention, many of which have been suggested by and worked upon by members of our staff. In fact, there is no aspect of our activities which should not soon be carefully examined in order that our over-all use of facilities of



staff, funds and equipment may be attuned to the technological opportunities and trends of the times in such manner as to make the Massachusetts Institute of Technology the most effective agency which it is in our power to achieve within the general scope of interests specified in our charter.

With this review of some of the outstanding items of our current situation and future opportunities, I pass now to the more detailed record of the year's work.

### 5. EDUCATIONAL PROGRAM

*For Civilians.* To meet conditions created by the war and to coördinate with the Army and Navy college training programs the Institute adopted a new academic program last June for all civilian students, consisting annually of three consecutive terms of approximately 16 weeks each. In accordance with this program a new civilian freshman class was admitted in June, and we now plan to admit another first year class next February. Without any relaxation of admission standards, the class admitted in June totalled 580, only 20 less than the normal quota of 600 for entering classes. The age composition of this class is lower than usual, but our customary high degree of geographical diversification has been maintained.

Despite the admission of a freshman class of almost normal size, our civilian registration is about half the pre-war total, heavy losses in the upper years having resulted from the calling of their reserves to active duty by the Services. This decline in registration has brought about simplifications in our curriculum, but we are continuing to offer instruction in nearly all fields normally covered. The formal schedule of studies in Geology has been suspended temporarily along with the coöperative course in Mechanical Engineering (II-A). All other courses are continuing, but several may suspend if civilian registration continues to drop.

The Graduate School continues with approximately half

its normal enrollment. A larger decrease was expected but this was countered by an increased enrollment of students from friendly foreign countries, notably from China and the Latin-American republics.

*For the Army and Navy.* The opening of the civilian summer term was timed to coincide with the initiation at the Institute of the Navy College Training Program (V-12), which also operates on the trimester basis of three 16-week terms per year. Of the 910 apprentice seamen detailed here at that time by the Navy for engineering, science, and premedical training, 238 were first-year students who follow a curriculum prescribed by the Navy. The remainder were college transfers who are permitted to continue in the same fields of study they had followed in the institutions from which they transferred. These transfer students were assigned, after careful appraisal of their records, to appropriate regular Institute subjects which they attend along with our civilian students. The adjustment of these Navy transfer students, who showed widely differing levels of previous training and of individual scholastic standing, was a problem difficult both for the Institute and the students themselves. The number of academic casualties, however, has not been as large as expected, and the majority have made a fine adjustment to the rigorous program of study, drill, and physical training required by the Navy.

In April, after several false starts, we received the first contingent of Army students to follow the Army Specialized Training Program in advanced engineering, including curricula in Civil, Mechanical, Electrical, and Chemical Engineering. Great difficulty was encountered by the Army at the beginning of the program in selecting men properly qualified to take the courses prescribed for them, and we had to reclassify the entire group, placing many of them in special refresher courses to prepare them for the Army curricula. Fortunately the Army

has greatly improved its selection procedures, and we are now receiving well classified and qualified students.

Unlike the Navy V-12 program and our own civilian schedule, the A.S.T.P. is on a quarter basis of four 12-week terms per year. The Army has sound reasons for the 12-week term, but the operation of terms differing in length results in acute complications for colleges which are training both Army and Navy students. Our problem at the Institute is still further complicated by other special Army and Navy programs with still other schedules. The Army has just introduced another degree of complexity by sending back approximately 200 R.O.T.C. juniors who were called to active duty last June and who now return in small lots distributed over several months to remain and study here for an indefinite period while they await calls to Officer Candidate School.

This state of utter confusion in schedules is probably unavoidable in a large institution which accepts more than one training program for the uniformed services, and I describe it not to criticize but to show the highly complex academic load which the Institute staff is handling, and handling successfully.

Some members of our staff and most departments have classes scheduled every week-day in the year save Christmas and one or two other holidays, and the number of different class sections is reaching almost fantastic figures. At the present time we have nearly a hundred sections of first- and second-year Physics, of English, and of Mathematics. This represents about 100 per cent increase in the volume of instruction handled by these departments. The faculty of the Institute knows no 40-hour weeks or 8-hour days; it is working on a schedule geared to maximum war-time production. The overall average teaching load at the Institute has increased about 25 per cent, with a substantially greater increase in some departments. This is proper and necessary in war time, but

would not be in the interest of scholarship under normal conditions.

The Armed Services restrict the publication of information on the number of men in training in specific fields, but I can give you the following over-all totals to indicate the variety and extent of the programs the Institute is scheduled to handle now or in the immediate future:

Army Specialized Training . . . . .	955
<i>Including:</i> Basic (First Year)	
Refresher (in preparation for advanced engineering)	
Advanced Engineering (Mechanical, Civil, Electrical, Chemical)	
Marine Transportation	
R.O.T.C. Juniors returned	
Navy College Training Program (V-12) . . . . .	910
<i>Including:</i> Freshmen	
College Transfers (Engineering, Pre-medicine, Meteorology)	
Advanced Meteorology . . . . .	360
<i>Including:</i> Navy officers, including WAVES	
Army Air Force Cadets	
Special Courses for Officers . . . . .	930
<i>Including:</i> Aeronautical Engineering (Navy)	
Aircraft Engines (Navy)	
And four other courses for Army and/or Navy	
Total . . . . .	3,155

All *enlisted* men studying here are housed and fed by the Institute. Students in the A.S.T.P. and the Army Air Forces' Meteorology "A" program have exclusive use of our undergraduate dormitories and of the dining facilities of Walker Memorial, and the Graduate House is devoted entirely to the housing and messing of the Navy V-12 students. Civilian students live in selected rooming houses or in fraternity houses, all of which are open.

Our athletic facilities are shared by the Army, and Navy,

and the civilian student body. With attendance averaging about 700 per week-day, the Alumni Swimming Pool is operating at capacity, along with every other athletic facility. The Institute provides all physical training instruction for the A.S.T.P., and swimming instruction for the Navy. It likewise provides full medical care for the A.S.T.P. The Navy, however, has its own dispensary and medical staff in the Graduate House, and the Army Air Force operates a dispensary in the Rogers Building for its meteorology students.

*E.S.M.W.T.* Despite the heavy load imposed by the Army and Navy training programs, the Institute continues to offer short intensive courses, both full- and part-time, under the Engineering, Science and Management War Training Program of the United States Office of Education. During the year, 42 courses were given for 1,203 civilians working for the government and for war industries, and 16 courses for 2,827 Army and Navy personnel. Sixty members of the Institute's staff, together with 46 instructors from outside the Institute, participated in the program.

Several of the *E.S.M.W.T.* courses given for Army and Navy personnel are now being continued by the Services under direct contract with M. I. T.

Other programs were completed or discontinued during the year, as for example the Pilot Training Program operated since 1939 for the Civil Aeronautics Authority. Twenty-two of these programs were offered with an enrollment of 517, and out of a total of 16,000 flying hours there were no injuries sufficiently serious to cause student loss of flying time.

*Staff Adjustments to War Training.* The major teaching burden under the war training program has fallen in our first and second years, especially in mathematics and physics where there has been a long standing shortage of instructors, and in the Departments of Mechanical, Civil and Electrical Engineering. To meet this concentrated demand, we have asked

instructors in fields less crowded to assist in the teaching of such subjects as physics and mathematics, and the response has been splendid. The high degree of flexibility possessed by our staff is suggested by the fact that we have professors of economics, architecture and graphics teaching mathematics, and professors of chemistry and geology teaching physics. To cite other examples, members of our geology staff are handling the large amount of geography required for the Army students, members of the Departments of Architecture and Modern Languages are helping in the teaching of English, the Department of Building Engineering has helped the Department of Civil Engineering in carrying the heavy load in surveying, and at least one member of the administrative staff has taken to teaching.

Members of the staff without exception have accepted these reassignments in fine spirit and have thus made it possible for us to meet otherwise impossible teaching demands. To insure the effective use of the staff, we have compiled a complete census of the different fields in which each member is qualified to teach and maintain in the President's Office a master file showing the availability, assignments, and teaching fields of each staff member.

Adoption of the year-round teaching schedule required a reconsideration of our academic salaries, which in normal times were paid in ten installments for nine months' duty, with summer months available to staff members for other employment if they chose. To make equitable compensation under the three-term program, the Executive Committee has authorized the following plan for 1943-1944:

(1) Every staff member on regular appointment is guaranteed two terms of academic duty at his regular academic salary.

(2) Every effort is made to meet staff preferences in selecting the two terms during which they carry a regular load, but

frequently it may be impossible to coordinate these preferences with the demands of our teaching program. Members of the staff are therefore expected to accept full-time assignment in any two of the three terms.

(3) It may be necessary to call on many members of the staff to teach during the third term also, either with a full-time or part-time assignment. Again every effort is made to meet the desires of the staff with regard to teaching duties in the third term and an effort is made to distribute these extra teaching assignments equitably. Subject to these conditions, staff members are expected to render such service as may be called for during the third term.

(4) The regular academic year salary for 1943-1944 is paid in nine installments rather than in ten installments, thus more nearly conforming with the period of service for which the salary is paid.

(5) The base additional compensation for those who teach a third term is two-ninths of the regular academic year salary, assuming that the staff member carries two-thirds of his normal load during the third term. If, in the third term, the staff member carries less than two-thirds of his normal load, the compensation is adjusted proportionally to the fraction of normal academic load which is being carried.

If a staff member is assigned in the third term a full teaching load or its equivalent in academic service, his additional compensation for the third term will be three-ninths of his regular academic year salary.

(6) All staff members below the grade of associate professor who are asked to teach a full or partial load during a third term will receive a flat sum of \$50 in addition to their third-term salary computed as outlined above.

(7) Compensation of staff members who are already on twelve months' appointment, such as administrative officers and some others, is not affected by this new plan.

*Implications in the War Training Program.* For obvious reasons the Army and Navy have had to standardize their college training the country over and gear it into fluctuating military needs. They have had to standardize on the duration of the training and on curricula, and they have had to limit their programs to the shortest possible period of time. Optimum military results have been the proper objective, not necessarily optimum educational results.

The programs as organized are a war-time substitute, therefore, and not a revolution in educational methods. Certainly our experience at the Institute indicates that students cannot study (or staff teach) intensively throughout the year without minds becoming jaded and standards dropping. The subtle processes of intellectual growth are not amenable to continuous forced feeding, even under military discipline. Neither are optimum educational results achieved from combining an intensive military regimen with professional education, or from curricula omitting humanistic subjects.

These observations are not criticisms of the Army and Navy college training programs; within the limitations imposed they are being well handled. Our experience, however, does not support speculations that the pattern of the Army and Navy college training programs will be the future pattern of collegiate education. If any war program has pointed a new way and a new opportunity, it has been the E.S.M.W.T. program of the Office of Education. It has given a new impetus to adult education and brought the colleges permanently into the field of in-service and refresher training at professional levels.

The chief significance of the Army and Navy training programs lies in the recognition by the government that college training is essential to the military even in war time, and in the widespread and effective use of the Nation's educational resources by the armed services. Taken in the round, the college training of the Army and Navy is a splendidly democratic



solution for meeting the professional and specialized training needs of the services. Unfortunately for our war effort and for the future of the country, the government has not had the courage to work out, on a comparably effective basis, the more difficult problem of training men to meet the acute shortages of professional men in industry and other civilian war activities.

As I have pointed out, the contractual policies of the services in dealing with the colleges are predicated on the "no-profit, no-loss" principle, which means that the Army and Navy pay costs on that limited portion of the institution's services which they desire. The uniform budgeted-cost contract now used by both services *if properly applied* can produce a result fair to both the college and the government. A major difficulty is the enormous amount of accounting, wasteful both of time and manpower, required of both parties, and the fact that it forces the colleges into a pinchpenny cost-accounting frame of mind in dealing with fundamental educational matters. Certain defects, such as the original effort to impose a standard twenty-hour per week teaching load on all institutions, have been resolved by the Joint Army-Navy Board for Training Unit Contracts, of which our own Treasurer is a member. This Board, which testifies to the desire of the Army and Navy to arrive at equitable policies, will doubtless help in meeting other contractual difficulties, including the fundamental one that every negotiator is likely to have a different idea of educational costs.

Certainly it can be said that the searching examination of educational costs required by the uniform contract is giving the institutions a new insight into their financial operations and the first really comparable data on relative operating costs of all kinds of institutions.

*New Facilities.* The great increase in population at the Institute (now totalling nearly 9,000) has upped the load on our Medical Department to the point where additional space is

urgently needed. During the year over 45,000 visits were made to the department and nearly 7,000 physical examinations completed. To insure our continued ability to maintain proper medical service under these conditions, the Executive Committee has authorized the enlargement of our infirmary by incorporating into it the second floor of Building 11 and by a more efficient arrangement of existing spaces. This will give us some 20 new beds and other necessary facilities.

Exclusive use by the Army and Navy of all of our pre-war restaurant facilities left the Institute without an adequate place for civilian students and staff to obtain meals. To meet this situation we have erected a temporary cafeteria, seating 450, adjacent to the Barbour Field House and turned over its operation to an experienced restaurant operator. While the appointments and service are simple they are adequate, and our feeding problem is satisfactorily taken care of for the duration.

To care for 900 enlisted men in the Graduate House we found it necessary to provide a mess hall. This was accomplished economically and adequately by adding a one-story addition, seating 450, to the west side of the House.

## 6. WAR RESEARCH

Although the major feature of the year was the adaptation of our educational program to Army and Navy training, our war research program continued to be our largest activity in terms of staff involved and funds expended. At the present time a total of 3,000 people are engaged in the prosecution of this research, of which about two-thirds are associated with a single project out of a list of current projects totalling 120. Of the total of three thousand, approximately one-third are professional personnel and the remaining two-thirds mechanics, technicians, secretaries, and other accessory personnel.

Total expenditures under the 162 contracts active during

the year totalled \$15,800,000, of which 60 industrial contracts accounted for \$800,000, and government contracts for \$15,000,000.

Methods and devices of major importance have come and continue to come from the research laboratories here, and certain of them have been important factors in some of the spectacular victories achieved by our armed forces.

I would reiterate that our research accomplishment would not have been possible without the coöperation of nearly two hundred colleges and industrial establishments which have released members of their staff to engage in government work here. Representatives from sister institutions have been in direct administrative charge of the largest of our projects, and throughout our program representatives of many institutions are working side by side.

I have already discussed some of the hazards and contingencies arising from this program. Our administrative staff is alert throughout to the need for rigorously accurate accounting and protection against hazards, and we are constantly refining our contracts and bettering our procedures. During the year Professor Ronald H. Robnett, of the Department of Business and Engineering Administration, was appointed Fiscal Officer of the Division of Industrial Coöperation by its Director, Mr. N. McL. Sage, and he has introduced more rapid and complete reporting on all business transactions within the Division.

The expansion of the Institute's personnel from a pre-war figure of 1,100 to the present total of 4,300 has required constant review of salary and wage policies. For the Institute itself we have established a Personnel Office responsible for all non-staff personnel. To coöordinate the wage and labor policies of the Radiation Laboratory, the Chemical Warfare Service Development Laboratory, and the Institute proper, each of which maintains its own personnel office, I appointed a Wage

Board last fall to review and harmonize the policies of the three groups. This has operated with marked success.

Similarly I have appointed a Salary Board for coördinating staff salary policies. This Board was appointed upon recommendation of a Corporation committee consisting of Phillips Ketchum, Horace S. Ford and Redfield Proctor (Chairman), which made a detailed study at my request of the salaries and wages paid in the Radiation Laboratory. I commend this report to you as a fine example of objective, constructive consideration of a complex problem. The committee made numerous suggestions, but found the over-all situation satisfactory.

We hope thus carefully to examine into various other aspects of our war activities in an ever alert effort to keep our house in order under the pressing and inflated conditions now prevailing.

#### 7. STATISTICS OF THE YEAR

*Finances.* Having already discussed the finances of our war program, I now wish to summarize our regular operations on a basis that affords comparisons with normal years. The fiscal year 1942-43 ended with an operating surplus of \$187,416. This surplus is very largely accounted for by the marked reduction in Institute research programs and graduate work which have been supported in the past to a large extent by endowment funds and by reductions in teaching salary budget resulting from leaves of absence.

Of the Institute's total budgeted regular expenditures of \$3,804,538, 61 per cent was academic expense (*i.e.*, teaching and research), 35 per cent plant and administration, and 4 per cent miscellaneous expense. It is interesting to note that this distribution of Institute expense is identical with that of last year. Forty per cent of operating income was derived from civilian students, 24 per cent from investments, 6 per cent from loans and scholarships, and 30 per cent from other sources

including overhead income from research contracts, and income from Army and Navy training programs. These percentages compare with 42, 29, 8, and 21 per cent respectively for the preceding year.

The yield on all investments based on market values as of June 30 was 3.77 per cent compared to 4.22 one year ago and 4.36 per cent two years ago. Reduction in investment income and increase in income from other sources due to year round educational and research programs were both expected.

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

## FINANCIAL TRENDS

	<i>Operating Income Budget</i>	<i>Total Gifts</i>
1930-31.....	\$2,880,131	\$1,339,280
1931-32.....	3,029,881	1,781,473
1932-33.....	2,779,815	306,295
1933-34.....	2,646,648	208,635
1934-35.....	2,694,799	580,695
1935-36.....	2,714,301	429,533
1936-37.....	2,977,573	812,421
1937-38.....	3,008,530	2,347,693
1938-39.....	3,203,300	1,362,392
1939-40.....	3,334,271	790,559
1940-41.....	3,361,052	888,180
1941-42.....	3,668,186	926,897
1942-43.....	3,991,956	884,268

Of the total gifts of \$884,268, \$616,702 represented capital additions.

The third year of operation of the Alumni Fund ended with a total of 8,533 alumni contributing \$102,026. Comparison with last year's figures of \$78,015 from 7,964 alumni shows a very encouraging trend.

*Enrollment.* By the opening of the summer term of the 1943-44 academic year, the number of civilian students had fallen to 1,579, a reduction of approximately one-half. More than offsetting this drop was the registration of 2,106 Army and

Navy trainees, including the V-12 and A.S.T. programs. As of August 2, this brought our student body total to 3,595. This does not include recent increases in our quota of Army students and certain full-time E.S.M.W.T. programs which, if included, would bring our total figure to over 4,500, the highest registration in the history of the Institute.

ENROLLMENT AT M. I. T.\*

	<i>Total Under-graduate</i>	<i>Freshmen</i>	<i>Total Graduate</i>	<i>Total Civilian Enrollment</i>	<i>Army and Navy</i>	<i>Total</i>
1930-31 . . .	2,670	734	539	3,209	....	....
1931-32 . . .	2,610	628	578	3,188	....	....
1932-33 . . .	2,308	562	523	2,831	....	....
1933-34 . . .	2,106	485	500	2,606	....	....
1934-35 . . .	2,009	542	498	2,507	....	....
1935-36 . . .	2,018	561	522	2,540	....	....
1936-37 . . .	2,174	650	619	2,793	....	....
1937-38 . . .	2,305	605	661	2,966	....	....
1938-39 . . .	2,401	656	692	3,093	....	....
1939-40 . . .	2,379	605	721	3,100	....	....
1940-41 . . .	2,379	605	759	3,138	....	....
1941-42 . . .	2,376	640	679	3,055	....	....
1942-43 . . .	2,451	731	569	3,020	....	....
1943-44 . . .	1,222	557	357	1,579	2,016	3,595

\* All figures are as of November 1 each year, save 1943-44, which is as of August 2. The totals do not include short war-training courses or full-time E.S.M.W.T. programs.

*Student Aid.* The distribution of aid to students during 1941-42 as compared with the preceding year is given in the table below:

SUMMARY OF STUDENT AID

	<i>1941-42</i>		<i>1942-43</i>	
	<i>Number</i>	<i>Amount</i>	<i>Number</i>	<i>Amount</i>
Undergraduate Scholarships . .	507	\$81,888	476	\$78,225
Graduate Scholarships and Fellowships . . . . .	317	116,415	337	90,576
Loans . . . . .	258	109,078	228	98,991
Student Employment Service .	462	57,677	394	51,109
<b>TOTAL STUDENT AID . . . . .</b>		<b>\$365,058</b>		<b>\$318,901</b>

Of the entire undergraduate student body, 23.5 per cent received aid; of the graduate group 56 per cent.

The Loan Fund record continues to be remarkably good. For the second year Fund repayments on principal amount exceeded the total of loans made, the excess being \$83,359. Striking is the fact that the total of interest payments up to June 30 exceeded by three times the amount of matured principal then unpaid.

*Personnel.* The Corporation suffered the loss of four of its Life Members during the year. William R. Kales, a member for 19 years, died December 3; A. Lawrence Lowell, a member since 1896, died on January 6; Charles T. Main, first Alumni Term Member to be elected (1906), died on March 6; and William H. Bovey, a member since 1924, died on April 26. Messrs. Kales, Main and Bovey were distinguished alumni of the Institute, and served it well and loyally in many capacities. Dr. Lowell had served on the Corporation since 1896, and was the third generation of his family to hold membership. His father, Augustus Lowell, his grandfather, John A. Lowell, who was Vice-President of Technology from 1862 to 1870, and his brother, Percival Lowell, were influential in shaping the course of the Institute through its early years.

Dr. Lowell served on the Executive Committee before he was appointed President of Harvard University, and his service as a member of the Corporation was particularly valuable during the years of the Institute's expansion following the great gifts of George Eastman.

The three Alumni Term Members whose five-year terms expired in June were Harry P. Charlesworth, Marshall B. Dalton, and Donald G. Robbins.

New members elected during the year include one Special Term Member, Phillips Ketchum; three Alumni Term Members for the regular term of five years, Francis A. Barrett, Walter J. Beadle, Donald F. Carpenter; and one Term Member, Irving W.

Wilson, to fill the unexpired term of the late Alfred H. Schoellkopf. J. Willard Hayden, whose Special Term Membership expired in January, was elected to Life Membership in May. Walter F. Downey, who resigned in August as Commissioner of Education of the Commonwealth, has been succeeded by Julius E. Warren, who thus assumed on September 1 the ex officio membership held by the Commissioner of Education. The new President of the Alumni Association, who took office on July 1, is Francis J. Chesterman, a Life Member of the Corporation.

Retirements from the faculty included Harry W. Gardner, Professor of Architecture and a member of the staff for 48 years; and George E. Russell, Professor of Civil Engineering and a member of the staff for 38 years. Each of these was given the title of Emeritus Professor, and Professor Russell continues as an Honorary Lecturer for 1943-44.

James R. Killian, Jr., since 1939 Executive Assistant to the President, has been appointed Executive Vice-President. Theodore B. Parker has been appointed Head of the Department of Civil Engineering vice Charles B. Breed, who requested relief in order that he might devote full time to his duties as Professor of Civil Engineering. Dean Harold E. Lobdell has been designated as the Institute officer responsible for carrying out our contractual obligations for the A.S.T.P. and V-12 training programs.

As Acting Professor of Military Science and Tactics, Lt. Col. Joseph F. Cook, Jr., is now in charge of the Military Science Department and Commanding Officer of the A.S.T.P. To serve while the heads of their departments are on war assignments, Carlton E. Tucker was appointed Executive Officer of the Department of Electrical Engineering, Bertram E. Warren as Executive Officer of the Department of Physics, and Carl F. Floe as Executive Officer of the Department of Metallurgy. Professor Tucker also assumed the Directorship of the Harbor



Building School vice Professor Barrow, who was granted leave of absence on October 1 to undertake a war assignment.

Robert M. Kimball, Assistant Director of Admissions, has been temporarily detached from that post to organize and establish a Personnel Office and to serve as Personnel Officer. Paul M. Chalmers has been appointed Assistant Director of Admissions in addition to his duties as Assistant Professor of English.

New additions to the staff include J. P. den Hartog, Professor in Mechanical Engineering, who will be on leave of absence during the emergency; Major William T. Cameron, Captain Lincoln W. Ryder, and Major Augustus A. Wagner, all Assistant Professors in Military Science and Tactics.

Promotions were as follows: to the grade of Professor: Douglass V. Brown, Frederick H. Norton and John B. Wilbur. To Associate Professor: Robert H. Cameron, Harold W. Fairbairn, Ernest N. Gelotte, Bernard S. Gould, George G. Harvey, Walter McKay, Herman P. Meissner, Manfred Rauscher, Robert R. Shrock. To Assistant Professor: Douglas P. Adams, William C. Bauer, Joseph Bicknell, Paul M. Chalmers, Kenneth R. Fox, Thomas R. P. Gibb, Jr., Albert C. Hall, Francis B. Hildebrand, John W. Irvine, Jr., Irving Knickerbocker, Thomas F. Malone, James D. McNitt, John B. Rae, Raphael Salem, Walter H. Stockmayer.

In addition to leaves of absence granted previously and continued, leaves were granted to the following: Heads of Departments Harold L. Hazen and John C. Slater; Professors John Chipman, Alfred V. deForest, Otto C. Koppen, Henry E. Rossell, C. Richard Soderberg, Manuel S. Vallarta; Associate Professors Herbert L. Beckwith, Nathaniel H. Frank, Edward R. Gilliland, John R. Loofbourow, F. Alexander Magoun, Bernard E. Proctor, Robert R. Shrock; Assistant Professors Bissell Alderman, William H. Brown, James E.

Mulligan, Arthur C. Ruge, Charles F. Squire, Alberto F. Thompson, Jr. and Walter L. Whitehead.

Resignations were accepted from Colonel Edward W. Putney, Professor and Head of the Department of Military Science and Tactics; Associate Professors Roy W. Carlson, William T. Martin and Clifford B. Purves; Assistant Professors Arthur D. Caswell, David O. C. deSouza, Justin R. Hartzog, Albert R. Kaufman, John H. Lutz, Jerome L. Spurr, Philip C. Stein, Malcolm S. Stevens, and Charles H. Thyng.

Emeritus Professor Davis R. Dewey, former head of the Department of Economics and a member of the staff from 1889 until his retirement in 1933, died on December 13; Emeritus Professor Leonard M. Passano, a member of the Department of Mathematics from 1892 until his retirement in 1936, died on January 30; and Emeritus Professor William J. Drisko, a member of the Department of Physics from 1895 until his retirement in 1935, died on August 4.

*Conclusion.* I cannot close this report without a personal expression of appreciation to members of the Corporation for their constant support and encouragement, and to the alumni and staff of the Institute for their unfailing loyalty. The strength of this institution rests on the effective coöperation of these groups.

Respectfully submitted,

KARL T. COMPTON,  
*President*

## REPORTS OF ADMINISTRATIVE OFFICERS

### DEAN OF STUDENTS

Aside from presenting the customary statistical comparisons of this year's operations with those of previous years, this report is concerned mainly with tracing the principal developments in governmental directives with respect to permitting undergraduate students of engineering and science to pursue their educational programs during wartime, and with outlining how those developments affected the Institute's policies and altered the plans of many members of our student body.

The following tabulations show: (1) the actual *civilian* undergraduate registration figures at various significant turning points during the period covered, and (2) their percentage relationships to the figures of the Registrar's "official count" for 1942-43, made on November 2, 1942:

<i>Tabulation (1)</i>	<i>Seniors</i>	<i>Juniors</i>	<i>Sophomores</i>	<i>Freshmen</i>	<i>Totals</i>
"Official 1942-43 count"					
(November 2, 1942) ..	522	600	603	727	2,452
End of Fall Term					
(January, 1943) . . . . .	520	581	573	702	2,372
Opening of Spring Term					
(February, 1943) . . . . .	165	572	502	556	1,795
End of Spring Term					
(May, 1943) . . . . .	162*	566*	457	385	1,570*
Opening of Summer Term					
(July, 1943) . . . . .	302	143	234	580	1,259

<i>Tabulation (2)</i>	<i>Seniors</i>	<i>Juniors</i>	<i>Sophomores</i>	<i>Freshmen</i>	<i>Totals</i>
"Official 1942-43 count"					
(November 2, 1942) ..	100%	100%	100%	100%	100%
End of Fall Term					
(January, 1943) . . . . .	99.6	96.9	95.1	96.6	96.8
Opening of Spring Term					
(February, 1943) . . . . .	31.6	95.4	83.3	76.5	73.2
End of Spring Term					
(May, 1943) . . . . .	31.2*	94.4*	75.8	53.0	64.0
Opening of Summer Term					
(July, 1943) . . . . .	57.8	23.8	38.8	79.7	51.3

\* Including as civilians 267 members of the Classes of 1943 and 1944, who, as members of the Advanced R.O.T.C., were placed on active duty during April but permitted to continue with their regular academic programs until the end of the term then in progress.

Under schedules adopted by Faculty vote on January 6, 1942, the first-term program for fourth year students began in June following the close of the second term of their third year, and 338 members of the Class of 1943 were graduated at Commencement Exercises held February 1, 1943. Other undergraduate students were not required to remain in residence during the summer of 1942, but if they did not do so, they were expected to obtain employment contributory to the war effort.

On January 6, the Faculty also voted to admit in September, 1942, an entering freshman class beyond "the present limitation of about 600 to the extent that there are increased numbers of applicants with superior qualifications within the limitations consistent with good performance as imposed by available staff and laboratory space." The gross number of applicants who sought admission to this Class of 1946 was 2,080 compared with 1,844 for the Class of 1945, and for 1942-43 the academic year began with a first-year registration of 731 compared with 640 in 1941-42. The percentage geographical distribution of these 731, compared with corresponding groups of the previous four years, was:

	<i>Percentage of First-Year Class</i>				
	<i>1942-43</i>	<i>1941-42</i>	<i>1940-41</i>	<i>1939-40</i>	<i>1938-39</i>
From outside New England . . .	59.5	61.0	61.5	62.0	58.1
From outside Massachusetts . . .	68.1	69.3	67.6	69.3	67.1

At the opening of the fall term on September 28, undergraduates who were physically qualified for military service and who had attained age twenty, had two means by which they might be enabled to continue with their studies; namely, (a) occupational deferment under Selective Service as being in preparation for work in essential occupations, but *only* if the individual had reached "approximately the satisfactory completion of the second academic year of his college work"; or (b) joining the military service under the Enlisted Reserve Corps plan of the Army, which was then intended to provide for insuring a future source of college graduates as officer candidates for the Navy and Marine Corps as well as for the Army.

Our first- and second-year students, therefore, had the latter of these two opportunities as their sole choice, and they were obliged to decide on enlisting in the E.R.C. before the end of the calendar year. For example, a first-year student and his parents had December 31, 1942 as a "dead-line" for the student's enlistment, even though he might not reach Selective Service age, *i.e.*, his twentieth birthday, until well along into his second (or even into his third) year at the Institute. Their decision was further complicated by the fact that on September 8 the Secretary of War had issued a statement that "the exigencies of the war have now become such that it is now expected that, by the end of the college term or semester beginning in September, those student members of the Reserves who have reached Selective Service age will all, or for the most part, be called to active duty, and those reaching that age during subsequent terms will similarly be called. . . ."

Ten days later, on September 18, the Secretary had issued a second statement in which he deplored that his previous statement had been misinterpreted "in some quarters to mean the end of all higher education for the duration of the war." He had continued, "The Army is greatly in need of men of specialized training, particularly physics, chemistry, engineering and medicine. We are equally interested in having adequate numbers of men of such training available to war production industries and the civilian research agencies of the government. Plans are now being worked out for the method of training for those inducted into the Army, but in any event it is hoped that the colleges will maintain their training of students in engineering and medicine and other sciences. In some cases, it will be necessary to expand this training. . . ."

On the basis of the Secretary's second statement, it appeared that some method would be evolved in due time whereby engineering students, at least those of high standing, might continue with their studies and thereby constitute a true reserve not only for the uniformed services but also for the future replacement needs of war industries. Throughout the autumn months, however, it became increasingly evident that most estimates of the future based upon current information were foreordained to be contradicted by counter information

soon forthcoming. Quite naturally, the incidence of student "rumors" further beclouded these unhappy conditions.

While it continued to be our administrative policy to exercise every practicable means to keep ourselves informed as to developments, we were thus strengthened in our considered belief that student morale could best be bolstered if members of our administration continued to refrain from speculation in any statements, informal or formal, made to individual students or through the medium of *The Tech*. The editors of that paper, it should be recorded, consistently and effectively cooperated with and supported our policies during this trying period.

On November 6, three halls of the Senior House (Atkinson, Runkle and Holman) were released from civilian occupancy for Army personnel, and by the end of that month about 400 "Meteorology A" cadets of the Air Forces were quartered on the Institute premises. By mid-November, the thirteenth to be exact, the Congress adopted legislation lowering the age at which registrants would be liable for call to active military duty under Selective Service, from 20 to 18, and the measure was approved by the President on November 16. By the end of the month, at the time of the National Interfraternity Conference held in New York on November 27 and 28, it became commonly known that the Army's plans for shortly calling members of the E.R.C. to active duty had been definitely formulated, and that these plans also provided for the selection of enlisted men from the Army at large to form units which would be sent to various colleges and universities there to undertake curricula which would be prescribed by the Army.

On December 5 the President signed an Executive Order "providing for the most effective mobilization and utilization of the national man power and transferring the selective service system to the Manpower Commission." Paragraph 4 of this order barred further voluntary enlistments in the military or naval services, including their reserve components, for men between 18 and 38; and Paragraph 6 established the responsibility of the Chairman of the War Manpower Commission for "insuring the efficient utilization of the nation's educational facilities and personnel for the effective prosecution of the war."

A week later, on December 12, a statement issued jointly by the Secretaries of War and of the Navy revealed their plans for future use of the colleges for the educational training of enlisted men of the various services, which plans had had the approval of the Chairman of the War Manpower Commission. The document prescribed the establishment of an "Army Specialized Training Program," the A.S.T.P. as it will be referred to hereafter in this report, and it also set forth a schedule of dates upon which members of the E.R.C. and of the Navy's reserve programs would be called to active duty. This schedule provided that our students who were Naval reservists, with very few exceptions, would remain at M. I. T. on an inactive status until June, 1943; and that our fourth- and third-year students in the E.R.C. would also remain at M. I. T. on an inactive status until June, 1943; but that our second- and first-year students in the E.R.C. would be called to active duty in February, 1943.

The impact of the last clause upon M. I. T. was severe, inasmuch as it affected the plans of 533 of our students who had voluntarily enlisted in the E.R.C. — 289 second- and 244 first-year men.

The plans of the Navy and Army also differed in the opportunities provided a reservist for continuing with his education after being called to active duty. Our Naval reservists would, for the most part, be allowed to continue their regular Courses at the Institute without interruption, but our Army reservists, except for some who might be assigned for meteorology training, would leave M. I. T. to undergo the thirteen-week basic military training required of men inducted into the Army through Selective Service. Upon completion of the basic military training period they *might apply* to be ordered to some college or university, but not necessarily back to M. I. T., as members of an A.S.T.P. unit. Selection of the personnel for these units would be accomplished by "screening" procedures administered by the Army authorities, who would also specify the content of the instruction to be given each unit.

Two days after these Navy and Army plans were announced, on December 14, the Selective Service amended its regulations and moved back the point at which occupational

deferment might be requested for a student in most M. I. T. Courses from the end of his second year to "after completion of his first academic year." This change, the new regulations stated, was prompted by "serious shortages of persons trained, qualified, or skilled to engage in these critical occupations." Obviously, the amendment introduced an inequality of treatment in that it provided a means whereby many of our second-year students who had not enrolled in any reserve program might be enabled to continue with their studies, whereas 289 of their classmates in the E.R.C. would have their studies abruptly interrupted in February. It was not until six weeks later, on January 27, that the Army postponed the time from February until June, 1943, when second-year students in the E.R.C., "who are pursuing approved technical engineering courses," would be called to active duty.

Meanwhile, early in January it had become clear to the Faculty that the Institute's calendar would have to be revised to provide for year-round operation in order to meet the conditions imposed by the Navy and Army plans. It had transpired that for its units the Navy intended to specify terms of the same length as the Institute term, *i.e.*, terms of sixteen weeks, fifteen of instruction and one of examinations; but for its A.S.T.P. units the Army would insist upon terms of twelve weeks. Consequently, with the hope that the timing of our terms for civilian students and those for Navy units might perhaps be synchronized, especially since it seemed probable no Navy units would be established before summer, the Faculty voted unanimously on January 6 to "adopt for the year 1943-44 a new academic program consisting of three consecutive terms of approximately sixteen weeks each, this program to become effective for civilian students in June, 1943, when the first of three terms under the three-term plan will begin; and that the next freshman class be admitted in June, 1943."

Undergraduate registration, which had been 2,452 at the time of the annual count on November 2, declined only 3.2 per cent during the first term. At the end of the first week of the second term, on February 15, however, those civilians in attendance aggregated but 73.2 per cent of the November 2



total. Of the 2,376 who had taken midyear examinations, 338 were graduated, 72 were disqualified for low academic standing, and 129 did not return because of an actual or anticipated call by the Army.

The 129 figure included 93 first-year students in the E.R.C., the group which was still scheduled for call to active duty at the end of the first term, although no reporting orders had been issued by the Army to the individuals concerned. Over 150 first-year students in the E.R.C., however, did enroll for the second term with the intention of continuing their education as long as they might, especially since they had some cause to suppose that the Army's continued delay in issuing reporting orders might conceivably presage a postponement of the time of call similar to that which had been announced on January 27 for second-year students in the E.R.C. But no such postponement came about, and on February 25 first-year E.R.C. students resident in the First Service Command were ordered to report for induction on March 8 at Fort Devens. Similar orders were issued by other Service Commands soon thereafter. The Institute allowed full abatement of any second-term tuition payments which had been made by men thus obliged to discontinue as students.

On March 1, midway between these two dates of February 25 and March 8, the Selective Service further amended its regulations so that occupational deferment might be requested for a student in most M. I. T. Courses, providing "that if he continues his progress he will graduate from such course of study on, or before, July 1, 1945." This change, the new regulations stated, like that which had been announced on December 14, was prompted by "a serious need for additional persons in scientific and specialized fields, and in certain of the professions." Under the Institute's accelerated calendar, adopted by the Faculty on January 6, even our first-year students of the Class of 1946 would be due to graduate at the end of the spring term of 1945.

Also on March 1 the Institute received notification from the War Department to prepare to receive an A.S.T.P. unit of 500 soldiers, who would begin to arrive on March 8, and for whom classes of instruction would commence on March 15.

At the midyears a fourth hall of the Senior House (Nichols) had been released from civilian occupancy to accommodate incoming "Meteorology B" cadets of the Air Forces, and since the personnel of the A.S.T.P. unit would also be quartered and messed by M. I. T., all civilian students remaining resident in the undergraduate dormitories were obliged to vacate those premises by 6 p.m. on March 6. Despite the unusual circumstances, including the necessary peremptoriness of the notice and the inclemency of the weather, this evacuation was accomplished with good grace and a minimum of difficulty. Some of the 359 students so dispossessed were accommodated in the Graduate House and by the fraternities, while others removed to their own homes if within commuting distance, or to rooming houses, of which a list was helpfully compiled by the Technology Christian Association.

The detachment of 282 "Meteorology B" cadets, also due to commence instruction on March 15, got under way on that date. For the A.S.T.P. unit, however, the Army's "screening" procedures operated less expeditiously, and less effectively than it had anticipated, and instruction could not begin until April 5. Men selected by the Army for this A.S.T.P. unit, which was to receive advanced training in Civil, Mechanical, Electrical or Chemical Engineering, were presumed to be chosen from soldiers qualified academically to undertake engineering studies at the sophomore level. Up to April 5, 363 soldiers had reported, and 37 of these were deemed unacceptable when it transpired they were manifestly unsuited for the specified curriculum. Eighteen of the 37, for example, were academically qualified *well beyond* the sophomore level.

A few late registrations brought the number who actually began classes on April 5, to 330, contrasted with the 500 originally contemplated. Of these 330, 64 after four weeks and 45 more after another six weeks, or a total of 109, had to be academically disqualified and sent back for further reclassification by the Army authorities. At the end of the term, on July 3, 205 of the original 330 successfully completed the academic requirements and were promoted. Additional soldiers reporting during late June and early July brought the strength of the A.S.T.P. unit to 401 at the start of its second term on July 12.

On April 7, two days after classes commenced for the A.S.T.P. unit, orders were issued to 237 juniors and five seniors, who were members of the Advanced R.O.T.C. and also of the E.R.C., to report at Fort Devens on April 11 to be placed on active duty. This had been contemplated by a War Department Memorandum, dated December 23, 1942, which specified that upon the "initiation of the A.S.T.P." at an institution, its students who were members of the Advanced R.O.T.C. and also of the E.R.C. would be called to active duty. The Memorandum provided, however, that they would remain in school "until the end of the first full semester . . . that begins in 1943." Consequently the 242 students returned from Fort Devens to the Institute on April 12 to resume their regular academic programs, which they continued until the end of the term on May 22. Twenty-six more members of the Advanced R.O.T.C., who had not belonged to the E.R.C., were subsequently enlisted in it, and 25 of these reported to Fort Devens April 16, after which they, too, returned to Cambridge to continue as regular students during the remainder of the spring term.

In accordance with the Faculty's vote of January 6, the summer term for civilian students began June 28 with a total undergraduate civilian registration of 1,259, or 51.3 per cent of the November 2, 1942, enrollment. The gross number of applicants seeking admission as freshmen was 1,950 compared with 2,080 in September, 1942; and the numbers matriculating were 580 and 731, respectively. The geographical distribution of these 580 was: 62 per cent from outside New England, and 69 per cent from outside Massachusetts.

It will be remembered that the amendment of the Selective Service's regulations governing occupational deferment, made March 1, was temporary in nature and did not adequately provide for cases arising subsequent to July 1. Consequently, on July 1, a further amendment was issued to the effect that deferment might be requested for a student in most M. I. T. Courses providing "that he is competent and gives promise of successful completion of such course of study and, that if he continues his progress he will graduate from such course of study within 24 months from the date of certification." Under the Institute's accelerated calendar, freshmen of the

group admitted June 28 will thus become eligible for certification at the earliest in late December, 1943, by which time approximately 48 per cent of the group will have reached their eighteenth birthday.

During the spring months the impending decline in upper class civilian registration became a matter of grave concern to the fraternities. The probability of an entering freshman class approximately normal in size, and the unavailability of dormitory accommodations for civilians, suggested that chapter houses might continue to be operated as rooming houses, either by the respective fraternities or under the Institute's management. But it seemed improbable that the average chapter, faced with the possibility of having only a half dozen upper class members returning to be in residence as civilians during the summer term, could hope to initiate three or four times that number of new members, mostly freshmen, and still continue to operate successfully as a fraternity. Nevertheless, at a meeting held May 18, most chapter presidents and alumni trustees, after a full discussion of the situation with Institute officials primarily concerned, decided to try to continue. The Institute, by making available the lists of admitted freshmen, and by establishing a "reception center" in the Graduate House during the week preceding June 28, as well as in other ways, endeavored to assist the fraternities in their objective. The outcome proved to be a happy one, for at this writing all of our fraternities are operating as such, and providing housing accommodations for over half of the undergraduate registration.

On July 1 the Institute's "Navy V-12" unit was established in the Graduate House, its complement being 910, all undergraduates. Included in this number were 249 naval reservists (V-1 and V-7 men) who had been civilian students at the Institute during 1942-43, and 238 entering freshmen selected by the Navy as a result of its V-12 examinations held throughout the country on April 2. The balance of 423 were principally V-1 and V-7 men transferred from other colleges and universities at which no "Navy V-12" unit was to be established.

The increase in the proportion of our undergraduate student body in uniform is illustrated by the following comparative figures:

	<i>Civilians</i>	<i>Army</i>	<i>Navy</i>	<i>Total</i>
"Official 1942-43 count"				
(November 2, 1942) . . . . .	2,452	.....*	.....	2,452
Opening of Spring Term (February, 1943) . . . . .	1,795	470	89	2,354
Opening of Summer Term (July, 1943) . . . . .	1,259	1,018	910	3,375

\* "Meteorology A" cadets (of whom there were 141 in attendance on November 2, 1942, and 470 at the opening of the Spring Term in February) were classified by the Registrar as Graduate Students up to December 31, 1942.

Distribution of student aid to undergraduates during 1942-43 compared with 1941-42 was:

	<i>1942-43</i>		<i>1941-42</i>	
	<i>Number</i>	<i>Award</i>	<i>Number</i>	<i>Award</i>
Freshman Scholarships . . . . .	214	\$37,845	194	\$41,030
Other Undergraduate Scholarships . . . . .	262	40,380	313	40,858
Total Scholarships . . . . .	476	\$78,225	507	\$81,888
Undergraduate Loans . . . . .	181	\$83,120	212	\$93,578
Total Aid to Undergraduates . . . . .	577*	\$161,345	631*	\$175,466
Percentage of Undergraduate Registration Receiving Aid . . . . .		23.5		26.5

\* Allowing for individuals receiving both scholarship and loan.

Of the 214 1942-43 Freshman Scholarships noted above, 40, totalling \$10,540, were Charles Hayden Memorial Scholarships for "Boston and New York boys." These awards were established in 1939 by the Hayden Foundation, and by vote of the Foundation's trustees those for 1942-43 were the last to be made for the duration of the war. The above tabulation, however, does not include grants totalling \$3,750 to 13 undergraduates of the three upper classes "born in Massachusetts," made possible by the continued generosity of the trustees of the James Melvin Trust, which aided 23 men to the extent of \$6,900 during 1941-42. Nor does it include William Barton Rogers Awards of \$300 made to five members of the Class of

1943 who had in the opinion of the Faculty Committee on Undergraduate Scholarships demonstrated "outstanding qualities," judged on the dual basis of their academic records and extracurricular accomplishments.

Including both graduate and undergraduate students, the Loan Fund Board received 308 applications during 1942-43 and acted favorably upon 228, or 74 per cent, \$98,991 being loaned. For 1941-42 the corresponding figures were 354, 258, 72.9 per cent, and \$109,078.

Repayments to the Fund during 1942-43 were: \$181,350 on principal account and \$18,448 for interest, or a total of \$199,798. Thus for the second year in the history of the Fund repayments on principal account exceeded the total of loans made, the excess being \$82,359.

The cumulative record of the Fund from its establishment in 1930 up to June 30, 1943, shows:

	<i>At June 30, 1943</i>	<i>At June 30, 1942</i>
Number of individuals receiving loans . . .	2,521	2,406
Total amount loaned . . . . .	\$1,835,075	\$1,736,084
Average amount loaned per capita . . . . .	\$728	\$722
Number of individuals whose indebtedness has been completely discharged . . . . .	1,262	1,035
Repayments received on principal account	\$1,031,698	\$850,348
Total matured principal . . . . .	\$1,086,345	\$914,419
Percentage of maturities paid . . . . .	95.0	93.1
Total matured principal unpaid . . . . .	\$54,647	\$64,071
Total interest received . . . . .	\$164,778	\$146,330

It is notable that the \$164,778 received for interest up to June 30, 1943, was more than thrice the amount of matured principal then unpaid, \$54,647.

The Student Employment Bureau of the T.C.A. placed a total of 394 individuals compared with 462 in 1941-42, and those placed in 1942-43 earned \$51,109 compared with \$57,677 last year. Of the 394 placed this year, 46 were under the N.Y.A. program of the Federal Government, 340 were in private employment, and eight were in both classifications. Earnings were \$2,974 under the N.Y.A. and \$48,134 from other sources.

The N.Y.A. program, begun in April, 1934, terminated on June 30, 1943, and during its history of nine and a quarter years, \$181,106 was disbursed to 2,332 M. I. T. students.

No June, 1943, scholastic averages were compiled for student activity groups which by that time had experienced considerable disorganization of their managerial personnel on account of the calling up of reservists. Fraternity averages showed a slight rise for 529 men who averaged 3.26 in June, 1943, compared with 739 who averaged 3.24 a year ago.

H. E. LOBDELL.

#### DEAN OF THE GRADUATE SCHOOL

Statistics of Registration in the Graduate School are presented in the next following report. The Registrar's Table 3, Classification of Students by Courses and Years, shows a total Graduate School registration of 596 (as compared with 679 on November 1 of the previous year). Included in this total are 141 Advanced Meteorology Trainees detailed by governmental agencies, about the same number as in the previous year.

Selective Service regulations concerning occupational deferment from military service on behalf of graduate students who are engaged in part-time service of instruction in critical fields or in war research have not changed materially since the previous annual report. The decrease in total enrollment in the Graduate School which was anticipated because of these regulations has been countered to some extent by increased enrollment of students from countries other than the United States, notably from Latin American republics.

Fellowships for study at advanced levels in this school, available to graduates of South American universities, have been established by *Industrias Quimicas Argentinas "Duperial,"* and *Compania Argentina de Electricidad (3)*, both of Buenos Aires; for a graduate of the National School of Engineers at Lima, Peru; and for a limited number of graduates of universities in the western hemisphere, exclusive of the United States, funds have been provided.

To the group of domestic industrially sponsored graduate fellowships it is a pleasure to add the William Underwood

Company Fellowship in Food Technology, and the Gulf Oil Corporation Assistantship.

The practice now followed in the Graduate School in respect to language requirements for a doctorate seems appropriate to a changing situation in respect to foreign sources of scientific literature. This policy, in brief, requires the demonstration of proficiency in reading scientific matter in English, German, and one other language approved by the department in which the candidate's major lies, the selection of the third language being based upon the significance of technical publications in that language which pertain to the *field* of the student's prospective professional work, and not upon his native tongue nor upon the geographical location in which he hopes to practice.

Graduate scholarship aid was extended to 337 applicants toward tuition expenses applicable between July 1, 1942 and June 30, 1943 in the sum of \$90,576 (including \$32,714 from general funds for tuition for staff members).

The award of tuition scholarships by the Committee on the Graduate School to staff members who are enrolled part-time in the Graduate School has been discontinued: any such allowances are now chargeable to departmental budgets as a part of the financial consideration in the employment for staff services.

Advanced degrees conferred during the calendar year July 1, 1942 through June 30, 1943 were: Ph.D., 30; Sc.D., 23; S.M., 174; M. Arch., 3; M.C.P., 3; and M.P.H., 14; a total of 247.

J. W. M. BUNKER.

#### THE REGISTRAR

The most significant change during the past year has been the replacement of our civilian students by Army and Navy students. This has affected the relative teaching loads of all departments, and our teaching staff have admirably coöperated and demonstrated that they have a high degree of flexibility. The registration at the important dates is shown in Table A. The decrease in the first and second years at the beginning of



the second term was largely due to the students in the Army Enlisted Reserve Corps anticipating their being called to active duty in early March, and the decrease at the end of March is the result of the calling of those who returned for part of the second term. The decrease in the fourth year was expected as the Class of 1943 graduated one term earlier.

After the close of the second term, the R.O.T.C. students in the third year and those in the Naval Reserve were called to active duty with the resultant decrease in the present registration in the second, third, and fourth years. Two hundred and forty-nine of the present students in our Naval Training program came from this group of Naval Reserves. These are distributed in the Navy unit as follows: 122 in the second year, 81 in the third year, and 46 in the fourth year.

The present distribution of students among the several classes (see Table B) shows that our principal increase in teaching load is in the first two years as the Meteorology A group (416) takes only meteorological subjects. Present information and conditions indicate that the teaching load will be relatively heavier in the first two years for the duration of the war.

J. C. MacKINNON.

TABLE A  
CHANGES IN REGISTRATION SHOWING REPLACEMENT OF CIVILIANS BY ARMY AND NAVY STUDENTS

	1ST TERM		2D TERM		SUMMER TERM	
	NOVEMBER 1, 1942	FEBRUARY 10, 1943	MARCH 29, 1943	AUGUST 2, 1943		
<b>REGULAR STUDENTS</b>						
First Year . . . . .	727	556	397		557	
Second Year . . . . .	603	502	454		227	
Third Year . . . . .	600	572	573		139	
Fourth Year . . . . .	522	165	167		299	
Graduate Year . . . . .	455	415	421		357	
Total . . . . .	2,907	2,210	2,012		1,579	
<b>ARMY AND NAVY STUDENTS</b>						
(Under Contracts)						
	Meteor. "A" (AN)	141	Meteor. "A" (AN)	474	Meteor. "A" (AN)	468
			Aero. Eng. (N)	46	Meteor. "B" (A)	238
			Air. Eng. (N)	43	Aero. Eng. (N)	45
					Air. Eng. (N)	42
					ASTP (A)	*326
						Navy C.T.P. (N)
						910
Total . . . . .	141	563	1,119		2,016	
Grand Total . . . . .	3,048	2,773	3,131		3,595	

(A) = Army (N) = Navy (AN) = Army and Navy

\* Instruction began April 5.

TABLE B

PRESENT DISTRIBUTION OF CIVILIAN, ARMY, AND NAVY STUDENTS ON OUR CAMPUS CLASSIFIED ACCORDING TO APPROXIMATE GRADE OF INSTRUCTION AND COMPARED WITH FIRST TERM OF LAST YEAR

	Summer Term August 2, 1943					Total	First Term Nov. 1, 1942
	Civilian	Navy NCTP	Army ASTP	Meteor.	Navy Special		
First Year . . . . .	557	380	—	—	—	937	727
Second Year . . . . .	227	329	129	201(B)	—	886	603
Third Year . . . . .	139	146	249	—	—	534	600
Fourth Year . . . . .	299	55	23	416(A)	88	881	522
Graduate Year . . . . .	357	—	—	—	—	357	455
Total . . . . .	1,579	910	401	617	88	3,595	2,907

## FOR THE YEAR 1942-1943

All statistics on registration are as of November 2, 1942

All statistics on degrees are through May, 1943

TABLE 1. REGISTRATION SINCE THE FOUNDATION OF THE INSTITUTE

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

TABLE 2. THE CORPS OF INSTRUCTORS

	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	'41	'42
Faculty Members of the Staff . . .	240	253	242	235	245	245	244	267	273	282	285	292	313
Professors . . . . .	86	98	93	88	83	87	78	87	90	98	99	95	97
Associate Professors . . . . .	63	68	60	57	69	81	87	89	98	89	92	99	104
Assistant Professors . . . . .	80	79	81	80	82	68	70	76	72	83	83	86	98
Ex-Officio . . . . .	4	3	3	5	6	6	6	5	6	7	7	7	8
Instructors . . . . .	7	5	5	5	5	3	3	3	3	3	3	2	3
Technical Instructors . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	1
Research Associates . . . . .	—	—	—	—	—	—	—	7	4	2	1	2	2
Other Members of the Staff . . . .	323	335	283	263	272	284	291	331	368	401	396	395	370
Instructors . . . . .	123	133	105	90	86	90	97	101	97	99	91	101	100
Technical Instructors . . . . .	—	—	—	—	—	—	—	—	—	—	—	6	7
Teaching Fellows . . . . .	—	—	21	22	20	24	51	52	52	52	55	52	60
Assistants . . . . .	70	96	45	43	70	64	69	79	78	85	87	75	—
Technical Assistants . . . . .	—	—	28	31	28	—	—	—	—	—	—	—	—
Lecturers . . . . .	32	34	28	25	25	24	19	29	28	31	31	17	18
Research Associates . . . . .	31	31	32	25	22	27	31	22	25	36	35	47	34
Research Assistants . . . . .	65	36	20	21	18	30	24	42	72	90	91	84	64
Research Fellows (D. I. C.) . . . .	2	5	3	3	2	1	—	—	—	—	—	—	—
Research Fellows . . . . .	—	—	—	3	1	12	5	16	15	8	—	—	—
National Research Council Fellows . . . .	—	—	—	—	—	—	—	—	—	—	—	1	—
Special Investigator . . . . .	—	—	1	—	—	—	—	—	—	—	—	—	—
Staff Members (D. I. C.) . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—
Total . . . . .	563	588	525	498	517	529	535	598	641	683	681	687	683
Other Members of the Faculty . . . .	15	15	17	25	26	27	31	28	28	28	32	37	40
Professors: Emeriti . . . . .	6	7	13	21	23	24	29	27	27	27	31	36	39
Retired . . . . .	3	3	—	—	—	—	—	—	—	—	—	—	—
Non-Resident . . . . .	6	5	4	4	3	3	2	1	1	1	1	1	1

TABLE 3. CLASSIFICATION OF STUDENTS BY COURSES AND YEARS

COURSE NAME AND NUMBER	1940-41						1941-42						1942-43						
	YEAR						YEAR						YEAR						
	1	2	3	4	G	Total	1	2	3	4	G	Total	1	2	3	4	G	Total	
Aeronautical Engineering XVI					40	146													
Architecture IV, IV-B, IV-C	21	18	16	19	20	94	13	13	44	39	22	147	12	12	56	39	28	169	
Architecture (IV, IV-B, IV-C) Fifth Year					18	18									13	15	14	12	66
Biology and Public Health VII, VII-T		6	6	5	35	52			3	5	37	48			8	11	8	42	10
Biophysics and Biological Engineering VII-A		3	2	2		7					2	13			2	3	4	1	
Building Engineering and Construction XVII		6	4	7		17			2	8	4	14			8	6			
Business and Engineering Administration XV		71	57	63	32	223			67	55	61	205			60	63	52	2	177
Chemical Engineering X		84	66	60	70	280			97	70	62	297			123	95	41	43	302
Chemical Engineering Frac. X-A, X-B, X-C					51	58				10	41	51					28	30	58
Chemistry V		21	32	30	79	162			19	29	36	67			18	20	22	52	112
Civil Engineering I		13	16	24	27	80			23	14	18	16			21	17	14	20	72
Economics and Engineering or Science				3	3	3													
Electrical Engineering VI		46	49	67	60	222			22	40	50	39			39	42	39	159	
Electrical Engineering (Cooperative) VI-A			46	20	17	20			31	41	19	14			43	27	42	16	128
Food Technology and Indust. Biology VII-B		9	9	5		23			6	5	9								
General Engineering IX-B		9	9	24	6	42			7	13	16				7	11	20		38
General Science IX-A		5	11	6		22			3	8	10				1	3	9		12
Geology XII		6	5	7		34			3	5	5	14			1	2	2	8	13
Industrial Economics																			
Marine Transportation XIII-C			4	8		12			10	5		12							15
Marine Transportation (XIII-C) Fifth Year				7		19				5		20							22
Mathematics XVIII		7	6	7		30				7		27							
Mechanical Engineering II		96	90	81	63	330			5	7	4	11			4	1	7	10	22
Army Ordnance (in Mech. Eng. Dept.)					4	4													
Torpedo Engineering (in Mech. Eng. Dept.)					2	2													
Mechanical Engineering (Cooperative) II-A			9	29	21	61			8	9	7	24							30
Metalurgy III		27	26	29	38	120			25	23	33	113			20	25	18	19	82
Ceramics (in Metallurgy Department)					9	9						12							6
Meteorology XIV					91	91						110							141
Naval Architecture and Marine Eng. XIII		34	31	15	5	85			32	27	23	3			31	28	27	7	86
Naval Engineering (in Naval Arch. Dept.)					11	11						13							
Naval Construction and Engineering XIII-A			18	21	10	49				19	18	9				27	17	18	62
Physics VIII		16	26	26	55	123			18	16	27	59			28	20	16	39	103
Sanitary Engineering XI			2		2	4						8							6
Unclassified		12	50	2		64			13	43	4				15	23	1	1	39
First Year (Not including Course IV)	584					584	627						715						715
Total	605	578	602	594*	759	3,138	640	567	574	593*	679	3,055	727	603	600	522*	596	3,048	

\* These totals include fifth year in Architecture IV, City Planning IV-B, City Planning Practice IV-C, and Marine Transportation XIII-C.

TABLE 4-A  
CLASSIFICATION OF STUDENTS BY COURSES, OPTIONS AND YEARS

No.	NAME	OPTION	Opt.	YEAR										TOTAL	COURSE NUMBER	
				2		3		4		G						
				Opt.	Tot.	Opt.	Tot.	Opt.	Tot.	Opt.	Tot.					
I	Civil Engineering			21	17	14	20								72	I
			1													
			2													
			3													
			4													
II	Mechanical Engineering			101	99	63	37								300	II
II-A	Mechanical Engineering — Cooperative															
III	Metallurgy	1. Metallurgy 2. Mineral Dressing	1 2	20	11	9	10								30	II-A
IV	Ceramics			12	15	13	5								56	IV
IV-B	Architecture															
IV-C	City Planning															
IV-C	City Planning Practice			1		1	7								9	IV-B
V	Chemistry			18	20	22	32								112	IV-C
VI	Electrical Engineering		1	39	39	42	39								159	VI
			2													
			3													
			4													
VI-A	Electrical Engineering — Cooperative			43	27	42	16								128	VI-A
VII	Biology and Biological Engineering		1	8	11	7	15								41	VII
			2													
			3													
			4													
VII-A	Physical Biology			2	3	4	1								10	VII-A
VII-T	Public Health		1													
			2													
			1													
			2													
VIII	Physics		2	28	20	16	39								103	VIII
IX-A	General Science			7	3	9	12								38	IX-A
IX-B	General Engineering															
X	Chemical Engineering			123	95	41	43								302	IX-B
X-A	Chemical Engineering Practice — Graduate														30	X-A
X-B	Chemical Engineering Practice — Undergraduate														7	X-B
X-C	Chemical Engineering Practice														21	X-C

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TABLE 4-A — (Continued)  
CLASSIFICATION OF STUDENTS BY COURSES, OPTIONS AND YEARS

No.	NAME	OPTION	Opt.	YEAR								Total	COURSE NUMBER
				2		3		4		G			
				Opt.	Tot.	Opt.	Tot.	Opt.	Tot.	Opt.	Tot.		
XI	Sanitary Engineering		1	1	1	3	2	2	1	6	XI		
XII	Geology	1. Geology 2. Mineral Resources	2	1	1	2	2	2	8	13	XII		
XIII	Naval Architecture and Marine Engineering			31	27	27	27	7	7	93	XIII		
XIII-A	Naval Construction and Engineering				28	27	27	7	7	62	XIII-A		
XIII-C	Marine Transportation				27	27	18	18	18	22	XIII-C		
XIV	Meteorology				5	9	17	18	141	141	XIV		
XV	Business and Engineering Admin.	1. Physical Sciences 2. Chemical Sciences	1	40	46	40	40	52	2	177	XV		
XVI	Aeronautical Engineering		2	20	17	46	39	16	28	169	XVI		
XVII	Building Engineering and Construction				8	2	6	2	16	16	XVII		
XVIII	Mathematics	1. Pure 2. Applied 3. Industrial Statistics	1		1	1	2	7	10	22	XVIII		
	Industrial Economics		3		1	1	4	1	15	15	Ind.Econ.		
	Unclassified					23	1	1	39	39	Unc.		
	First Year			603	600	522*	596	727	727	727	First Year		
	Total			603	600	522*	596	727	727	3,048	Total		

\* This total includes fifth year in Architecture.  
† Includes 12 in Architecture.

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

COURSE	YEAR					TOTAL	COURSE
	1	2	3	4	G		
I Civil Engineering . . . . .	—	—	—	—	2	2	I
II Mechanical Engineering . . . . .	—	—	—	3	1	4	II
III Metallurgy . . . . .	—	—	1	—	1	3	III
Ceramics . . . . .	—	—	—	—	1		
IV Architecture . . . . .	3	—	—	2	—	5	IV
IV-B City Planning . . . . .	—	—	—	1	—	1	IV-B
V Chemistry . . . . .	—	1	2	—	1	4	V
VI Electrical Engineering . . . . .	—	—	2	1	5	8	VI
VII-T Public Health . . . . .	—	—	—	—	3	3	VII-T
VIII Physics . . . . .	—	—	1	3	2	6	VIII
X Chemical Engineering . . . . .	—	—	—	—	2	2	X
XIII Naval Architecture and Marine Engineering . . . . .	—	—	1	—	—	1	XIII
XIV Meteorology . . . . .	—	—	—	—	127	127	XIV
XV Business and Engineering Administration . . . . .	—	—	—	—	1	1	XV
XVIII Mathematics . . . . .	—	—	—	—	3	3	XVIII
Unclassified . . . . .	—	3	—	—	—	3	Unc.
First Year (except Course IV) . . . . .	3	—	—	—	—	3	First Year
Total . . . . .	6	4	7	10	149	176	Total

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

COURSE	YEAR					TOTAL	COURSE
	1	2	3	4	G		
I Civil Engineering . . . . .	—	1	—	—	—	1	I
II Mechanical Engineering . . . . .	—	1	3	—	2	6	II
IV Architecture . . . . .	1	—	—	—	—	1	IV
V Chemistry . . . . .	—	—	1	1	3	5	V
VI Electrical Engineering . . . . .	—	1	3	4	—	8	VI
VI-A Electrical Engineering — Cooperative . . . . .	—	—	—	1	—	1	VI-A
VII Biology and Biological Engineering . . . . .	—	—	2	—	—	2	VII
VII-T Public Health . . . . .	—	—	—	—	1	1	VII-T
VIII Physics . . . . .	—	1	—	—	1	2	VIII
IX-B General Engineering . . . . .	—	—	1	2	—	3	IX-B
X Chemical Engineering . . . . .	—	2	1	—	1	4	X
XIII Naval Architecture and Marine Engineering . . . . .	—	1	—	—	—	1	XIII
XIV Meteorology . . . . .	—	—	—	—	2	2	XIV
XV Business and Engineering Administration . . . . .	—	6	4	—	—	10	XV
XVI Aeronautical Engineering . . . . .	—	—	—	1	1	2	XVI
XVIII Mathematics . . . . .	—	1	—	—	1	2	XVIII
Unclassified . . . . .	—	—	6	1	—	7	Unc.
First Year (except Course IV) . . . . .	15	—	—	—	—	15	First Year
Total . . . . .	16	14	21	10	12	73	Total

\* Excludes eleven special students.



TABLE 5. CLASSIFICATION OF STUDENTS BY COURSES SINCE 1935

	1935-36	1936-37	1937-38	1938-39	1939-40	1940-41	1941-42	1942-43
<i>Engineering Courses</i> . . . . . Total	2,028	2,187	2,288	2,379	2,418	1,922	1,836	1,861
Aeronautical Engineering XVI . . . . .	200	221	210	230	245	237	147	169
Architectural Engineering IV-A . . . . .	17	12	5	2	—	—	—	—
Building Engineering and Construction XVII . . . . .	32	23	27	29	26	17	14	16
Business and Engineering Administration XV . . . . .	280	274	269	265	251	223	205	177
Chemical Engineering X, X-A, X-B, X-C . . . . .	414	452	473	524	497	338	348	360
Civil Engineering I . . . . .	142	122	123	114	104	80	71	72
Army Engineer (in Civil Engineering Dept.) . . . . .	—	11	15	17	13	—	—	—
Electrical Engineering VI, VI-A, VI-B, VI-C . . . . .	381	444	452	448	432	325	256	287
†Electrochemical Engineering XIV . . . . .	27	23	22	9	2	—	—	—
General Engineering IX-B . . . . .	61	47	64	73	68	42	36	38
Mechanical Engineering II, II-A . . . . .	274	313	370	401	433	353	345	330
Army Ordnance (in Mechanical Engineering Dept.) . . . . .	10	10	12	10	22	4	—	—
*Metallurgy III . . . . .	60	81	84	108	124	129	125	88
†Meteorology XIV . . . . .	—	—	—	—	—	—	110	141
*Mining Engineering III . . . . .	28	32	35	25	10	—	—	—
Naval Architecture and Marine Eng. XIII, XIII-C . . . . .	80	93	100	89	139	121	125	115
Naval Construction and Engineering XIII-A . . . . .	23	23	21	28	42	49	46	62
Sanitary Engineering XI . . . . .	9	6	6	7	10	4	8	6
<i>Science Courses</i> . . . . . Total	382	467	501	555	543	453	427	341
Biology and Public Health VII, VII-A, VII-B, VII-T . . . . .	65	91	94	86	91	82	81	79
Chemistry V . . . . .	140	176	186	203	194	162	151	112
General Science IX-A . . . . .	12	20	25	33	30	22	21	12
Geology XII . . . . .	15	26	32	45	36	34	27	13
Mathematics XVIII . . . . .	26	20	27	28	40	30	27	22
Physics VIII . . . . .	124	134	137	160	152	123	120	103
<i>Architecture IV, IV-B, IV-C</i> . . . . . Total	100	97	111	100	108	112	92	77
<i>Economics and Eng. or Sci., and Industrial Eng.</i> . . . . . Total	2	7	3	4	1	3	13	15
<i>Unclassified</i> . . . . . Total	18	35	63	55	30	64	60	39
† <i>First Year (not including Course IV)</i> . . . . . Total	—	—	—	—	—	584	627	715
Grand Total . . . . .	2,540	2,793	2,966	3,093	3,100	3,138	3,055	3,048

\* June 1940, Mining Engineering discontinued. Metallurgy, formerly Course XIX, changed to Course III.  
 † Beginning September 1940, First Year Students not required to designate choice of course except for Course IV.  
 ‡ June 1940, Electrochemical Engineering discontinued. June 1941, Meteorology, formerly included in Aeronautical Engineering, changed to Course XIV.

TABLE 6. GEOGRAPHICAL CLASSIFICATION OF STUDENTS SINCE 1938

UNITED STATES		1938	1939	1940	1941	1942
<i>North Atlantic</i> . . . . .	Total	2,057	2,050	2,060	2,056	2,068
Connecticut . . . . .		125	124	104	116	142
Maine . . . . .		20	22	22	28	30
Massachusetts . . . . .		1,032	979	951	896	906
New Hampshire . . . . .		22	19	21	28	32
New Jersey . . . . .		169	173	180	178	168
New York . . . . .		492	522	558	586	566
Pennsylvania . . . . .		146	152	165	177	170
Rhode Island . . . . .		40	50	47	35	41
Vermont . . . . .		11	9	12	12	13
<i>South Atlantic</i> . . . . .	Total	170	185	187	167	192
Delaware . . . . .		14	15	14	10	12
District of Columbia . . . . .		40	59	52	42	41
Florida . . . . .		18	21	26	25	32
Georgia . . . . .		10	11	11	13	11
Maryland . . . . .		30	27	36	29	36
North Carolina . . . . .		8	6	11	16	6
South Carolina . . . . .		7	5	4	1	6
Virginia . . . . .		25	23	21	20	30
West Virginia . . . . .		18	18	12	11	12
<i>South Central</i> . . . . .	Total	105	106	99	103	98
Alabama . . . . .		16	15	9	9	10
Arkansas . . . . .		6	6	4	8	8
Kentucky . . . . .		15	14	18	18	14
Louisiana . . . . .		11	12	7	9	5
Mississippi . . . . .		3	4	7	8	6
Tennessee . . . . .		9	13	14	18	20
Texas . . . . .		45	42	35	33	35
<i>North Central</i> . . . . .	Total	365	375	403	377	363
Illinois . . . . .		111	115	121	103	106
Indiana . . . . .		15	12	22	23	19
Iowa . . . . .		7	9	14	5	5
Kansas . . . . .		10	8	7	7	13
Michigan . . . . .		39	44	45	47	39
Minnesota . . . . .		11	14	18	10	20
Missouri . . . . .		40	50	41	44	39
Nebraska . . . . .		8	9	13	9	10
North Dakota . . . . .		2	2	1	4	5
Ohio . . . . .		105	96	99	99	90
South Dakota . . . . .		—	2	3	3	3
Wisconsin . . . . .		17	14	19	23	14
<i>Western</i> . . . . .	Total	155	153	154	145	136
Arizona . . . . .		2	6	6	—	3
California . . . . .		49	42	44	45	42
Colorado . . . . .		28	28	26	22	19
Idaho . . . . .		3	1	—	1	1
Montana . . . . .		12	11	6	8	7
Nevada . . . . .		3	2	1	—	1
New Mexico . . . . .		4	7	6	3	4
Oklahoma . . . . .		13	9	19	19	11
Oregon . . . . .		11	12	12	15	16
Utah . . . . .		6	11	10	7	4
Washington . . . . .		21	22	21	23	27
Wyoming . . . . .		3	2	3	2	1
<i>Territories and Dependencies</i> . . . . .	Total	10	14	11	12	13
Alaska . . . . .		—	—	—	1	—
Canal Zone . . . . .		1	1	1	1	1
Hawaii . . . . .		4	4	5	4	5
Puerto Rico . . . . .		5	9	5	6	7
<b>Total for United States</b> . . . . .		<b>2,862</b>	<b>2,883</b>	<b>2,914</b>	<b>2,860</b>	<b>2,870</b>

(Continued on page 65)

TABLE 6 — (Continued)

FOREIGN COUNTRIES	1938	1939	1940	1941	1942
Total . . . . .	231	217	224	195	178
Argentina . . . . .	5	5	6	4	7
Australia . . . . .	1	1	1	1	—
Austria . . . . .	1	—	—	—	—
Bahamas . . . . .	—	—	—	—	1
Barbados . . . . .	—	—	2	—	—
Belgium . . . . .	2	4	2	—	2
Bolivia . . . . .	—	—	1	—	2
Brazil . . . . .	1	11	11	14	13
British West Indies . . . . .	3	3	1	2	1
Canada . . . . .	52	47	37	24	21
Chile . . . . .	—	1	3	—	3
China . . . . .	37	29	26	37	31
Colombia . . . . .	6	6	6	6	4
Cuba . . . . .	10	11	13	15	15
Czechoslovakia . . . . .	1	1	1	—	—
Denmark . . . . .	1	2	1	1	—
Dominican Republic . . . . .	1	1	1	1	1
Dutch West Indies . . . . .	1	—	—	—	—
Ecuador . . . . .	—	—	—	1	1
Egypt . . . . .	—	—	1	—	—
England . . . . .	11	4	2	1	—
Finland . . . . .	—	—	—	1	1
France . . . . .	5	6	2	2	—
Germany . . . . .	4	4	2	1	—
Greece . . . . .	—	—	2	1	1
Guatemala . . . . .	—	1	2	2	4
Haiti . . . . .	1	1	2	—	—
Honduras . . . . .	2	2	2	2	1
Iceland . . . . .	—	—	1	—	1
India . . . . .	10	4	14	11	7
Iraq . . . . .	—	—	—	1	1
Ireland . . . . .	1	—	—	—	—
Italy . . . . .	4	4	3	1	—
Japan . . . . .	1	1	2	—	—
Mexico . . . . .	7	8	1	9	12
Netherlands . . . . .	5	7	1	1	—
Newfoundland . . . . .	1	—	—	—	—
New Zealand . . . . .	—	1	1	—	—
Nicaragua . . . . .	—	—	—	—	1
Norway . . . . .	3	7	7	4	—
Palestine . . . . .	—	—	1	—	—
Panama . . . . .	1	—	—	—	—
Paraguay . . . . .	1	—	—	—	—
Peru . . . . .	2	1	5	6	7
Philippines . . . . .	14	10	18	11	5
Poland . . . . .	2	1	—	—	—
Portugal . . . . .	—	—	1	2	1
Rhodesia . . . . .	—	—	1	1	—
Roumania . . . . .	—	1	2	2	—
Salvador . . . . .	2	—	1	1	1
Scotland . . . . .	1	1	—	—	—
South Africa . . . . .	1	—	—	—	1
Spain . . . . .	1	1	1	—	—
Straits Settlements . . . . .	—	1	1	1	1
Sweden . . . . .	2	1	1	—	—
Switzerland . . . . .	4	5	4	1	2
Syria . . . . .	1	1	1	1	—
Thailand . . . . .	8	8	6	4	—
Turkey . . . . .	8	9	12	16	17
Union of South Africa . . . . .	3	1	1	1	1
Union of Socialistic Soviet Republics . . . . .	3	2	—	—	—
Uruguay . . . . .	—	—	—	2	5
Venezuela . . . . .	1	2	4	4	8
Grand Total, United States and Foreign . . . . .	3,093	3,100	3,138	3,055	3,048

TABLE 7. NEW STUDENTS ENTERING FROM OTHER COLLEGES AS CANDIDATES FOR DEGREES

Class Joined at the Institute	Years Spent at College				Total
	One	Two	Three	Four or more	
First Year . . . . .	25	5	1	—	31
Second Year . . . . .	20	36	2	6	64
Third Year . . . . .	—	13	28	43	84
Fourth Year . . . . .	—	—	2	1	3
Graduate Year . . . . .	—	—	8	136	144
Total . . . . .	45	54	41	186	326

**TABLE 8**  
**WOMEN STUDENTS CLASSIFIED BY COURSES AND YEARS**

COURSE	YEAR					Total
	1	2	3	4	G	
II Mechanical Engineering . . . . .	—	—	—	2	—	2
III Metallurgy . . . . .	—	—	—	—	1	1
IV Architecture . . . . .	5	2	3	4	2	16
Fifth Year . . . . .	—	—	—	1	—	1
V Chemistry . . . . .	—	1	2	—	5	8
VI Electrical Engineering . . . . .	—	1	—	—	2	3
VII Biology and Biological Engineering . . . . .	—	1	1	—	4	6
VII-T Public Health . . . . .	—	—	—	1	18	19
VIII Physics . . . . .	—	—	1	—	—	1
IX-A General Science . . . . .	—	—	1	—	—	1
X Chemical Engineering . . . . .	—	1	—	—	1	2
XIV Meteorology . . . . .	—	—	—	—	1	1
XV Business and Engineering Administration . . . . .	—	—	1	—	—	1
XVIII Mathematics . . . . .	—	1	—	—	—	1
Unclassified . . . . .	—	1	1	—	—	2
First Year (not including Course IV) . . . . .	8	—	—	—	—	8
<b>Total . . . . .</b>	<b>13</b>	<b>8</b>	<b>10</b>	<b>8*</b>	<b>34</b>	<b>73</b>

\* This total includes Fifth Year in Architecture.

**TABLE 9**  
**OLD AND NEW STUDENTS**

Year	1937-38	1938-39	1939-40	1940-41	1941-42	1942-43
Students registered at end of last academic year (including specials) . . . . .	1,843	1,955	1,985	1,973	1,897	1,936
Students who have previously at- tended the Institute, but were not registered at end of last ac- ademic year (including specials)	124	96	100	127	77	84
New students who entered by ex- amination . . . . .	162	213	198	229	318	212
New students who entered with- out examination . . . . .	377	399	338	303	264	462
New students who entered from other colleges as candidates for degrees . . . . .	395	379	419	404	367	326
New students (specials, not candi- dates for degrees) . . . . .	65	51	60	102	132	28
<b>Total . . . . .</b>	<b>2,966</b>	<b>3,093</b>	<b>3,100</b>	<b>3,138</b>	<b>3,055</b>	<b>3,048</b>

TABLE 10. LIST OF AMERICAN COLLEGES AND UNIVERSITIES WITH NUMBER OF GRADUATES ATTENDING THE INSTITUTE

College	College	College
Adelphi College . . . . . 1	Marietta College . . . . . 2	University of Akron . . . . . 2
A. & M. College of Texas . . . 1	Mass. Inst. of Tech. . . . . 121	University of Alabama . . . . . 3
Alabama Polytech. Inst. . . . . 2	Mass. State College . . . . . 8	University of Arkansas . . . . . 2
Amherst College . . . . . 9	Miami University . . . . . 3	University of Buffalo . . . . . 2
Augustana College & Theol. Seminary . . . . . 1	Mich. State Normal Coll. . . . 1	University of California . . . . . 8
Baldwin-Wallace College . . . . 1	Middlebury College . . . . . 4	University of Chicago . . . . . 1
Bates College . . . . . 1	Missouri State Teachers College, S. E. . . . . 1	University of Cincinnati . . . . . 5
Beloit College . . . . . 1	Montana School of Mines . . . . 2	University of Colorado . . . . . 3
Berea College . . . . . 2	Montana State College . . . . . 2	University of Denver . . . . . 1
Bethany College . . . . . 4	Morehouse College . . . . . 1	University of Florida . . . . . 1
Birmingham-Southern Coll. . . . 4	Mt. Holyoke College . . . . . 4	University of Georgia . . . . . 1
Boston College . . . . . 8	Murray State Teachers Coll. . . . 1	University of Illinois . . . . . 4
Boston University . . . . . 5	N. Y. State College for Teachers . . . . . 1	University of Kansas . . . . . 5
Bowdoin College . . . . . 3	New York University . . . . . 3	University of Kentucky . . . . . 3
Bridgewater State Teachers College . . . . . 2	North Central College . . . . . 1	University of Maine . . . . . 1
Brigham Young University . . . . . 1	N. D. State Teachers College (Valley City) . . . . . 1	Univ. of Memphis Law Sch. . . . . 1
Brooklyn College . . . . . 3	Northeast Missouri State Teachers College . . . . . 1	University of Michigan . . . . . 2
Brown University . . . . . 8	Northeastern University . . . . . 7	University of Minnesota . . . . . 5
Bryn Mawr College . . . . . 1	Northwestern University . . . . . 3	University of Missouri . . . . . 3
California Inst. of Tech. . . . . 4	Oberlin College . . . . . 2	University of Nebraska . . . . . 3
Carleton College . . . . . 3	Ohio Northern University . . . . . 1	Univ. of New Hampshire . . . . . 5
Carnegie Inst. of Tech. . . . . 2	Ohio State University . . . . . 6	University of New Mexico . . . . . 1
Case School of App. Science . . . . . 1	Ohio Wesleyan University . . . . . 1	Univ. of North Carolina . . . . . 2
Catawba College . . . . . 1	Oklahoma A. & M. College . . . . 1	Univ. of North Dakota . . . . . 1
Clark University . . . . . 4	Pennsylvania State College . . . . 2	University of Notre Dame . . . . . 2
Colby College . . . . . 5	Penn State Teachers College (Mansfield) . . . . . 1	University of Oklahoma . . . . . 1
Colgate University . . . . . 2	Pomona College . . . . . 2	University of Pennsylvania . . . . . 3
College of Charleston . . . . . 1	Princeton University . . . . . 8	University of Pittsburgh . . . . . 2
College of the City of N. Y. . . . . 3	Providence College . . . . . 1	University of Redlands . . . . . 1
College of William & Mary . . . . 3	Purdue University . . . . . 4	University of Rochester . . . . . 3
College of Wooster . . . . . 3	Reed College . . . . . 4	University of Scranton . . . . . 1
Colorado College . . . . . 4	Rensselaer Poly. Inst. . . . . 4	University of Tennessee . . . . . 2
Colorado School of Mines . . . . . 3	R. I. College of Education . . . . . 1	University of Texas . . . . . 4
Columbia University (N.Y.) . . . . 7	Rhode Island State College . . . . 3	University of Utah . . . . . 2
Cornell University . . . . . 16	Rice Institute . . . . . 1	University of Vermont . . . . . 3
Dartmouth College . . . . . 3	Ripon College . . . . . 1	University of Virginia . . . . . 1
Denison University . . . . . 1	Rockhurst College . . . . . 1	University of Washington . . . . . 7
DePauw University . . . . . 2	Rutgers University . . . . . 1	University of Wisconsin . . . . . 3
Dickinson College . . . . . 1	St. Joseph's College . . . . . 1	University of Wyoming . . . . . 1
Drexel Institute . . . . . 2	St. Lawrence University . . . . . 4	Ursinus College . . . . . 1
Duke University . . . . . 2	St. Vincent College . . . . . 1	Vassar College . . . . . 1
Elmira College . . . . . 1	Simmons College . . . . . 2	Villanova College . . . . . 1
Emmanuel College . . . . . 3	Smith College . . . . . 1	Virginia Union University . . . . . 2
Emory University . . . . . 2	S. D. State School of Mines . . . . 1	Virginia Polytechnic Inst. . . . . 2
Georgetown University . . . . . 1	Southwestern . . . . . 2	Wagner Memorial Lutheran College . . . . . 1
George Washington Univ. . . . . 1	Stanford University . . . . . 4	Wake Forest College . . . . . 1
Georgia School of Tech. . . . . 2	State College of Washington . . . . 2	Washington and Jefferson College . . . . . 4
Grinnell College . . . . . 1	Syracuse University . . . . . 3	Washington and Lee Univ. . . . . 2
Hampton Institute . . . . . 1	Teachers College of the City of Boston . . . . . 3	Waynesburg College . . . . . 1
Harvard University . . . . . 19	Temple University . . . . . 2	Wellesley College . . . . . 5
Howard University . . . . . 1	Tenn. State Teachers College (Memphis) . . . . . 1	Wesleyan University . . . . . 1
Illinois Inst. of Tech. . . . . 1	Texas Technical College . . . . . 1	Western Reserve Univ. . . . . 1
Iowa State College of A. & M. A. . . . 4	Trinity College (Hartford, Connecticut) . . . . . 1	Western State Normal School (Maine) . . . . . 1
Iowa Wesleyan College . . . . . 1	Trinity College (Washington, D. C.) . . . . . 3	W. Virginia Wesleyan Coll. . . . . 1
Jamestown College . . . . . 1	Tri-State College . . . . . 1	William Jewell College . . . . . 2
Juniata College . . . . . 1	Tufts College . . . . . 6	Williams College . . . . . 7
Kansas State College of A. & S. . . . . 1	Tulane Univ. of Louisiana . . . . . 2	Woodstock College . . . . . 1
Kenyon College . . . . . 4	Union College (N. Y.) . . . . . 2	Worcester Polytech. Inst. . . . . 3
Knox College . . . . . 2	U. S. Coast Guard Academy . . . . 10	Yale University . . . . . 11
Lehigh University . . . . . 4	U. S. Military Academy . . . . . 1	
Linfield College . . . . . 1	U. S. Naval Academy . . . . . 64	
Louisiana State Univ. & Agric. & Mech. College . . . . . 1		Total . . . . . 666
Lowell Textile Institute . . . . . 2		Number of American Colleges Represented . . . . . 185
Loyola University . . . . . 1		Number of Foreign Coll. Represented (Not Listed) . . . . . 43
		Total . . . . . 228

TABLE II  
REGULAR STUDENTS FROM COLLEGES CLASSIFIED BY COURSES

COURSE	No Previous Degree			Graduates of Other Colleges					Graduates of M. I. T. Taking Graduate Work		Total
	Entered			September 1942		Previous Years		S.B. Degree April 1942	Other Graduates		
	Sept. 1942	Pre-vious Years	Total	Under-grad.	Grad.	Under-grad.	Grad.				
								Under-grad.	Grad.		
Aeronautical Engineering XVI	1	16	17	—	17	2	10	1	—	1	
Architecture IV, IV-B, IV-C	1	10	11	—	4	2	4	3	1	4	
Biology and Public Health VII, VII-A, VII-T	—	1	1	1	20	—	18	1	—	2	
Building Engineering and Construction XVII	9	21	30	—	1	2	—	—	—	—	
Business and Engineering Administration XV	23	17	40	2	20	2	38	11	2	13	
Chemical Engineering X, X-A, X-B, X-C	1	7	8	—	14	1	25	4	8	12	
Chemistry V	—	—	—	—	—	—	—	—	—	—	
Civil Engineering I	2	12	14	1	10	—	6	1	1	2	
Electrical Engineering VI, VI-A	21	24	45	1	14	9	16	17	3	20	
General Engineering IX-B	—	9	9	—	—	1	—	—	—	—	
General Science IX-A	—	2	2	—	3	—	—	—	2	2	
Geology XII	—	—	—	—	—	—	3	—	—	—	
Industrial Economics	—	—	—	—	9	—	6	—	—	—	
Mathematics XVIII	—	1	1	—	2	—	3	1	—	2	
Mechanical Engineering II, II-A	14	30	44	3	9	6	14	17	6	23	
Metallurgy III	3	2	5	1	6	—	12	2	3	5	
Meteorology XIV	—	—	—	—	—	—	13	1	—	1	
Naval Architecture XIII, XIII-C	7	12	19	—	—	1	—	—	—	—	
Naval Engineering (in Naval Arch. Department)	—	—	—	—	7	17	18	—	—	—	
Naval Construction and Engineering XIII-A	6	8	14	—	27	8	19	—	8	10	
Physics VIII	—	1	1	—	—	—	1	—	—	—	
Sanitary Engineering XI	—	1	1	—	—	—	—	—	—	—	
Unclassified	20	2	22	6	—	—	—	—	—	—	
First Year	31	—	31	—	—	—	—	—	—	—	
Total	140	175	315	42	144	44	206	61	36	97	



TABLE 13 DEGREES OF BACHELOR OF SCIENCE ACCORDING TO CLASS IN WHICH THEY WERE AWARDED

Class	Aeronautical Eng.	Architectural Eng.	Architecture	Biology or Natural Hist. (Inc. VII-A)	Bldg. Eng. & Constr.	Business and Eng. Admin.	Chemical Eng.	Chemical Eng. Practice X-B	Chemistry	Civil Engineering	Electrical Eng. (Inc. VI-A)	Electrochemical Engineering*	General Eng.	General Science or General Course	Geology	Mathematics	Mechanical Eng. (Inc. II-A)	Metallurgy**	Military Eng.	Mining Eng. and Metallurgy	Naval Arch.	Physics	Sanitary Eng.	Total	Total by Decades	
1865										9							1							14	14	
1866										2							1								10	24
1870										4							2								17	41
1871										8							4								26	67
1872										3							2								18	85
1873										12							1								18	103
1874										10							1								26	129
1875										10							2								18	147
1876										12							4								32	179
1877										8							2								19	198
1878										9							8								23	221
1879										3							2								23	244
1880										3							2								8	252
1881										3							5								8	260
1882										3							2								24	284
1883										3							3								24	308
1884										3							7								36	344
1885										5							9								28	372
1886										4							4								28	399
1887										6							7								56	455
1888										10							8								58	513
1889										11							17								77	590
1890										14							25								75	665
1891										18							28								103	768
1892										25							36								133	901
1893										22							30								129	1030
1894										25							41								133	1163
1895										21							33								138	1301
1896										26							48								146	1447
1897										17							26								179	1626
1898										20							44								191	1817
1899										33							33								199	2016
1900										32							41								217	2233
1901										30							37								176	2409
1902										29							41								185	2594
1903										16							39								165	2759
1904										32							34								200	2959
1905										37							39								240	3200
1906										36							39								232	3432
1907										26							46								278	3710
1908										15							34								244	3954
1909										21							46								282	4236
1910										47							37								320	4556
1911										38							52								230	4786
1912										48							62								223	5009
1913										51							41								212	5221
1914										57							57								251	5472
1915																									3	5475

(Continued on page 71)



TABLE 13 — (Continued)  
DEGREES OF BACHELOR OF SCIENCE ACCORDING TO CLASS IN WHICH THEY WERE AWARDED

Class	Aeronautical Eng.	Architectural Eng.†	Architecture	Biology or Natural Hist. (Inc. VII-A)	Bldg. Eng. & Constr.	Business and Eng. Adm.	Chemical Eng.	Chemical Eng. Practice X-B	Chemistry	Civil Engineering	Electrical Eng. (Inc. VI-A)	Electrochemical Engineering*	General Eng.	General Science or General Course	Geology	Mathematics	Mechanical Eng. (Inc. II-A)	Metallurgy**	Military Eng.	Mining Eng. and Metallurgy	Naval Arch.	Physics	Sanitary Eng.	Total	Total by Decades
1911			10	1			19		12	40	49	5		2			49			17	9	1	15	232	
1912			21	4		31	30		12	55	52	3					47			21	3	2	14	261	
1913			19	3		37	58		17	58	43	8					50			20	4	1	15	269	
1914			19	3		33	9		23	60	51	8					65			17	8	1	19	304	
1915			30	3		33	49		9	49	42	10		3			69			5	5	3	18	289	
1916			37	5		32	11		13	45	56	14		5			84			14	9	3	18	321	
1917			27	10		37	43		13	49	45	10		5			63			10	14	5	17	345	
1918			28	7		29	40		8	45	50	11		2			75			4	7	3	9	344	
1919			16	9		48	63		4	45	50	6		3			66			7	7	4	9	399	
1920			19	2		70	92		9	52	30	9		1			55			13	12	2	2	319	
1921			11	3		126	98		9	98	75	15		3			128			24	18	1	3	505	
1922			32	3		115	73		16	64	78	25		1			106			27	16	8	7	637	
1923			18	0		82	57		13	69	125	17		2			82			23	13	6	3	608	
1924			15	0		94	53		8	57	110	9		3			98			19	11	3	1	557	
1925			6	2		95	45		13	76	108	14		2			76			20	14	1	2	501	
1926			9	2		89	39		19	70	121	8		4			72			1	9	4	3	514	
1927			15	9		73	38		13	73	114	11		2			67			11	5	4	3	471	
1928			8	19		69	37		11	59	84	10		1			64			12	3	4	5	483	
1929			29	25		23	59		18	40	76	8		2			48			6	6	11	4	459	
1930			29	15		15	39		12	49	83	6		5			70			12	13	7	2	496	
1931			39	10		15	68		10	12	49	8		3			68			21	16	21	4	505	
1932			27	16		15	18		7	38	74	4		2			86			14	13	14	2	471	
1933			27	9		13	56		15	35	86	8		7			80			26	25	28	5	496	
1934			26	10		16	74		15	47	86	7		8			50			14	14	19	1	401	
1935			27	8		18	8		5	18	57	8		1			45			14	14	19	1	401	
1936			27	3		13	12		6	23	68	5		2			47			19	18	11	2	410	
1937			30	3		9	4		13	15	67	5		4			46			19	19	17	1	380	
1938			25	3		11	4		14	22	62	4		6			10			5	23	14	1	399	
1939			30	2		6	7		53	25	67	7		13			2			9	23	17	1	453	
1940			29	6		12	9		23	14	73	2		5			7			7	18	22	2	504	
1941			36	7		6	7		22	22	79	2		8			6			20	24	23	1	501	
1942			39	5		7	59		8	16	66	6		6			90			22	22	29	5	531	
1943			37	5		49	48		7	21	66	6		11			78			—	33	14	1	448	
Total	467	172	865	333	146	1,824	1,753	212	915	2,337	3,154	391	513	242	90	83	3,304	1,134	5	880	598	356	262	18,946	

\* 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 May degrees awarded in Class 1943.

TABLE 14  
DEGREES OF MASTER OF SCIENCE AWARDED

	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	
1887																										1
1888																										1
1889																										1
1890																										1
1891																										1
1892																										1
1893																										1
1894																										1
1895																										3
1896																										3
1897																										4
1898																										5
1899																										3
1900																										4
1901																										8
1902																										8
1903																										7
1904																										12
1905																										18
1906																										9
1907																										15
1908																										12
1909																										17
1910																										19
1911																										20
1912																										20
1913																										19
1914																										25
1915																										27
1916																										35
1917																										30
1918																										15
1919																										15
1920																										50
1921																										17
1922																										126
1923																										170
1924																										146
1925																										142
1926																										123
1927																										142
1928																										161
1929																										169
1930																										196
1931																										189
1932																										237
1933																										182
1934																										186
1935																										173
1936																										151
1937																										186
1938																										221
1939																										232
1940																										267
1941																										259
1942																										173
1943																										139
<b>Total</b>	195	84	36	92	4	278	616	125	287	16	1,066	48	23	39	377	62	69	42	321	5	69	26	610	4,490		

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  
4,616

\* Includes only May degrees.

TABLE 15  
DEGREES AWARDED IN ARCHITECTURE AND CITY PLANNING

Year	Bachelor in Architecture	Bachelor of Architecture in City Planning	Master in Architecture	Master in City Planning
1921 . . . . .	—	—	3	—
1922 . . . . .	—	—	2	—
1923 . . . . .	—	—	7	—
1924 . . . . .	—	—	8	—
1925 . . . . .	—	—	5	—
1926 . . . . .	—	—	9	—
1927 . . . . .	—	—	7	—
1928 . . . . .	—	—	6	—
1929 . . . . .	—	—	9	—
1930 . . . . .	—	—	7	—
1931 . . . . .	—	—	9	—
1932 . . . . .	11	—	5	—
1933 . . . . .	24	—	7	—
1934 . . . . .	27	—	—	—
1935 . . . . .	17	4	11	—
1936 . . . . .	14	4	4	2
1937 . . . . .	9	2	11	3
1938 . . . . .	19	1	3	3
1939 . . . . .	14	1	10	3
1940 . . . . .	11	2	21	7
1941 . . . . .	17	2	6	1
1942 . . . . .	15	1	4	4
*1943 . . . . .	10	—	—	2
Total . . . . .	188	17	154	25

\* Includes only February and May degrees.

TABLE 16  
DEGREES OF MASTER IN PUBLIC HEALTH AWARDED

Year	Number
1941	3
1942	11
*1943	9
Total	23

\* Includes only May degrees.

TABLE 17  
DEGREES OF DOCTOR OF PHILOSOPHY AWARDED

Year	Biology	Chemistry	Geology	Mathematics	Physics	Total
1907 . . . . .	—	3	—	—	—	3
1908 . . . . .	—	3	—	—	—	3
1909 . . . . .	—	—	—	—	—	—
1910 . . . . .	—	1	1	—	—	2
1911 . . . . .	1	—	—	—	—	1
1912 . . . . .	—	3	3	—	—	6
1913 . . . . .	—	1	—	—	—	1
1914 . . . . .	—	2	—	—	—	2
1915 . . . . .	—	2	—	—	—	2
1916 . . . . .	—	1	1	—	1	3
1917 . . . . .	—	3	1	—	—	4
1918 . . . . .	—	3	1	—	—	4
1919 . . . . .	—	—	—	—	1	1
1920 . . . . .	—	4	1	—	—	5
1921 . . . . .	1	3	—	—	3	7
1922 . . . . .	—	4	1	—	—	5
1923 . . . . .	—	5	1	—	—	6
1924 . . . . .	2	10	—	—	2	14
1925 . . . . .	—	11	—	—	—	11
1926 . . . . .	—	2	2	—	—	4
1927 . . . . .	2	6	1	1	1	11
1928 . . . . .	1	5	1	1	—	8
1929 . . . . .	4	8	2	1	—	15
1930 . . . . .	—	5	2	3	—	10
1931 . . . . .	—	9	—	1	—	10
1932 . . . . .	1	12	—	1	2	16
1933 . . . . .	2	10	3	3	—	18
1934 . . . . .	2	10	2	2	1	17
1935 . . . . .	4	15	2	3	7	31
1936 . . . . .	—	15	—	3	12	30
1937 . . . . .	2	11	4	1	10	28
1938 . . . . .	2	12	2	4	7	27
1939 . . . . .	1	33	4	3	4	45
1940 . . . . .	3	19	5	4	5	36
1941 . . . . .	1	18	1	3	5	28
1942 . . . . .	1	19	5	1	8	34
*1943 . . . . .	2	4	2	2	6	16
Total . . .	32	272	48	37	75	464

\* Includes only May degrees.

TABLE 18. DEGREES OF DOCTOR OF SCIENCE AWARDED

Year	Aero. Eng.	Ceramics	Chem. Eng.	Chem.istry	Civil Eng.	Elec. Eng.	Electro-chem. Eng.	Geology	Mathematics	Mech. Eng.	Metal-lurgy	Meteor-ology	Min. Eng.	Naval Arch.	Petro-ium Eng.	Physics	San. Eng.	Total
1911						1												1
1912																		
1913																		
1914																		1
1915						1												1
1916						1												1
1917																		1
1918																		1
1919																		1
1920	1							1					1					3
1921																		3
1922	1			1		1		1										5
1923	1					1		1			1					2		6
1924			2			1		1			3					1		7
1925	1		3	1							4							9
1926			1	1					1	1	2					1		6
1927						1					1							10
1928	1		5		1	2					1			1				6
1929			3						1	3	1							20
1930			9			6			1		1							9
1931			3	2		3				2	1					2		14
1932			5		1	2		1			6							24
1933			10	1	2	3		1	1	3	2	1	1					13
1934			3			2	1		2		1					1	1	14
1935			2	1		4				2	3							24
1936	2	1	12			1										1		23
1937	1	1	9	1	1	6				2					1			38
1938			12		2	7		1		2	5	3				5		26
1939	2	1	10		3	1					4	1	1			3	1	29
1940		2	12		3	1		1		2	2	2	1			4	1	41
1941	1	1	15	3		3				3	8	3				3		26
1942	1	2	14		2	1				1	3	1				2		13
*1943		2	5			1					3					2		
Total	13	12	135	10	16	49	2	7	5	21	53	10	5	1	1	30	3	373

\* Includes only May degrees.

TABLE 19

## DEGREES OF DOCTOR OF PUBLIC HEALTH AWARDED

Year	Number
1924	I
1927	I
1928	I
1930	I
1939	I
1942	I
<hr/> Total	<hr/> 6

TABLE 20

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

Year	Electrical Engineering	Electrochemical Engineering	Total
1910	I	—	I
1914	I	—	I
1916	I	—	I
1917	—	I	I
<hr/> Total	<hr/> 3	<hr/> I	<hr/> 4

TABLE 21

## SUMMARY OF DEGREES AWARDED (1868-1943)

Bachelor of Science . . . . .	18,946
Bachelor in Architecture . . . . .	188
Bachelor of Architecture in City Planning . . . . .	17
Master of Science . . . . .	4,616
Master in Architecture . . . . .	154
Master in City Planning . . . . .	25
Master in Public Health . . . . .	23
Doctor of Philosophy . . . . .	464
Doctor of Science . . . . .	373
Doctor of Public Health . . . . .	6
Doctor of Engineering ( <i>Discontinued after 1918</i> ) . . . . .	4
<hr/> Grand Total . . . . .	<hr/> 24,816

## DIRECTOR OF ADMISSIONS

During the year, 2,059 applications were received for admission to the civilian First Year Class (which entered on June 28, 1943), as compared with 2,080 in 1942. Notices of admission were sent to 922 of these applicants, of whom 583 were actually registered on the third day of the term, as compared with 731 in September, 1942. This exceptionally heavy shrinkage between admission and actual registration was due to the operation of the Selective Service Act, and to the fact that a considerable number of accepted civilian applicants were subsequently selected by the Navy for assignment to V-12 Navy college training units here or elsewhere.

The admission of the entering class in June instead of September resulted in a corresponding reduction in the age composition of the class, which was further accentuated by the withdrawals into military service of most of those above eighteen, leaving only 80 entrants of this age or over at the opening of the term. The high degree of geographical diversification characteristic of the entering classes in recent years continues to prevail.

The policy of careful selection of the entering class has been maintained, and no relaxation of academic standards of admission has taken place. The corps of Honorary Secretaries has continued its work of contact and conferences with prospective students, and has provided indispensable aid in fulfilling the policy of selective admission. The fact that twenty Honorary Secretaries are at present temporarily inactive, in most cases because of war work, together with current transportation difficulties, increased somewhat the number of candidates with whom no personal conference could be arranged. Despite these obstacles, conferences were held with 96 per cent of the entering group, either at the Institute or by Honorary Secretaries elsewhere.

Contact with secondary schools and alumni groups was maintained, though on a somewhat reduced scale. It was found that under the uncertainties of war conditions, schools were unusually eager for information on the Institute's activities as these related to the plans of students contemplating entrance,

and welcomed both personal visits and such announcements as were issued during the year.

As was to be expected, the number of college transfers, which had remained at a normal level through 1942, dropped sharply. Only 46 civilian undergraduate transfers entered in June, 1943, as compared with 158 in September, 1942. Entrants under the Special Coöperative Plan with liberal arts colleges dropped from 23 in 1942 to five in 1943.

B. A. THRESHER.

#### LIBRARIAN

The Institute Library now contains 371,270 volumes, as nearly as can be estimated pending a thoroughgoing inventory.

During the year just closed the home use of books declined steadily in all the libraries, except Walker Memorial and Aeronautics, to a total of 87,080 (Central 30,207, science and engineering branches 29,068, Walker Memorial 27,805). This trend, which began in 1940-41, would give us more concern were it not clearly a direct result of war conditions and common to most if not all college and reference libraries. There is reason to believe that after the war the trend will reverse itself and the curve of home use rise to a higher point than ever before.

However, circulation figures are proverbially inadequate to tell the whole story of a library's use. For, running counter to the decline, which was principally in student use, there was a decided increase in the use of the libraries in connection with war research, both by Institute men (including regular and special personnel) and by the representatives of firms and government agencies.

The extent of this service is well shown in the report of the Reference Librarian, who lent to 57 business firms 1,539 volumes, and to 56 college, university, government and institutional libraries, 754 more, a total of 2,293. Over 1,000 of these books were supplied by the branch libraries. The heaviest borrowing was by Arthur D. Little, Inc., Watertown Arsenal, the Boston Ordnance District, and the United Shoe Machinery Company.

For M. I. T. men 615 books, periodicals, and theses were obtained from other libraries. Photostat orders obtained rose to



a new high of 529, and microfilms to 156. We still depend mainly on the Harvard Photostat Department for this duplication work. Eventually the Library should have its own photo-duplication service. Even more remarkable was the increase in telephone requests to the Central Library Reference Department alone, from 3,783 to 4,756, an average of over fifteen per seven-hour day. Such requests often require much library research before they can be answered properly.

The growth in this department's work has fully justified the addition of an Associate Reference Librarian, to which position Margaret P. Hazen was appointed in December, 1942. Her work has included, in addition to sharing the duties of the Reference Librarian, the preparation of the following exhibits: Military Engineering Before 1850; M. I. T. in the First World War; Antoine Lavoisier; Roy F. Heinrich's Historical Pictures of Vermont; and Latin American Material Received by the Institute Library. She compiled the *List of Periodical Publications, Books, and Reviews by Members of the Staff* for the President's Report, responsibility for which was this year assumed by the Library for the first time, and prepared *A Brief Guide to the Institute Library*, a four-page leaflet, notebook size, especially for Army and Navy students and freshmen; this took the place of the usual Handbook, omitted this year.

The increase in reference service due to the war was equally notable in the work of the Vail Library staff, where inquiries increased ten per cent over last year. Vail service to the staffs of special war research laboratories and ESMWT training courses increased 100 per cent; to alumni and outside users, 15 and 16 per cent respectively. Many students in Army and Navy courses make considerable use of Vail Library resources on their own initiative. Service to special personnel connected with the war programs includes, however, much more than circulation and reference work; for example, much time is given to personal consultation and the orientation of newcomers. All together, service to special personnel accounts for over a third of Vail service and activity.

The Assistant to the Vail Librarian carried on, with the cooperation of the Electrical Engineering Department, an experimental six weeks' program of seminar instruction in

technical reading for the benefit of juniors in course 6.00, which was well attended. Both faculty and student interest indicate a demand for its renewal after the war.

The work of the Catalog Department was aided by the addition of a full-time trained cataloger and the Central card catalog was enlarged by a section of 108 trays, estimated to provide space for six or seven years' growth. No space remains for further expansion. 1,358 volumes were transferred in various directions between Central and the branches, a perennial task, the unfortunate but inevitable result of our branch library system.

With regard to our files of periodicals from Axis-occupied countries, we are already filling some of the gaps in the volumes of 1941, 1942, and 1943 through the aid of a national committee of librarians and the reprinting projects of the Alien Property Custodian. We have acquired in some cases original copies, in others A.P.C. reprints, and in others microfilm copies. In general, departmental advice has been sought as to how far we should go in taking the risk of duplicating issues presumably being stored for us abroad.

This year for the first time use was made of our rented space in the New England Deposit Library. 954 volumes of little-used books were sent there for storage.

With the aid of a special assistant, the large duplicate collection in the dome was overhauled and put in order under the direction of the Supervisor of the Stack. Sets of certain of the most-used periodicals were set aside as a Duplicate Reserve, and a beginning had been made on the sale of unwanted duplicates to other reference libraries when the curtailment of the budget due to the Army-Navy program made it necessary to dismiss the assistant and reduce this work to a minimum, using student labor.

In the Aeronautics Library, circulation rose and fell with the variations in methods of instruction of special training groups, such as the aviation cadets taking meteorology; the net result, however, was an increase of 14 per cent over last year. The branch now contains 9,223 volumes. A survey of the collection to determine weak spots was made by the branch librarian, and an appropriation of \$500 obtained from the

Library Growth Fund for building up the collection. Funds also were made available for a few hundred books and periodicals for the Sloan Automotive Laboratory, to be administered as a deposit from the Aeronautics Library.

At the Dewey Library the Engineering Librarian has continued the issuing of monthly lists of current literature and reviews of technical books, which have been mailed to over one hundred staff members and have rendered a real service. The Economics Librarian notes greatly increased use of the library by the same special personnel and outside groups mentioned above under the Central Library. Some courses still assign outside reading and their students often require assistance from both the Economics and the Engineering librarians.

The Eastman Librarian reports conditions similar to those in Central and Dewey libraries, namely, less circulation for home use but increased demand for service from war research personnel, alumni, industrial firms, etc. The number of individual users registered rose to 1,618, an increase of 7.8 per cent over the previous year. It is found that newcomers to the Institute require more help than the pre-war clientele. Two projects to which much time has been given are: the cataloging of microfilms of tables acquired for the use of computers and the collection and cataloging of department reprints. Miss Chamberlain continues to check periodicals for the Current Literature List of the *Review of Scientific Instruments*.

The use of the Lindgren Library has followed the same pattern as that of the other branches, with a slight increase in the circulation of books in metallurgy. Requests for service have come by telephone and by mail as well as over the desk. Interesting examples were several calls for lists of books suitable for a metallurgical library; of these one came from an alumnus at Oregon State College, one from the head of the department of metallurgy at the University of Buenos Aires, and one from a graduate student returning to Turkey to teach. Miss Bogart also prepared the indexes for Professor Wulff's book, *Powder Metallurgy*.

At Walker Library the regular librarian, Mrs. Emily Flint, was away on leave of absence and her place was acceptably filled by Miss Barbara Davis as Acting Librarian. The remark-

able increase in the use of this library is worthy of note, in view of the popular impression that engineering schools ignore the humanities. This activity has necessitated more student assistants for both day and evening service. From December through June the library was open on Sundays from one o'clock to six, but this service will be cancelled under the economy program for next year.

The Library Committee, consisting of Professor Penfield Roberts, Chairman, and Professors Huntress, Barrow, D. V. Brown, Weber, Shrock, and the Librarian ex officio, held two meetings. Upon its recommendation the Library Growth Fund, which has functioned successfully during its three-year trial period and now has a balance of over \$13,000, was renewed in November, 1942 for an indefinite term. The Committee endorsed the new library building project by adopting at its meeting of March 11, 1943 a strong and convincing "Statement on the Need for a New Library Building at M. I. T." for presentation to the Visiting Committee on the Library.

The Friends of the Library committee held a well-attended luncheon meeting on April 7 and *Footnotes* No. 5 was issued in the summer of 1943.

With deep regret I have to record the tragic deaths of two members of the Library staff and a student assistant. Miss Catherine L. Murphy, Circulation Assistant, and Raymond F. Sullivan of the Class of 1943, both valuable and highly regarded workers, perished in the Coconut Grove fire. Captain Charles R. Mills, U. S. A., M. I. T. '38, who as Assistant to the Vail Librarian had entered upon a promising career as a technical research librarian, was killed on active service in Sicily in July, 1943.

Three other recent members of the Institute Library staff are now in the armed forces: Joseph R. Coolidge, Jr., Charles Gilligan, and Harold F. Mercer.

The Staff Association held seven meetings, five of which were addressed respectively by Dr. Maria Telkes, Dr. George de Santillana, Miss Margaret Whitcomb, Miss Margaret Hazen, and Mrs. Helen Fowle.

Several members of the staff attended the meeting of the Engineering Librarians' Committee of S.P.E.E., New England

Section, at Wentworth Institute, in October, and the meeting of New England College Librarians at the Houghton Memorial Library, Harvard, in May.

Mrs. Lane continued to serve on the American Standards Association's committee on library standards and as chairman of the Engineering-Aeronautics section of the Science-Technology group of Special Libraries Association; she was also on the Engineering School Librarians' Committee of S.P.E.E. and chairman of the similar committee of the New England Section. Miss Hazen served on the S.L.A. committee on the Technical Books Exhibit at the Boston Book Fair.

Publications by members of the Library staff included: "Guide to the Literature of Ultra-high-frequency Techniques" contributed by Mrs. Lane to the work *Ultra-high-frequency Techniques* by Brainerd, Woodruff and others; "Technique of Technical Reading" by Margaret H. Lane, in *VI-A News*, July, 1942, and "An Engineering School Library in War Time" by Margaret P. Hazen, in the *Library Journal*, May 1, 1943.

Outstanding among the gifts of the year is a collection of 212 books in electrical engineering and physics from the library of the late Dr. A. E. Kennelly. Of these, 112 became part of the Vail Library.

Mr. Olaf Wenstrom, a mining engineer, presented to the Lindgren Library 149 books on geology, mining engineering, and metallurgy.

To Professor Norton A. Kent we are indebted for 140 volumes in physics; to Professor and Mrs. F. K. Morris for 40 volumes in German literature; to Professor C. S. Robinson for 55 publications of the American Geographical Society; to Professor C. E. Fuller for 28 books and pamphlets in mechanical engineering; and to Professor C. E. Locke for a number of early American textbooks.

The Mukluk Associates, a Technology group interested in the Far North, under the leadership of Professors A. V. de Forest and F. G. Fassett, presented twelve volumes on the Arctic to Walker Memorial Library as the nucleus of a special collection.

Among the gifts of individual volumes two are of particular interest because of their association with Technology presidents: a folio volume of the Royal Society of London, "The

Signatures in the First Journal-book and the Charter-book of the Royal Society, being a facsimile of the Signatures of the Founders, Patrons and Fellows of the Society from the year 1660 down to the present time," 1936, presented to Dr. Compton in London and by him given to us through the Friends of the Library; and the manuscript of former President Maclaurin's Yorke Prize Essay, presented by Professor W. Rupert Mac-laurin.

Unfortunately space is lacking to record the gifts of several professors and outside friends to whom we are indebted for copies of their own published works.

To those who are not intimately familiar with the work of the Institute Library, I should like to point out that its service is by no means limited to nearby communities. Requests for service come from alumni and others in industry, teaching and research, and from other libraries, in far-off cities and states and occasionally from foreign lands. Calls for bibliographical assistance or coöperative effort from government agencies engaged in collecting information for the armed forces, and from library associations and other organizations and institutions, are more numerous than ever. Thus no small part of the staff's time has to be devoted to what might be called extramural service.

W. N. SEAVER.

#### DIRECTOR OF DIVISION OF INDUSTRIAL COÖPERATION

The work of the Division of Industrial Coöperation has increased in both number of projects and dollar volume. Such detail as may be reported is covered in the Report of the President.

#### PLACEMENT OFFICER

*Alumni Placement.* Operations of the Alumni Placement Bureau have continued about as last year. We have had an increased number of industrial calls. A simplification in our placement procedure was introduced as a result of the organizing of the Officer Procurement Service by the Army and by the inclusion of the Institute as one of a group receiving employment bulletins from the Army and the Navy.

One interesting feature has been the increase in the number of requests for draft-exempt engineers available for

post-war planning. While it is recognized that, when the time comes, the solving of post-war problems will be one of the most important functions of engineers, there seem to be almost no men available for this type of work.

*Undergraduate Placement.* That wartime conditions continue is shown in placement with approximately 40 per cent of the Class of 1943 going into the Armed Forces and the remainder taking jobs in essential war industries. Also, compared to former years there were fewer advanced degree men available.

A placement survey combining the figures of the February and May groups taken shortly before the May graduation follows:

	<i>Individuals</i>	<i>Placed</i>	<i>Per Cent Placed</i>		
			<i>1943</i>	<i>1942</i>	<i>1941</i>
Bachelors.....	410	404	98.5	96.5	93.9
Masters.....	150	145	96.7	98.0	96.8
Doctors.....	29	28	96.6	91.9	95.8
C.P.H.....	10	9	90.0		
	599	586	97.9	96.7	94.5

The following table indicates the various fields represented by the employed men:

	<i>No. of Men</i>
Army.....	140
Navy.....	111
Marines.....	4
Aircraft.....	52
War Research.....	51
Federal and State Governments.....	26
Chemical Manufacture.....	25
Teaching.....	22
Electrical Equipment.....	20
Further Study.....	16
Petroleum.....	14
Rubber Industries.....	13
Mechanical Equipment.....	12
Shipbuilding.....	11
Tools and Instruments.....	11
Metals.....	10
Automotive Firms.....	3
Nine Other Fields.....	11

The dispersion of employed men by companies follows:

	<i>No. of Men</i>
United States Army.....	140
United States Navy.....	111
United States Marines.....	4
M. I. T. (Research and Teaching).....	66
Federal and State Governments.....	26
1 company.....	14
1 company.....	7
3 companies.....	5 men each
5 companies.....	4 men each
8 companies.....	3 men each
17 companies.....	2 men each
62 companies.....	1 man each

*Summer Undergraduate Employment.* As the whole school was in attendance during the summer there was no summer placement program.

N. McL. SAGE.

#### THE PERSONNEL OFFICER

Beginning in mid-February, all non-staff employees of the Institute were classified according to the type of work they were doing. Subsequently a study of the wage rates was made, with a view toward coordinating the rates and establishing maximum rates for all classes of non-staff, in compliance with War Labor Board regulations. The study included all non-staff of the regular Institute activities, the Chemical Warfare Service Laboratory, the Harbor Building group and those on all D.I.C. projects except for the Radiation Laboratory. Dr. J. A. Beattie made a separate study of the Radiation group. Through the M. I. T. Wage Board, under the chairmanship of Mr. H. S. Ford, with representatives from Chemical Warfare Service, D.I.C. and Radiation, the policies and practices affecting the non-staff group have been studied and coordinated.

On July 1, 1943, the Personnel Office was opened officially for the purposes of: procuring applicants for available non-staff positions, taking care of all necessary details in connection with employment, setting the starting wage rate, conferring with department heads regarding salary increases, and finally main-



taining a file of personal history data on each employee. Beyond this, the Personnel Office will serve as liaison between the non-staff employees and the administration.

Under current conditions, the task of procuring applicants is a most difficult one. However, with the coöperation and patience of the staff, almost all of the requests for replacements and additions have been satisfied. The number of resignations, particularly from the regular Institute group, has been surprisingly small, considering the prevailing instability of the labor market in this area. While no statistics are readily available for previous years, it is doubtful whether the number of changes in personnel has been much greater than normal during the last few months.

R. M. KIMBALL.

#### MEDICAL DIRECTOR

During the past year the Medical Department has felt the pressure of war work. Increased numbers of patients together with the loss of staff members to the Armed Forces have created many problems.

From our Staff of Physicians we have lost Dr. John W. Chamberlain, Dr. Lancaster, Dr. Miller, Dr. Murray and Dr. Bailey (Dental). The scarcity of doctors has made replacements difficult, but the clinics have continued on full time.

45,172 visits were made to the Department during the year. This includes those seeking physical examinations, X-ray appointments, Navy men receiving typhoid inoculations, dental visits and students requesting excuses.

24,313 visits were made to Out Patient clinics.

Surgical cases.....	9,501
Medical cases.....	14,812

6,629 physical examinations were made compared with 3,727 last year — a notable increase of 2,902.

Students.....	4,170
Faculty.....	2
Employees.....	2,457

There were 154 cases of contagious diseases compared with 21 last year. The marked increase was due to 140 cases of German measles.

Chicken Pox . . . . .	1	Mumps . . . . .	2
Meningitis . . . . .	1	Scarlet Fever . . . . .	4
Measles . . . . .	6		

There were 1,758 X-rays taken this year.

Dental . . . . .	137
Routine Chests . . . . .	1,025
Miscellaneous . . . . .	596

The physical examinations revealed 859 defects, defective vision being the most common.

Abnormal Blood Pressure . . . . .	35	Diabetes . . . . .	3
Albuminuria . . . . .	24	Flat Feet . . . . .	17
Asthma . . . . .	18	Glycosuria . . . . .	5
Chronic Nephritis . . . . .	1	Hay Fever . . . . .	31
Color Blindness . . . . .	74	Herniae . . . . .	5
Defective Hearing . . . . .	5	Infantile (old) . . . . .	6
Defective Heart . . . . .	15	Paralysis Face . . . . .	1
Defective Vision . . . . .	541	Phlebitis . . . . .	1
Defective Posture . . . . .	3	Undescended Testicle . . . . .	13
Defective Speech . . . . .	2	Underweight . . . . .	5
Defective Thyroid . . . . .	2	Varicocele . . . . .	20
Deformities . . . . .	23	Pulmonary Observations . . . . .	9

Of the nine cases of pulmonary tuberculosis observations two of these were receiving pneumothorax treatments.

There were 4,276 visits made to the Dental Clinic, an increase of 1,253 over last year.

Dental Examinations . . . . .	1,431
Treatments . . . . .	2,349
Oral Prophylaxis . . . . .	496

These figures indicate the splendid growth and usefulness of this Department.

In the Psychiatric Clinic, Dr. Coon saw 167 cases, 6 additional cases among employees and 16 Infirmary visits, making a total of 189.

In the Pathological Laboratory 2,257 tests were made during the year compared to 930 last year, an increase of 1,327.

Blood Counts . . . . .	644
Serology Tests . . . . .	138
Urinalyses . . . . .	1,363

There were 779 bed patients treated in the Infirmary — 285 more than last year. The number of Out Patients treated were 1,617, an increase of 224 over last year. The total number of cases was 2,396, an increase of 509. The total number of days lost in the Infirmary was 3,226, an increase of 1,209 days.

The great number of “defective vision” found each year again emphasizes the need of an Eye Clinic as a part of our organization.

GEORGE W. MORSE, M.D.

CHAIRMAN OF COMMITTEE  
ON SPECIAL WAR TRAINING PROGRAMS

Although the Engineering, Science and Management War Training Program has been curtailed somewhat due to excessive pressure on the staff already heavily loaded with war work, together with the ever-increasing demand on class room and laboratory space, 58 courses were offered during the past year. Each of these courses was given at the request of several branches of the Army or Navy, Civil Service, and Industry. Sixty members of the instructing staff together with 46 instructors from outside the Institute participated in this program.

The enrollment was 4,144, more than double that of the previous year. This increase was due almost entirely to the expansion of programs designed to give special training to Army and Navy personnel, although courses in Aeronautics and Aircraft Engines for Naval Officers previously given under ESMWT are now being carried on under separate contract with the Institute. The number of Army and Navy personnel trained is 2,827 as compared with 680 last year. The number of civilians increased from 1,203 to 1,317.

During the year, a new series of courses in Fire Protection Engineering have been added at the request of the Office of the Provost Marshal General.

The following table shows the comparison of the number of courses, full time and part time, number enrolled and the distribution of Army and Navy personnel, and civilians for the three year period during which this program has been in operation:

<i>Period</i>	<i>February-October 1941</i>	<i>October 1941-42</i>	<i>October 1942-43</i>
Number full-time courses . . . . .	13	18	30
Number part-time courses . . . . .	14	32	28
Total number of courses . . . . .	27	50	58
Number of Army and Navy personnel . .	314	680	2,827
Number of civilian personnel . . . . .	615	1,203	1,317
Total number enrolled . . . . .	929	1,883	4,144

The chairman of this committee is serving on the Training Council War Manpower Commission, Region I; and also on the War Job Information Committee under the War Manpower Commission.

An appropriation of \$30,000,000 has been authorized for the continuation of the ESMWT Program for the coming fiscal year. This committee estimates that its program for the coming year will be of the same order of magnitude as the present one, but with additional emphasis on courses of importance to the armed forces.

During the past year 216 institutions participated in the ESMWT Program, offering 12,888 courses with an aggregate enrollment of 567,838. The cost of the entire program was \$24,445,120.

R. D. DOUGLASS.

#### DIRECTOR OF ALBERT FARWELL BEMIS FOUNDATION

In view of war demands on personnel, the Foundation has not attempted to continue normal operations during the war.

The Director is serving as Chief, Division 2, National Defense Research Committee, and as Executive Officer, Committee on Fortification Design, National Academy of Sciences. The Foundation's secretary has been released part time for work connected with the war effort.

During the year, the Foundation collaborated with the City Planning Division in an Urban Redevelopment Field Station set up at the Institute under the direction of Professor

Frederick J. Adams, Head of the City Planning Division, Philip H. Cornick, of the Institute of Public Administration, New York, and Edwin H. Spengler, Associate Professor of Economics at Brooklyn College and formerly consultant to the National Resources Planning Board. The necessary funds were granted by the Foundation. Coöperating agencies included the Boston City Planning Board and the American Public Health Association's Committee on the Hygiene of Housing. The purpose of the Field Station is to analyze and evaluate in terms of present-day social and economic conditions, the various proposals made for urban redevelopment, as a guide to post-war activity. A report on this year's studies is now in preparation.

The Director has been appointed a member of the Executive Committee of the American Institute of Architects' Committee on Post-War Reconstruction.

J. E. BURCHARD.

## SCHOOL OF ENGINEERING

### AERONAUTICAL ENGINEERING

In spite of a substantially increased enrollment, the undergraduate course has proved entirely inadequate to meet the demands of industry and the armed forces for aeronautical engineers. The Navy has been sending at regular intervals large classes of selected graduates of engineering schools for an intensive course in aeronautical engineering and a parallel course in aeronautical engines.

These courses have been handled by the existing staff in addition to our regular curriculum. Needless to say, this has meant a heavy teaching load.

In addition, a number of research projects have been undertaken for the Army Air Forces, the Naval Bureau of Aeronautics and the National Advisory Committee for Aeronautics.

Professor Draper's laboratory for instrumentation has been greatly expanded for war research projects and a special staff numbering forty has been engaged.

The Wright Brothers Wind Tunnel continues to operate two shifts on aerodynamic problems for the airplane industry.

It is scheduled for many months ahead. A special wind tunnel staff has been organized under the supervision of Professors Ober, Markham and Bicknell, who can devote only part time to teaching assignments. A temporary building has been provided to house this staff.

Professor Rauscher divides his time between teaching and the supervision of a research project for which a special staff has been recruited. Professor Koppen has been granted leave part time for war work; otherwise the prewar faculty is intact.

The result of the diversion of the efforts of some staff members from their normal duties causes a serious unbalance of the teaching load which has been cheerfully shouldered by their colleagues. The Department is, however, distinctly short-handed, but so long as aeronautical engineers are so desperately needed by the industry, it is unlikely that this situation can be relieved.

J. C. HUNSAKER.

#### BUILDING ENGINEERING AND CONSTRUCTION

Due to conditions brought about by the war the summer work as originally planned for both options of the course following the sophomore year has been omitted and several shorter courses in surveying are planned to replace Summer Camp requirements. The curriculum is being carried on with civilian students without other changes. The entire staff is sharing in the teaching of war training classes in mathematics, physics or mechanics in other departments.

The National Lime Association continued its support of departmental research work in masonry materials. This program, under the direction of Professor H. R. Staley, assisted by Mr. Peter Johnson of the staff, included a study of sedimentation and flow characteristics of lime hydrates, an investigation of soundness tests for lime, and work on curing methods and workability measurements of mortars and concretes. The Timber Engineering Company continued its support of departmental research into the behavior of split-ring timber connectors, and a comparative study of the action of flat, single-taper and double-taper split rings and grooves has been partially

completed. This work has been under the direction of Professor A. G. H. Dietz.

The D.I.C. project for Adhesive Lime, Ltd. has been completed by Professor Staley and Mr. Johnson. The initial project for the Cummer Lime and Manufacturing Company started early in the year has been completed and Professor Staley and Mr. Johnson have undertaken an extended project under the same auspices aimed at the determination of the characteristics and behavior of certain limestones when used chemically and structurally. Professor Dietz, with the assistance of Mr. John Barry, has continued the work of the D.I.C. project for the Resinous Products and Chemical Company. The work this year has centered around the behavior of aircraft plywood, aircraft assembly adhesives and the resistance of "Compreg" and other high density materials to vibration and fatigue tests.

Professor Staley and Mr. Johnson have started a study of prestressed concrete in order to separate usual shrinkage volume changes from those due to plastic flow or "creep," and to determine the changes in modulus of elasticity under variable loads using the "sonic" method for these measurements. This work is being done with concrete beams under low and high prestress together with unloaded specimens of the same mixes. Creep measurements in a concrete ring under high prestress, started as a thesis by Messrs. R. W. Anderson and A. M. Gonzalez of the Class of 1942, have been extended.

The preparation of the data and report of the thin-shell "dome" tests has been carried forward and a complete analysis of the "dome" has been prepared by Dr. Eric Reissner of the Department of Mathematics which checks the laboratory results quite closely. This should lead to a rational analysis of the design of thin-shelled, shallow-rise domes of large radius when subjected to concentrated loads. The work on this problem has been the joint effort of Professors Voss, Peabody, Staley and Dietz.

Professors Voss, Peabody and Dietz, together with Mr. Miles N. Clair of the Thompson & Lichtner Co., Inc., presented papers at a symposium on "Conservation of Critical Construction Materials" before the B.S.C.E. Professor Staley presented a paper to the A.S.T.M. in June, 1942 on "Curing of Masonry

Mortars." Professor Voss presented a paper on "Effects of Bombings on Structures and Other Installations" to the New England Water Works Association in January, 1943. Professor Dietz presented two papers, one on "Stress-Strain Relations in Timber Beams" at the Forty-Fifth Annual Meeting of the A.S.T.M. in June, 1942; another on the "Behavior of Plywood Under Repeated Stresses," with Henry Grinsfelder, at the fall meeting of the Wood Industries Division of the A.S.M.E. Professor Dietz has also prepared Restricted Reports on "Curing of Resin-Wood Combinations by High-Frequency Heating," with Professor Arthur R. Von Hippel, for the N.A.C.A., and for the "Wood Aircraft Fabrication Manual," as a member of the Forest Products Laboratory staff and issued by the Aeronautical Board. Professor Peabody has the preparation of a second edition of his book on "Reinforced Concrete" in process and will give particular attention to new material on shrinkage, flow and prestress for the design of tanks, pipes and beams. He has also conducted series of tests on "mountain rope" for the War Department and has made materials tests for the United States Navy and the United States Shipping Board.

Professor Voss has continued his activities as Chairman of Committee C-7 of the A.S.T.M. and his lectures in connection with Civilian Defense for the State Committee and the O.C.D. Professor Peabody has been made a member of the Executive Committee of the Designers' Section of the B.S.C.E. Professors Staley and Dietz have continued their work with committees of the A.S.T.M. Professor Dietz is now acting as consultant with the rank of Senior Engineer on the Forest Products Laboratory staff, as consultant for the Aircraft Products Company on plywood and plastics, as consultant for Timber Engineering Company on the design of timber structures, and as consultant for General Panel Company on designs and tests of pre-fabricated houses.

Professor Voss, together with Dean MacCornack and Professors Schaefer and Schwartz, worked with Governor Saltonstall's Committee on Public Safety for the introduction of a State Building Law. This has resulted in action by the Legislature establishing a Board of Standards and Appeals



and a Recess Commission to study legislation leading to state-wide building regulations.

In the field of low-cost housing, Professors Voss and Dietz have continued the study of simplicity and flexibility in pre-fabrication and have brought this study to the point where it will be amplified by the preparation of panels and models.

W. C. Voss.

#### BUSINESS AND ENGINEERING ADMINISTRATION

The departmental study of war production methods carried on in 1941-42 resulted in the publication during the present year of the *Handbook of War Production*, which marks the Department's most significant current contribution to the war effort. A subsequent coördinate research instituted at the suggestion of Mr. B. E. Hutchinson of the Corporation has had to do with the techniques of manufacturing via the production line. Two members of the Department staff, Mr. E. A. Boyan and Mr. Richard Muther, as well as our graduate students, have been investigating these methods during the past year. For a period, Mr. Muther was employed by the Chrysler Corporation and had opportunity to work in a variety of their mass production plants. As a result of these investigations, a new elective in this subject has been given during the past summer term for the benefit of students in the Department of Mechanical Engineering as well as the Department of Business and Engineering Administration. A preliminary publication in this field has already resulted, and a text covering the subject in greater detail is now in process of organization.

A second new subject was given during the year in the form of a seminar in production for naval officers in naval construction. In this subject, comparisons were drawn between war production techniques in manufacturing and shipbuilding establishments.

Departmental faculty members have given heavily of their time to the war and post-war effort. Professor Fernstrom has continued on a leave of absence. After organizing and initially operating one of the largest new shipbuilding yards on the Atlantic Coast, he resigned to assume charge of our national stocks of surplus rubber in the Office of the Rubber Director.

From this post he was drafted by the Maritime Commission to undertake the expediting of production of a large manufacturing company producing a critical component, with which responsibility he is now actively engaged. Professor Fiske completed his year as President of the National Association of Cost Accountants and will shortly return to his teaching activities. Professor Schaefer completes his third and last year as Grand Master of Masonry in Massachusetts, and a secrecy even deeper than that which surrounds current military activities precludes a description of his wartime accomplishment during this three-year period. Professor Robnett has withdrawn in part from his teaching to undertake the work of fiscal officer in connection with war contracts entered into by the Institute's Division of Industrial Coöperation. Professors Cunningham and Tallman are continuing their study of new product development problems which have resulted in teaching material which has already found its way into the classroom. Professor Cunningham assisted in the presentation of special courses for supply officers in the armed forces, given under the auspices of the Harvard Graduate School of Business Administration. Professor Tallman, in his capacity as New England Consultant for the Office of Civilian Requirements of the War Production Board, has conducted several surveys bearing upon the manpower and consumer goods shortages. Professor Goodwin has continued to contribute his services to the conduct of evening classes in the War Training Program and is now concentrating his efforts upon the enhancement of production in a New England establishment engaged in the production of highly strategic war materials.

As a result of an arrangement entered into with the Puerto Rico Development Corporation in collaboration with the University of Puerto Rico, funds have been provided whereby the Institute has been in a position to offer fellowships to a group of graduate Puerto Rican engineers who will spend a full year of intensive training at Technology in preparation for their return to Puerto Rico, where they will assist in the organization and operation of new industrial establishments. At present, eight recipients are undergoing training in this department, having been selected from a group of over two hundred competi-

tive applicants. They will be guaranteed at least a year's employment by the Development Company upon their return to Puerto Rico, and it is anticipated that this educational activity is a prelude for larger groups of such fellowship students in the future. Professor Schaefer has been appointed director of this program, and Dr. Herman P. Meissner of the Department of Chemical Engineering as assistant director. Appreciation is expressed to the several professors in other departments who have collaborated importantly upon initial phases of this development by giving especially designed courses for these students in specialized technical areas.

A gratifying aftermath of the Alfred P. Sloan Fellowship Program, which has been temporarily discontinued for the duration, has been the continuing request on the part of the public for copies of published reports which were the product of students in these groups. Five such reports dealing with administrative problems have been issued, and though they have received but moderate publicity, they have been attracting increasingly wide and continuing attention. We hope that there will be opportunity further to develop this type of social contribution in the future.

New departmental alumni activities have engaged the Department during the past year. In February, letters were sent to one hundred of our graduates who were occupying positions as officers in the armed forces for the purpose of assaying the value of their studies in this Department in relation to the war effort. A large proportion of detailed replies have been received, and have yielded important and useful data for the further focusing of our classroom effort upon the current needs. In April, a letter was sent to all graduates of the Department, requesting their advice and counsel on departmental post-war policy. Responses to these inquiries have been numerous and are now in classified form and will be of marked value in assisting in the laying of a sound course for future development. Early in the year, a monthly overseas letter to all Course XV men in foreign service was instituted and has apparently found welcome readers.

Inasmuch as any departmental planning affecting student usefulness after graduation must of necessity give consideration

to the possible cessation of hostilities, it follows that much of departmental thought and study has been in relation to so-called post-war activities. These have related to such questions as shifts in industrial needs for graduates and corresponding changes in curricular emphasis; policy with respect to business and engineering electives; problems of age-groupings in relation to graduate work; and new areas for research and field investigation. A particularly engaging problem has been the proper reflection in our course content of the ever-broadening social responsibilities of the industrial administrator. These conclusions will form the basis of a separate report.

E. H. SCHELL.

#### CHEMICAL ENGINEERING

Last year the Department reported the loss to war work of four members of its faculty. During this year three more have gone. Professor Gilliland is Assistant Rubber Director and Professors Whitney and Walker have been taken over by the Chemical Warfare Service Development Laboratory. Those still on the staff have found it necessary to devote increasingly large fractions of their time and energy to war problems. While reduction in student numbers (graduate enrollment has fallen to one-third) has reduced the instructional load, the proper handling of the work of the Department has been possible only by a great increase in the responsibilities of the younger staff members. The effectiveness with which they have met this responsibility is gratifying testimony to the quality of the group.

The School of Chemical Engineering Practice was overloaded the first seven months of the year but underloaded thereafter. It is operating on an irregular schedule designed to meet the needs of specific student groups, but it is anticipated that the work of the School itself will be discontinued for the emergency sometime during the coming year.

The only modifications of the instructional program were those necessitated by the war. Because of the difficulty in synchronizing the schedules of Army, Navy and civilian students, the option in industrial relations has been discontinued. The instruction in colloidal chemistry and plastics was

expanded. The new subjects required by the A.S.T.P. program were introduced. Classroom instruction in these has required little modification of our standard procedures but a new laboratory course in unit operations is being developed by the Practice School staff for Army men, the work to be carried out largely in coöperation with plants in the Boston area.

*Research Program.* The progress in research to be reported for the year consists mainly in accruals from continuation of old programs. In the field of applied chemistry, the potentialities of a new ceriathoria-cupric chloride catalyst for the Deacon reaction was explored and the applicability to the chlorination of hydrocarbons of the very promising results obtained is being followed up. Studies on the effective utilization of chemical raw materials now becoming available, such for example as butadiene, are under way. The experience of the Department in the field of equations of state has been utilized advantageously in the study of thermodynamics of polymerization reactions. An extensive program on the applications of the fluidized powder technique mentioned in last year's report to various reactions between gases and solids has been organized. It is hoped this will in time culminate in important industrial applications.

Work has continued in the field of unit operations. Intensive study has been made of the mechanisms of heat transfer in regenerator systems of novel type and the utilization of the experimental results in regenerator design. New data have been collected on the factors governing the capacity of solvent extraction operations. Experimental results on interaction of air and water in packed cooling towers show, as long suspected, that the thermal resistance of the liquid film is a factor of importance.

In the colloid field, the further development of alsifilm has been turned over largely to other organizations. The use of stream double refraction in solving problems in liquid flow has been widely adopted. Work in the rubber field has expanded. The processes for reclaiming synthetic rubbers developed in the Department are already going into industrial use. It has been possible to develop methods of handling reclaimed natural rubber which offer promise of marked increase in abrasion

resistance, a problem of obvious importance for tire conservation. An extensive program, including work on the mechanisms of polymerization and the development and utilization of various rubber substitutes, has been carried out in coöperation with the Rubber Director's office.

The most important development in fuel engineering is participation in the Institute's inter-departmental program on gas turbines, particularly the initiation of fundamental research on the space requirements for high output combustion. The work on atomization of liquid fuels has continued and special studies of the problem of turbulent flames have been made in coöperation with the Practice School.

Two books by Professor Robinson have appeared, one on the *Recovery of Vapors* and the second on the *Thermodynamics of Firearms*.

W. K. LEWIS.

#### CIVIL AND SANITARY ENGINEERING

The staff efforts have been especially characterized by their participation in the Army Specialized Training Program. This program has required several special courses in Surveying and in Structures, which have heavily taxed the efforts of the staff. The scholastic requirements of these new courses have been held at a standard comparable with similar Technology courses, with the aim that successful accomplishment by the students in these courses will be acceptable later to colleges throughout the country as credits toward an undergraduate degree.

Other demands for training armed forces in Mathematics and Physics have been so great that this Department, along with others, has loaned some of its younger staff members to teach these courses. This has depleted the staff available for teaching in the added professional courses within the Department, with the result that the remaining staff has been heavily loaded this year with class work.

Unfortunately, it has been necessary to abandon fundamental research to provide time for special research for the many war problems that the staff has been assigned. Professors Wilbur, Fife and Norris, and Messrs. Peck and Platt, have devoted much of their efforts to such problems. Professor

Ruge has had a leave of absence to devote all of his time to such matters. Professor Gifford has also devoted most of the year to war research. Professor Carlson has devoted about all of his time to problems relating to the war effort. The majority of the staff have in one way or another been associated with war work, the nature of which it is not possible at the present time to divulge.

The project on shearing strength of soils, sponsored by the United States Engineer Corps, is in its fourth year; the emphasis on this year's work has been on the effect of speed of shear on strength and on pore water pressure determinations in clay.

Results of the past six years of Research on Consolidation of Clays by the Soil Mechanics staff of the Department were published this year.

Owing to the extensive falling off in civilian undergraduate attendance, a simplification of the curriculum for civilians has been adopted. Course XI, Sanitary Engineering, has been abandoned as an undergraduate course but has been retained as a graduate course. The group electives in the senior year have been simplified. The Summer Surveying Camp has been temporarily discontinued because all of the staff were required to teach in the courses at Cambridge which ran throughout the summer period.

Civilian attendance in the graduate courses has been fairly well sustained, and most of these courses have been given. Civilian attendance in the undergraduate courses, however, has been small because students have gone into the armed services, but the required Army program of the A.S.T.P. has in a large measure made up for this deficiency.

Practically all of the recent graduates of the Civil Engineering Course have gone into the armed forces.

Professor Carlson has resigned and gone into private practice. Professor Breed has been elected a Director in the American Society of Civil Engineers. Professor Wilbur was awarded the Desmond Fitzgerald Prize of the Boston Society of Civil Engineers for his paper entitled "The Smith-Putnam Wind Turbine Project."

Both Professors Howard and Shea have been absent much of the academic year on account of illness. Professor Shea has

now returned to his duties but Professor Howard is still unable to resume his work.

At the end of this academic year Professor Breed resigned as head of the Department and Professor T. B. Parker, '11, formerly Chief Engineer of the Tennessee Valley Authority, has succeeded him. This appointment brings to the Department leadership of a man of varied and extensive engineering experience.

I am unable to close this narration of the departmental activities during the past year without expressing my deep appreciation of the coöperation and loyalty of the staff throughout the ten years during which it has been my privilege to act as its head. Seldom does one have such a challenge for his best efforts as this staff has given me. To my successor, Professor Parker, I confidentially prophesy that he will experience this same coöperation and loyalty.

C. B. BREED.

#### ELECTRICAL ENGINEERING

The various phases of the war effort have continued to occupy an increasing portion of the time and effort of our staff. Currently, an equivalent of twenty of the thirty-four Faculty members are engaged in some activity directly connected with the war effort but apart from ordinary teaching or research duties. Unfortunately but little can be said at this time of the nature of their contributions to technical progress.

The Faculty members who continue to be on leave or special assignment include Professors R. D. Bennett, E. L. Bowles, R. D. Fay, H. E. Edgerton, S. H. Caldwell, W. L. Barrow, G. S. Brown, J. G. Trump, W. M. Hall, M. S. McIlroy, J. E. Mulligan, W. H. Radford, and J. A. Wood. In addition, Professor Hazen has been appointed to the chairmanship of an N.D.R.C. Division requiring substantially full time with Professor K. L. Wildes as Technical Aide. Professor P. Moon has been on half-time leave for eight months but is expected to return soon to full-time teaching. Professors J. C. Balsbaugh and A. R. von Hippel are devoting full time and Professor C. Kingsley, Jr. half time to war research under contracts of the Division of Industrial Coöperation. Dr. A. C. Hall, who was



promoted to an assistant professorship this year, is spending substantially all of his time on war research at the Institute.

Conservation of manpower has forced the discontinuance, for the duration, of the Illumination Option, commencing after the graduation of the present senior class in February, 1944.

Men have been accepted by the companies for the Coöperative Course VI-A. In general, the students are following some one of the options in Course VI, with but few reporting for works assignments, because of the limited time permitted by selective service regulations for the completion of the requirements for the degree.

In April the first group of Army Specialized Training (A.S.T.) students began their work at the Institute, taking advanced courses in Civil, Mechanical, Electrical and Chemical Engineering. The Department is responsible for a major portion of the instruction in the Electrical Engineering Course and for one subject in each of the other three courses. The curricula are abridgments of the regular Institute curricula which emphasize the technical studies and which are completed in from eighteen to twenty-one months. During the year this group is expected to build up to a sizeable number.

One subject in the A.S.T. Electrical Engineering Course entitled "Servomechanisms and Control Devices" is apparently new to undergraduate curricula in this country, though Professor G. S. Brown and his group have given such a subject at the graduate level in the Department for the past four years. In order to assist the other engineering schools offering the advanced A.S.T. Electrical Engineering Course, arrangements have been completed to hold at the Institute in October a coöperative conference of prospective teachers from these schools under the leadership of Professor Brown. It is hoped that this conference may be as serviceable to all, including ourselves, as were the two previous conferences of engineering school teachers in preparation for teaching the then new courses in ultrahigh-frequency techniques. Professor Brown's group is preparing an elementary text for this subject.

Students in the upper years of the parallel Navy program are taking the regular curricula with our civilian students, which

makes for efficient operation. Some of these men should qualify for degrees.

The number of civilian students in the department, while fewer than normal, nevertheless constitutes about half of the total. The first group in the new undergraduate electronics option, set up two years ago, graduated in February. This option involved the development of a new classroom subject "Electrical Implementation" and two new laboratory subjects "Electronic Engineering Laboratory" and "Electrical Implementation Laboratory," which were offered in the Electrical Measurements Laboratory.

At the graduate level, automatic control, network theory, antennas, and transients in linear systems continue to be especially active. While present draft regulations limit the graduate-student body to teaching and war-research assistants, officers of the United States and foreign services taking advanced work, and foreign civilian students, the total is still about half the normal number. The range of graduate offerings while limited is, however, sufficient to meet present-day requirements.

To meet the needs of power-option and physics students for advanced work in ultrahigh-frequency techniques, an abridged sequence of subjects has been offered in this field. In the future, as an economy on staff time, such need is to be cared for by election of the regular subjects of the communications option.

During the past year, the Department has coöperated with the Department of Mechanical Engineering in formulating a one-semester subject in kinetics which is of special interest to students specializing in electrical engineering and uses to a high degree the type of mathematical background already developed in their electrical-engineering training. The emphasis is placed principally on the study of vibrating bodies and the behavior of simple gyroscopic systems. Special attention was given to the use of network principles in the handling of mechanical systems. This subject, Applied Mechanics 2.07, was given by Professor John A. Hrones of the Department of Mechanical Engineering with the coöperation of Professor M. F. Gardner of this Department.

Considerable development has taken place in the subjects

which the Department offers for nonelectrical students. The new subject, Instrument Electricity, offered to meet the needs of students majoring in other fields of engineering in electrical measurement and electronic techniques, was so well received that it has been given in each term since it was first offered. Detailed consideration is being given to the development of an integrated two-term program in electrical-engineering fundamentals to meet demands for the more comprehensive electrical backgrounds created by the ever-expanding use of electrical methods and devices in other engineering fields. This program, undertaken in conjunction with the Civil Engineering and Mechanical Engineering Departments, has three broad objectives: thoroughness in covering basic principles, forming a foundation upon which specialized techniques can be developed later in the student's professional life; a comprehensive treatment of the important fields of electronics and measurements; and close coordination between classroom and laboratory work to achieve the greatest economy of time and thought. To prepare better our junior-year R.O.T.C. Signal Corps students, from departments other than Electrical, for active duty at the end of the Junior year, a one-term subject, "Elements of Electrical Communications" was offered at the request of the Department of Military Science in the second term.

Because of the large diversion of staff to war research activity, it has become necessary to change the teaching methods in laboratories to a somewhat more routine basis. While this is justified as a war emergency measure, the more individual methods of instruction will be resumed as soon as war-manpower demands are lessened.

In connection with the second of the aforementioned ultra-high-frequency conferences, arrangements were made to adopt microwave demonstration apparatus, as developed during the first offering of this subject at M. I. T., for use in similar instruction in other schools. Some twenty-two schools ordered sets of such equipment under ESMWT auspices. These were engineered by our staff, manufactured by a local supplier and in our own shops in accordance with conference specifications. A book of data and working drawings was made up and supplied with each outfit. This apparatus, which was practically not

otherwise available, should be a substantial contribution to instruction in this field.

Professor W. L. Barrow, who has been in charge of a large specialized school for Army and Navy officers under ESMWT auspices, was granted a leave on October first. The school is now in charge of Professor C. E. Tucker and operates under contracts with the Army and Navy. It occupies leased space in Boston, and employs the services of three other faculty members as well as a number of other instructors especially engaged for the purpose.

During the year, two new volumes appeared in the course revision series, Volume II, "Magnetic Materials and the Transformer," published in April, and Volume III, "Applied Electronics," which was published in March. The particular timeliness of this latter volume has resulted in two reprintings already. Volume I, "Electric Circuits," which appeared in June, 1940, has had a steady sale and has been reprinted during the year. Volume II has also had an initial sale which indicates genuine interest. Work on the first of three reference volumes is nearing completion and it is expected that "The Mathematics of Circuit Analysis" will go to the printer soon. These texts have been well received and should give the students increased emphasis on fundamental electrical science so essential at the present time.

In the field of research, the Department's activity has been almost exclusively on the war effort. In the Center of Analysis, the new Differential Analyzer has been completed to the point where it is in operation on war problems. The older model of analyzer is in long-hour operation, while the punched-card division is in three-shift operation. The Network Analyzer continues active in studies for the electric power companies to enable them to meet increasing demands with a minimum of use of new construction materials.

The characteristics of X-radiation with energies up to four megavolts and the clinical results obtained in an experimental therapy program using three-megavolt X-rays were summarized by Professor J. G. Trump and Mr. R. W. Cloud for the American Roentgen Ray Society from data taken on the Hyams' High-Voltage Generator.

Theoretical work dealing with the calculation of light and color, including a new theory of color harmony, has been in progress. Better methods for the calculation of illumination of fluorescent luminaires and a new method of the design of reflectors for fluorescent lamps have been developed by Professor Moon.

A sound room for the calibration of instruments for the use of the Physics and Electrical Engineering Departments has been constructed with funds provided by the General Radio Company.

The research in the field of insulation, under Professors Balsbaugh and von Hippel, continues with definite accomplishment being made. While details of this and other research must remain for disclosure later, these activities are also of long-range importance, as well as being a contribution to the solution of urgent war-time needs. That our student body is contributing directly to the war research is attested by the fact that many theses, both graduate and undergraduate, are confidential and will not be released to the library by the supervisors until after the close of the war.

The staff has continued its activity in professional societies, though the number of papers presented has necessarily been greatly reduced. Professor Guillemin has given a series of lectures for the benefit of certain members of the Radiation Laboratory where he has acted as consultant.

Because of the priority situation, procurement of new equipment has been difficult and vital repairs and replacements in our educational laboratories have been delayed. Contributions of equipment from the Sperry Gyroscope Company and the Western Electric Company of ultrahigh-frequency and other apparatus have been of material assistance, however.

The immediate problems of the Department are concerned with the frequent reassignment of space, facilities and staff to meet the rapidly changing needs for training men and for prosecuting war research in the most efficient way.

C. E. TUCKER.

### SECTION OF GRAPHICS

The focus of attention of the Section of Graphics during the year has been on the adjustment of our courses to suit the requirements of the Army and Navy programs.

Other drawing courses were designed and given in the evenings under the ESMWT program. Though all of these courses are intensive in nature, the Section has throughout continued to place the emphasis, in drawing courses, on excellence in drafting technique and, in Descriptive Geometry, on developing the capacity for visualizing spatial relationships.

The course in Nomography, first offered in 1941-42, has proved successful and will continue to be offered.

J. T. RULE.

### MECHANICAL ENGINEERING

The past year has been marked by a shift in emphasis from elective subjects and individual research programs offered in this Department, under the auspices of the Graduate School, to special training courses for the Army and Navy at the undergraduate level, and to research projects sponsored by government agencies and war industries. The omission, for the duration, of a substantial number of subjects of instruction of a specialized and perhaps unessential character has partially adjusted the teaching load on the staff, but the staff has been reduced by a shortage of assistants and instructors normally taken on as replacements for those going into the armed services or into industry, and by leaves granted other staff members to serve the war effort either full or part time. As a consequence, the staff has been working at high pressure with the load on some members perhaps excessive. Further adjustments may be necessary, including larger lecture sections and the substitution of laboratory demonstrations before groups of students in the place of individual working assignments.

The Coöperative Course (II-A) and the Honors Course have been discontinued for obvious reasons but they can be restored whenever conditions make it possible. The electrical courses of the curriculum have been revised to strengthen the fundamental training in electrical engineering and to increase the emphasis on engineering electronics.

While it is not permissible to report the war research projects handled in the Department, it can be stated that these include problems assigned by the Bureaus of Aeronautics, Ships and Ordnance of the Navy, the Quartermaster and Ordnance Departments of the Army, the National Defense Research Committee, the National Advisory Committee for Aeronautics, National Research Council, the Engineering Foundation, and a large number of corporations engaged in war production.

A substantial expansion of engine testing facilities in the Sloan Automotive Laboratory has been made to accommodate special Army and Navy classes and an increased number of war research projects.

J. C. HUNSAKER.

#### METALLURGY

The normal activities of the Department of Metallurgy have continued but on a reduced scale due to the large proportion of time of all staff members that is being devoted to problems related to the war effort. Many members of the staff are working on war research projects through the Division of Industrial Coöperation. Many are also doing important consulting work for companies engaged in the production of war materials.

Three members of the staff are on leave: Professor Bitter who is attached to the Navy Department in Washington, Professor Waterhouse, Special Staff Consultant for the Office of Lend-Lease Administration, and Mr. Spedden who is in Bolivia as an associate production specialist for the Office of Economic Warfare.

The Mineral Dressing Division has continued its research on fundamental problems relating to the separation of minerals and the crushing of ores. During the year six papers were published. Professor Gaudin and Professor Schuhmann have also been devoting considerable time to problems in the extraction of tin from Bolivian ores. The modern Mineral Dressing Laboratory which we now have is considered to be a model in design and has been copied by a number of companies and educational institutions.

In the Ceramics Division fundamental research work on

clays has continued with very favorable results. In addition the laboratories are being used for insulation and refractory problems related to the production of war materials. Professor Norton also has published a second edition of his book, "Refractories."

In the Process Metallurgy Division Professor Hayward continued his research on the extraction of chromium and nickel from Cuban iron ores with encouraging results. He also contributed four articles on the production of non-ferrous metals to various technical journals. Professor Chipman has devoted a major part of his time to war research, including one semester on leave which was spent at the Metallurgical Laboratory of the University of Chicago. During the year he published three papers in the field of equilibria in steelmaking reactions. He also delivered the annual Campbell Memorial Lecture before the American Society for Metals. The invitation to give this lecture is considered to be one of the highest honors bestowed in the field of metallurgy.

In the Physical Metallurgy Division Professor Homerberg has devoted considerable time to problems of selection of materials for tank and aircraft parts. He has also been very active in the development of high strength cast railroad car wheels. Professor Cohen has continued his outstanding work on transformations in the heat treatment of steel. During the year five papers were published which attracted much favorable comment. In addition he has acted as consultant to the Boston Ordnance District and to two companies manufacturing strategic tools and ferroalloys. Professor Wulff acted as consultant to the War Production Board on problems in metal scrap recovery and to the National Defense Research Committee. He is editor and major author of a new book on Powder Metallurgy, and a member of the Powder Metallurgy Committee of the A.I.M.E.

The Radiographic Laboratory under the direction of Professor J. T. Norton has contributed a valuable wartime service in the checking of castings and weldments. More than a thousand radiographs were made during the year. In the X-ray diffraction laboratory the principal interest has been in the highly important problem of the measurement of residual



stresses in metals. Two research projects, one sponsored by the N.D.R.C. and the other by the Welding Research Committee of the Engineering Foundation, are in progress. Professor Norton and Professor Rosenthal are both members of the Weld Stress Committee of the American Bureau of Welding.

Professor Williams devotes a large portion of his time to his duties as Deputy Dean of Engineering and to the organization of the Army and Navy training program. He is also a member of the War Metallurgy Committee and metallurgical advisor to the Quartermaster General. He has worked in close cooperation with Watertown Arsenal, particularly in the training of ordnance inspectors. Due to Professor Williams' increased duties as Dean of Engineering, Professor Floe has been made temporary Executive Officer for the Department.

C. F. FLOE.

#### METEOROLOGY

The facilities of the Department have been strained to the utmost during the past year by a greatly expanded training program in Meteorology for the Army and the Navy. The duration of the training program is eight months, which is divided into three quarters of eleven weeks each. Continued revision of the material presented has been made in an effort to meet the changing requirements of the Military Weather Services. In spite of the special demands imposed by such considerations, the academic level of the subjects of instruction is only slightly lower than that of the corresponding subjects offered in the Graduate School prior to the war.

A small number of civilian students has been enrolled during the past year. In general, such students take the same course of instruction as the military students amplified by additional advanced subjects. A similar program is followed by officers who have been assigned to us by the Army to act as instructors, and they generally qualify for the Master's degree.

A Navy V-12 program in Aerology has been established during the year. The first group is small but it is anticipated that this program will be considerably larger next year.

It now appears that the most pressing requirements of the armed forces for meteorologists will be satisfied in the near

future. From now on the number of men in the training program will probably diminish. This will permit more emphasis on advanced training of a specialized nature and on research on problems bearing on the war effort.

In addition to the instructional program, several research projects have been actively prosecuted during the year. The research on improved methods for long range forecasting has been continued in coöperation with the Weather Bureau by a group headed by Professor Willett. Another group has been working on a related project for the Army Air Forces under Professor Haurwitz's direction. The work on methods for the de-icing of aircraft which is being carried out for the Army Air Forces has been continued on an increased scale. The development of an instrument for the measurement of rain density in flight for the N.A.C.A. was completed during the year. The design and construction of instruments for the determination of the range of visibility has been undertaken for the Weather Bureau.

Several staff members have served part-time with various governmental agencies. Professors Houghton, Willett and Austin have been consultants to the Army Air Forces. Professor Houghton has served on two sub-committees of the N.A.C.A. and as Section Member and Consultant of the N.D.R.C. Professors Willett and Houghton are members of the University Meteorological Committee which has coördinated the work of the institutions giving training in meteorology with the armed forces.

H. G. HOUGHTON.

#### NAVAL ARCHITECTURE AND MARINE ENGINEERING

The national emergency and the adoption of the three-term year by the Institute have necessitated considerable revision of the programs for the various courses in this Department. The seniors in Course XIII and XIII-C graduated in February, 1943 instead of in June, 1943. The graduate class of United States naval officers in the first group taking the combined three-year course in Naval Construction and Engineering graduated in May, 1943. Subsequent XIII-A groups will

be on the Institute's yearly three-term program and will therefore complete the course in two years instead of three as before.

At the beginning of the spring term 1943 a group of Turkish naval officers registered in Course XIII-A. These students are now pursuing about the same course of study as the student officers of the United States Navy and the Brazilian Navy who entered in the summer of 1942.

The last group of United States naval officers to take the one-year course in Naval Engineering graduated in May, 1943, at which time the course was discontinued for the duration of the war.

The Department has conducted two short intensive courses during the past year, one in Naval Construction for Naval Reserve ensigns, and one in Naval Architecture for Civil Service appointees. The latter course ended in June, 1943, at which time the opinion of those concerned was that it was doubtful if a group having the background essential for the prescribed course in Naval Architecture could be obtained, and the starting of another course should be delayed until a more opportune time. This question is under study by the naval authorities concerned.

Five of the juniors in the course of Marine Transportation who were enrolled in the Reserve Officers Training Corps were transferred to the Transportation Corps when called into active service in June and were sent to the Transportation Corps' Replacement Center.

An intensive Army Specialized Training Program course in Marine Transportation of twelve weeks' duration has been arranged for training Army students for the Transportation Corps. The first group started on July 12 and the men enrolled are all engineering graduates. The training being given these men is mainly in the fields of port facilities and cargo handling. In cooperation with the Boston Port of Embarkation the students spend one afternoon each week at the Boston Army Base observing cargo handling and becoming familiar with the organization and operation of a port of embarkation.

During the past year a limited amount of testing was undertaken in the Propeller Tunnel for private accounts and for the Division of Industrial Cooperation. The latter tests are

still in progress. Fundamental research is being carried out regarding the effect of angular flow and air content of water on the cavitation phenomena and regarding the design of propellers which must operate under cavitating conditions. Part of this work has been carried out in the form of graduate theses by students in Course XIII-A.

H. H. W. KEITH.

## SCHOOL OF SCIENCE

### BIOLOGY AND BIOLOGICAL ENGINEERING

At the beginning of the present year the research programs of the Department were almost all either under contract with governmental agencies or directly related to the war effort. Every effort was made to arrange teaching loads and other responsibilities so as to release staff members as much as possible for war research. To this end certain advanced courses were either cancelled or scheduled in alternate years. This caused little difficulty in view of decreased enrollment in undergraduate courses.

At the beginning of the summer term undergraduate teaching was largely concerned with the training of pre-medical students. About sixty Navy V-1 transfer students were enrolled in elementary and advanced pre-medical subjects. Additional Navy V-12 pre-medical students are now taking basic courses and will begin their biological studies in the spring term.

The work in Food Technology under Professor Proctor's direction has been concerned almost exclusively with projects, under contract with the Office of the Quartermaster General, for improvement in the quality and in the processing, handling and shipping of foods for the various branches of the armed services. Additional projects are under contract with N.D.R.C. and the Rubber Development Corporation. Professor Proctor's wide experience in this field has been called on to the fullest extent since June, when he was appointed Chief of Subsistence and Research in the Research and Development Branch of the Office of the Quartermaster General. This is a position of great responsibility and requires his full time in Washington. In his absence, Professor Sluder is continuing the research projects

here. Dean Prescott is kindly assisting with some of the teaching in Food Technology in addition to his duties in connection with the inspection and establishment of dehydration plants for the Army, as Special Consultant to the Secretary of War. Dean Prescott's leadership in this field received public recognition when he was awarded the Nicholas Appert Medal of the Institute of Food Technologists on June 2, 1943.

In the Nutritional Biochemistry laboratories Professor Harris and his associates have been very active in research on problems of importance to the armed forces and on the home front. Included are investigations of emergency rations for the Army and Navy, an assay of the nutritional status of large numbers of workers in certain industries, an evaluation of the effect of restaurant cooking practices on the vitamin content of foods, and a collaborative research with the War Department on the production of a low cost lunch of high nutritive value for war workers. A carefully planned project is also under way in which the possibilities of low-cost feeding will be tested on school children in Mexico. This work, which is being conducted in collaboration with the Pan American Sanitary Bureau and the Mexican Government, is of importance not only in itself but for the information which it will give concerning techniques of mass feeding generally.

Acknowledgment is gratefully made of financial support for the above studies by grants from the Rockefeller Foundation, Kellogg Foundation, Lederle Laboratories, Lever Brothers Company, Distillation Products, Inc., Lipton Tea Company, and Hoffman-LaRoche, Inc.

The research of a considerable number of the staff has been devoted almost exclusively to war problems of a medical nature. Professors Bear, Gould, Jennison, Schmitt, Sizer and Waugh, Dr. Duggan and Dr. Salo have been at work on the preparation of materials for the treatment of wounds and burns. Professor Gould has also investigated certain aspects of scurvy. These projects are under contract with the Committee on Medical Research. Professor Horwood has served on a committee investigating certain substitutes for serum in shock therapy. In addition he instructed a large group of restaurant operators on matters of sanitation and served on a number of committees

dealing with matters of public health in Massachusetts and in the Boston area. Professor Jennison participated in the work of several committees on health for the Army and acted as a consultant for the C.W.S. and for the British Ministry of Health. At the request of the Quartermaster Corps Professor Blake has been preparing an extensive report on insects and certain other animals of interest to the armed forces.

Among the biophysicists, Professors Horton and Loofbourow are devoting full time to assignments in Divisions C and 14, respectively, of N.D.R.C. Dr. Lion, besides conducting the first classes in the electrical aspects of Biological Engineering under the new program, devoted more than half time to work in the Insulation Research Laboratories. He also assisted with certain aspects of the medical war research.

The research on the ultrastructure of natural materials with the electron microscope has been considerably expanded along lines which are both of immediate practical importance and of considerable theoretical interest. With the aid of generous grants from the Dewey & Almy Chemical Company and Godfrey L. Cabot, Inc., a second RCA electron microscope has been installed in new laboratories for this program. The original electron microscope, obtained under a special Rockefeller grant, has been used almost exclusively in an investigation of the molecular architecture of protein fibers. Close correlation of the results with those obtained by X-ray diffraction on similar material by Professor Bear resulted in discoveries of importance in the interpretation of the structure of certain types of protein molecules.

One of the most pressing problems at present is that of finding adequate space for the expanding research program. This problem will become more acute with the return of graduate students following the war. It is hoped that a solution will be found such that all units of the Department may be in close proximity rather than scattered in several buildings as is now the case.

F. O. SCHMITT.

#### CHEMISTRY

The efforts of the members of the staff who were normally active in the research programs of the Department have been

devoted entirely to problems of a scientific nature relating to the war. Doctor Keyes devoted his entire time to a continuation of war research. Doctors Beattie, Collins, Stockmayer, and Stout were on leave of absence and, at the request of the United States Army, leave was also granted to Dr. Thompson who accepted a commission as Major in the Public Health Service. He is serving as Regional Gas Officer for the New England States.

Doctors Schumb, Scatchard, Huntress, Harris, Young, Milas, Gamble, Amdur, and Stephenson, all of faculty rank, have been directly connected with Government research projects on a part-time basis but have fortunately been able also to take part in teaching and in the research programs of those enrolled in the Graduate School. Dr. Millard and Dr. Davis, in addition to their teaching and other duties, have been respectively executive for the Meteorology B program and registration officer and advisor for the students enrolled in the Army Specialized Training Program in Civil, Mechanical, Electrical, and Chemical Engineering. In addition to other war work, Dr. Milas has directed the program of Vitamin Synthesis, which has been continued under a grant from the Research Foundation and supporting companies interested in this field. The results continue to be most encouraging. Doctors Purves, Hockett, Marvin, and Gibb have assisted as consultants to industry engaged in war work. The scientific contributions of Dr. Morton in the field of sodium polymerization resulted in a substantial grant from the Research Corporation for continuation of this work on an enlarged scale. This program, which began in June, gives promise of results of importance to the synthetic rubber industry.

The Department has been able to replace staff members on leave of absence, or otherwise engaged, and supply research personnel from its experienced Teaching Fellows, in their last year of academic work as candidates for the degree of Doctor of Philosophy.

The Department has also maintained a Graduate School, limited to approximately thirty candidates by the regulations of selective service, and at the same time has utilized this source of trained men for transfer on a full-time basis to its various

war projects. The privilege of advancing to war research has been granted only to those whose graduate work has progressed to a point to warrant participation, and while the group available to industry has not been as large as usual, work of an essential research nature has been conducted efficiently by young men of exceptional qualifications. Personnel was also supplied from this source to projects under the jurisdiction of other departments where men with chemical training were required. The coöperation of those candidates who served as Teaching Fellows has enabled the Department to provide excellent teaching and the technical manpower necessary for the progress which has been made. Their willingness and enthusiasm to assist in performing the duties of men who have been called for other service are appreciated. The Department looks forward to the post-war period when these men will be able to complete the work for the degree. While their educational progress, insofar as academic requirements are concerned, has been interrupted, they have gained valuable research experience.

Mention should be made of, and compliments paid to, the staff members who have been devoting their full attention to the teaching and administration of the large numbers of Army, Navy, and civilian students attending the Institute as undergraduates, particularly in the first three years, and in special advanced subjects. In spite of their many special duties and the complications of an accelerated and somewhat irregular program, they have without exception, with enthusiasm, taught effectively and at the normal standard on a continuous and intensive basis.

The Department as a whole has been giving consideration to the revision of the curriculum in its undergraduate and graduate schools and is preparing to strengthen the fourth year work in Physical and Organic Chemistry. It is formulating a continuous program in Chemistry, with a liberal interpretation of the requirements in the Graduate School and a rather strict undergraduate curriculum which will prepare the undergraduates for advanced study or for industry at the end of the fourth year. The introduction of more advanced, but fundamental, chemistry in the undergraduate program will eliminate duplication in special courses offered to entering graduate



candidates. The changes are in anticipation of an influx of former graduate students whose programs of study have been interrupted and also of those students now serving in the armed forces who plan to enter the Graduate School.

While the number of scientific papers published has been restricted by limitations imposed on research of a confidential nature, the contributions to scientific literature has numbered thirty-nine.

L. F. HAMILTON.

### GEOLOGY

Instructional and research activities of the Department of Geology have been greatly curtailed by war conditions during the past year. Geology was not listed as a defensible subject, which fact of course resulted in a decrease in enrollment in the Department. A large proportion of the staff of the Department has been away on leave of absence in various types of essential work. Those on leave are Professors Slichter, Shrock, Whitehead, Parks, and Research Associate, Dr. Pekeris. Professor Newhouse has been devoting part of his time, including all of the summer semester, to work with the United States Geological Survey in connection with the search for essential minerals.

Professor Frederick K. Morris has had charge of a course in elementary geography, given to more than two hundred members of the Meteorology B group of the United States Army Air Forces. Professor Shimer was recalled from retirement to assist Professor Morris in this course.

Professor Fairbairn has been rendering full-time service in teaching physics, and Professor Buerger has been teaching physics part-time.

W. J. MEAD.

### MATHEMATICS

The schedules for Army students coming to the Institute during the year included unusually large amounts of mathematics, five hours per week for A.S.T.P. and ten hours for pre-meteorology instead of the usual three hours per week for first and second year students. This and the increased total

registration resulted in an unusual amount of mathematics teaching, reaching about twice normal at the end of the year. In handling this overload the Department was fortunate in being able to borrow teachers from a considerable number of departments, including aeronautics, architecture, building construction, civil engineering, economics, electrical engineering, mechanical engineering, graphics, and the registrar's office.

During the summer of 1942 a special program of study was arranged for a group of Fellows in applied mathematics. The demand for men with this type of training was, however, so great that all of these transferred to research or teaching positions at the end of the summer term.

Professors Wadsworth, Wiener, Levinson, Dr. Thomas and the staff of the statistics laboratory were very active working on problems for industrial concerns and for the government. Professors Crout, Reissner, and Dr. Hildebrand continued the war research already in progress, and Dr. Wallace was given leave of absence to engage in war research for the National Research Council of Canada.

H. B. PHILLIPS.

#### PHYSICS DEPARTMENT

Nearly every member of the Physics Department teaching staff has been engaged full time or part time in war work during the year. The war activities being directed by Professor Slater have required his presence away from Cambridge since March. His duties as Head of the Department have been carried on since then by Professor Warren, acting as Executive Officer of the Department. Professor Harrison's new duties as Dean of Science and as a Division Chief of N.D.R.C. have required his full time. Professors Stratton, Frank, Boyce, Allis, Albertson, Lamar, and Squire are now away on full-time leave of absence. Professor Hardy is a Section Chief of the N.D.R.C. with partial relief from teaching duties. Professors Morse, Van de Graaff, and Buechner are working on projects in Cambridge with full relief from teaching duties. Professors Mueller, Nottingham, Stockbarger, Evans, Sears, Livingston, Harvey, Duntley, Goodman, and Warren have been engaged in war work either part-time or during part of the year. A number of

the younger staff members are doing war work along with part-time or full-time teaching.

The teaching load in elementary physics has nearly doubled since February as a result of the Army and Navy courses which have started since then. A physics course for about 225 men in Meteorology B was started in February. A physics refresher course for about 225 men in term 4A of the A.S.T.P. was started in March. Beginning with the summer term, a special one-year physics course was set up for Navy students. Of the 450 men taking this course, about half were from the first year V-12 group, and the other half were Navy transfers from other colleges. The physics refresher course was repeated during the summer for about 125 term-4A men in the A.S.T.P. The enrollment in the civilian freshman and sophomore courses was only slightly below normal during the fall and spring terms and down about a quarter in the summer term. During the summer term it was necessary to give eight different courses in elementary physics to care for the civilian freshmen and sophomores and the Army and Navy groups. The total enrollment in elementary physics was about 1,850, requiring a record high of 75 recitation sections.

The increased teaching load in the summer term has been handled in part by visitors from other institutions, by members of other departments at the Institute, and by several new men on temporary appointment. Professor J. M. Hyatt, Head of the Physics Department at Simmons College, and Mr. R. E. Merrill, Instructor of Physics at the Medford High School, have been visiting members of the Department during the summer term. Professors Buerger and Fairbairn of the Geology Department, Professors Dietz and Staley of the Department of Building Construction, and Professor Reynolds and Mr. Lowe of the Department of Civil Engineering have been carrying from one-third to full teaching loads in physics.

Normal research activities in the Department have stopped. The number of graduate students has dropped about a third below the previous year. Graduate subjects have been cut down to the few which have reasonably large enrollment. However, enough graduate subjects are being offered to enable

a graduate student to complete the requirements for the doctor's degree.

B. E. WARREN.

#### PUBLIC HEALTH

The primary concern of the Department is the satisfactory completion and termination of public health training at the Institute on July 1, 1944. The accelerated program of public health training for graduate students, which began June 8, 1942, was completed in February, 1943. It provided training for public health bacteriologists, sanitarians, and health educators, who immediately filled useful and important positions in the war effort. The last group of public health students to be admitted in the Department of Public Health began work in June, 1943, and will complete their training in February or June, 1944. In the twelve-month period ending October, 1943, thirty-seven graduate students have been registered in the Department.

C. E. TURNER.

### SCHOOL OF ARCHITECTURE

#### ARCHITECTURE

The revised curriculum recommended by the staff of the School of Architecture and approved by the Faculty is based on the theory of the coördination of the subjects offered. Subjects treated as generally unrelated to the main objective of the course lose in value and tend to confuse the thinking of the students. The value of each subject taught should be brought to bear on every problem and when completed it should be evident that the students thoroughly understand the principles of construction to be used and also that careful thought has been given to the proper building materials. This will require some research in the building material field and will bring realism into the student's approach to his work.

The four major items to be strengthened are: principles of construction, building materials and their proper uses, practical economics of the building industry, and the fundamental principles of city planning.

With the rapidly increasing numbers of new building materials and appliances, the sciences become more important to the architect. However, if they are not brought to bear directly and in a practical way on the problems of the architect they will revert to the status of unrelated subjects and therefore in the minds of many become of little value in an architectural course of studies. The architect needs enough scientific background to enable him to exercise sound judgment in the use of building material and equipment. Since he becomes, upon signing his contract with the owner, the owner's fiscal agent, his most important function then is the wise expenditure of the funds entrusted to him.

Two major deficiencies in the education of architects have been the almost complete absence of training in the fundamentals of the practical economics of the building industry field and the failure to appreciate the basic problems involved in the economic, social, physical and political decay of our cities. All members of the profession should be trained to view architecture from a broader point of view.

A detailed study of the problems involved in the education and training of the architect is being prepared to amplify the basic recommendations contained in this brief report.

W. R. MACCORNACK.

#### CITY PLANNING

The adjustment of the program of instruction in City Planning to meet war conditions has not necessitated any curriculum changes. Several freshmen and sophomores registered last September in the four-year course leading to the degree of Bachelor of City Planning, but these were called to military service before the end of the academic year with the result that we will have to wait until two or three years after the close of hostilities before this new curriculum can be subjected to a real test.

Registration in the graduate program leading to the degree of Master in City Planning has remained relatively stable, the summer term in 1943 showing an actual increase over the two preceding terms. Prospects for the fall term appear to be good both as to the number and caliber of the students.

The research program inaugurated last year by the Urban Redevelopment Field Station has been carried vigorously forward, despite manpower difficulties necessitated by war conditions, and several reports are now being prepared for publication. The Field Station, which is operating on a grant from the Bemis Foundation, was fortunate in obtaining the services as part-time consultants of Philip H. Cornick, of the Institute of Public Administration, and Edwin H. Spengler, Associate Professor of Economics at Brooklyn College and an authority on municipal finance.

One indication of the growing interest in all phases of long-range planning and urban redevelopment is the greatly increased attendance at the Summer Conference on City and Regional Planning held at the Institute during the two weeks beginning September 7, 1943. The registration at this Conference, which is now in its seventh year, included participants from sixteen states and from the Dominion of Canada. It was double that of any previous year.

The problem of obtaining adequately trained personnel is still a serious one for municipal, state, and Federal planning agencies, and increased activity in the field of postwar planning has accentuated an already difficult situation—thus placing a heavy responsibility on the few schools in the country offering professional training in city and regional planning. It is believed that the training of older men who have had a background of experience in some of the more specialized professions, such as architecture and civil engineering, offers a partial solution to this problem and should be given consideration in educational plans for the postwar period.

F. J. ADAMS.

## DIVISION OF HUMANITIES

### ECONOMICS AND SOCIAL SCIENCE

Conditions arising out of the war have compelled us to curtail the staff and activities of the Department. Four of our young instructors have been taken into the armed services. Professor Bissell is still with the War Shipping Administration, and Professor Armstrong during the present term has been on

leave of absence. Two of our staff are teaching part time in the Mathematics Department. In spite of the change to a twelve months' program, we have been able to carry on with this reduced staff. There has been a shrinkage in the number of students attending our undergraduate classes, the number of graduates has diminished, and we have eliminated certain unessential subjects from the curriculum.

The curtailment of our activities would have been greater, of course, but for the inflow of Army and Navy students. About three hundred of such students are now attending our classes. To meet the needs of the pre-medical students sent by the Navy we have added courses in General and Abnormal Psychology. A special course in Industrial Relations is being given to those enrolled in the Army Training Program in Port Management, and a special course in Statistics for students in the Puerto Rican Fellowship Group.

During the spring term the Industrial Relations Section organized two courses of three weeks' duration for young personnel executives. The instruction was given by men of experience drawn from industry and government assisted by our own staff. Each day was devoted to a topic of current importance such as job evaluation, union-management coöperation, absenteeism, handling complaints and grievances, etc. These courses were attended by representatives of twenty-six companies and, in the judgment of students and instructors, were quite successful. This bringing together, according to a carefully thought-out plan, of the general knowledge of the scholar and the special knowledge of the business man, is a pedagogical technique that may be worth extending to other subjects in the field of industrial economics.

In the field of statistics Professor H. A. Freeman has continued his work for the Army Air Force and has carried on research in Chemical Warfare. He has also conducted an ESMWT course in quality control for inspection engineers. Professor Samuelson, in addition to his fairly heavy graduate teaching load, has been engaged in statistical research in connection with various D.I.C. projects. For the greater part of the year Professor Samuelson was associated with the National Resources Planning Board.

Professor Maclaurin reports progress in the study of the economics of technological change which is proceeding under his direction. This investigation, financed by a grant from the Rockefeller Foundation, seeks to discover the factors responsible for the nature and rate of introduction of innovations. The first project which has now been completed is an analysis of the factors in the electric lamp industry that influenced the development and introduction of the fluorescent lamp. Studies of the glass container, paper, and radio industry are under way. The Committee on Research in Economic History has sponsored an investigation of the role of the entrepreneur in technological change. This study is being undertaken by Professor Scoville. The National Bureau of Economic Research is exploring the possibilities of a study in the "export of technology" and Professor Maclaurin is serving on a committee of the Bureau which is considering this project.

During the year most of the staff as suggested above spent a part of their time in outside activities, either industrial or governmental. Professors Brown, Pigors and R. E. Freeman have been acting as arbitrators or public panel members in connection with labor disputes coming up for settlement before the War Labor Board. Professors Myers, McGregor, Knickerbocker and Pigors have been called in as consultants on personnel problems by companies engaged in war work. Such activity has been encouraged as a valuable contribution to the war effort and as a means of enriching the experience of our teaching staff.

R. E. FREEMAN.

#### ENGLISH AND HISTORY

Because of the uncertainty regarding our civilian enrollment and the probability that the Department would eventually be called upon to take some part in the Navy V-12 and the Army Basic educational programs, two changes were made this year in the options offered by the Department.

The first was the elimination of the three options — Contemporary Literature, Postwar History, and Scientific Writing and Thought — given in the second term of the freshman year. In place of these options the teaching of composition was



continued throughout the second term in a course which placed particular emphasis upon oral presentation. As a result of this change the program of the Department was simplified and it was in a better position to handle any courses in English or history which might be prescribed for students in the Army and Navy. Our first experience with such courses came in March when we began to teach Oral and Written Communication to approximately two hundred fifty men who were training to become meteorologists.

The addition in the sophomore year of an option in American Civilization was the second change. It had been contemplated for some time and discussed with the members of the Visiting Committee. All concerned felt that such an option was desirable. It proved to be a popular one, drawing most heavily from the option Growth of the Western World, which places primary emphasis upon European history.

Under its new coach, Mr. Glenn H. Leggett, the Debating Society had a very successful year. About sixty undergraduates took part in either the intramural or the intercollegiate program of the Society. Twenty-five men chosen through an elimination tournament held at the beginning of each term won two-thirds of the forty intercollegiate debates in which they participated. The varsity team, besides winning thirteen of seventeen debates, tied for first place in the Dartmouth Debate Tournament held at Hanover last November, with teams from thirteen colleges competing. A varsity debate held with Johns Hopkins last April was published in the University Debaters' Annual for 1942-43, a yearbook containing eight or ten of the best intercollegiate debates of the year.

Professor Greene and Professor Fassett collaborated with members of the English staff at Harvard in the publication of a manual called *Direct Communication — Written and Spoken*. Professor Bartlett served with Professor Porter G. Perrin of Colgate and Professor Lennox Grey of Columbia Teachers' College on the committee which helped the Army Specialized Training Division plan the course in Communication which is part of the Basic Training Program.

H. R. BARTLETT.

## GENERAL STUDIES

In spite of war conditions, the program of liberal and humanistic electives has been maintained with less change than at one time seemed probable.

On account of the all-year academic program, the present report covers three terms instead of two. In the fall term of the academic year 1942-43, the last term in which the number of civilian students was still normal, a full list of nineteen electives was offered with a total enrollment of 551 students, which was well above the average of recent years. Students who expected to enter the armed forces in the near future often indicated a desire to include a course of a humanistic type in their last term.

The next two terms, with increasing numbers of students in courses prescribed by the Army and Navy, have been essentially war terms. In the winter term the enrollment in General Studies was 250, and in the summer term 353, a decline in average enrollment which is smaller than that of our regular civilian students.

The list of courses has also been reduced and modified. In the current summer term, seventeen members of the Faculty participate, giving a total of fourteen courses. The largest single course is Topography in a World War with an enrollment of 103. There are also large enrollments in such subjects as International Relations and in Military History of the United States. Many students, however, continue to demand courses which have no direct relation to the war, as, for example, the History of Philosophy, the History of Science, Psychology and courses in Literature and the Fine Arts. Subjects in which the student has adequate opportunity for oral and written expression, especially a Reading Seminar in which a wide variety of books are read and discussed informally, have been especially successful.

In addition to the General Study list for civilian students, the various courses for the Army and Navy, especially the Navy V-12 program, include some subjects, especially Psychology and Economics, which would normally belong to the General Study list.

As a result of our recent experience, it seems likely that in

the period after the war the General Study Committee will recommend a shorter list, but with adequate provision of competent specialists in the fields which are covered. The importance of using subjects of this type for incidental training in the oral presentation of information and ideas is also recognized.

R. G. CALDWELL.

MILITARY SCIENCE AND TACTICS

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

Quotas for the Advanced Course were increased as follows:

Ordnance Unit . . . . .	5	making a total of 105
Chemical Warfare . . . . .	5	making a total of 50
Coast Artillery Corps . . . . .	5	making a total of 107

The total numbers trained in the Advanced Course were as follows:

Coast Artillery Corps . . . . .	97	(Quota 107)
Ordnance . . . . .	105	(Quota 105)
Corps of Engineers . . . . .	91	(Quota 100)
Signal Corps . . . . .	61	(Quota 75)
Chemical Warfare . . . . .	44	(Quota 50)

Beginning with the present academic year, the Advanced Course R.O.T.C. has been suspended by the War Department for the duration of the war.

Continuing the previously announced policy the tours of duty for Reserve Officers has been shortened for the duration. Six Officers have been relieved from duty at this station since my last report, and of the six, four have been replaced.

A War Department requirement that all members of the Advanced Course R.O.T.C. be enlisted in the Enlisted Reserve Corps was fulfilled. Some two hundred forty-two Juniors were called to active duty at the Institute April 11, 1943. The Seniors were called to active duty at the Institute May 1, 1943.

As usual, all units of the Department were rated as "Excellent" by the First Service Command Inspectors.

Rifle and Pistol teams had a successful season up to about

February, 1943, at which time they were discontinued for the duration by the Institute.

E. W. PUTNEY.

### MODERN LANGUAGES

Since the beginning of the war the activities of the Department have been progressively modified owing, in the first place, to the temporary lessening or deferment of foreign language study in some professional departments, in the second place to the need for offering two new General Studies in Conversational Wartime French and German to replace the former literary courses, and thirdly to the transfer of a considerable proportion of its staff's schedule time to other departments in order to meet the demand for help in teaching the large groups of Army and Navy men taking Physical Geography, English and History.

A considerable number of Navy men in the Premedical Course, second year, were assigned to classes in German, French and Spanish, the great majority taking German. The new course in Russian was heavily elected by Seniors (thirty-three men) and was followed as listeners by a number of the Institute staff. Unfortunately the effect of the draft was to reduce very greatly the size of the class.

The system of offering language examinations for Doctorate candidates has recently been modified by reverting to our older system of individual examinations in French, German and Spanish given on personal application instead of offering only three examinations a year in each of these languages.

Apart from these modifications there have been no important changes in our policies which seem to be working very well, especially in the continued requirement of the individual selection of scientific articles for written translation.

The facilities of our Phonograph Room have been used to a much larger extent than in the past. Important Library acquisitions have included a number of dictionaries in Russian, Spanish, and Portuguese. The Department again acted as host to the New England Branch of the American Teachers of Spanish. Professor Carrier was elected in January President of the New England Modern Language Association, and

Professor Koch served as Secretary-Treasurer of the Massachusetts Group of the same Association. Mr. Znamensky produced during the year a new scientific Russian Reader used in his course with marked success.

E. F. LANGLEY.

## REPORT OF THE TREASURER AUDITORS' CERTIFICATE

We have made an examination of the books and accounts of the Treasurer and the Bursar of the Massachusetts Institute of Technology for the year ended June 30, 1943, and the accompanying balance sheet at that date and statements of operating income and expense and current surplus for the year. We have reviewed the accounting procedures of the Institute, and without making a detailed audit of the transactions, have examined or tested accounting records of the Institute and other supporting evidence by methods and to the extent we deemed appropriate.

We checked the investment accounts at June 30, 1943, with lists of securities at that date, certified by the Old Colony Trust Company of Boston, Massachusetts, custodian. We obtained independent confirmations of a substantial proportion of student loans, accounts receivable (other than from the United States Government), and accounts payable, and made physical tests of the quantities included in the inventory of supplies. In general, it was not practicable to obtain confirmations of receivables from and advances by the United States Government, but as to these items we satisfied ourselves by other auditing procedures.

As indicated in the Treasurer's report, the accompanying financial statements show the aggregates but not the detail of the operations resulting from war research contracts with the United States Government and with certain large industrial corporations. However, the accounts relating to the war research contracts have been included in our examination of the Institute's transactions for the year. Reserves aggregating \$432,144.61 (Special War Reserve 1941-1942, \$407,144.61 and Army and Navy Reserve, \$25,000, included in endowment and other funds), have been provided for contingencies and for adjustments which may result from possible renegotiation or termination of war contracts, but the adequacy of such reserves cannot now be determined.

In our opinion, the accompanying balance sheet and statements of operating income and expense and current surplus, with supporting schedules and footnotes, and with the explanation in the preceding paragraph relating to war contracts, present fairly, on the basis indicated, the financial condition of the Institute at June 30, 1943, and the results of its operations for the year ended at that date.

We satisfied ourselves by examination of the transactions for the year of the Joseph Hewett and the George S. Witmer Funds, of which the Massachusetts Institute of Technology acts as trustee, that the provisions of the trust agreements had been fulfilled.

Our examination embraced also the accounts of the Massachusetts Institute of Technology Pension Association for the same period, which, in our opinion, have been correctly stated.

September 28, 1943. PATTERSON, TEELE & DENNIS,  
*Accountants and Auditors*

### REPORT OF THE AUDITING COMMITTEE

*To the Corporation of the  
Massachusetts Institute of Technology:*

The Auditing Committee reports that the firm of Patterson, Teele & Dennis was employed to make an audit of the books and accounts of the Institute for the fiscal year ended June 30, 1943, and their certificate is submitted herewith.

Respectfully,

September 23, 1943

VICTOR M. CUTTER  
HENRY E. WORCESTER, *Chairman*

## TREASURER'S STATEMENT

*To the Corporation:*

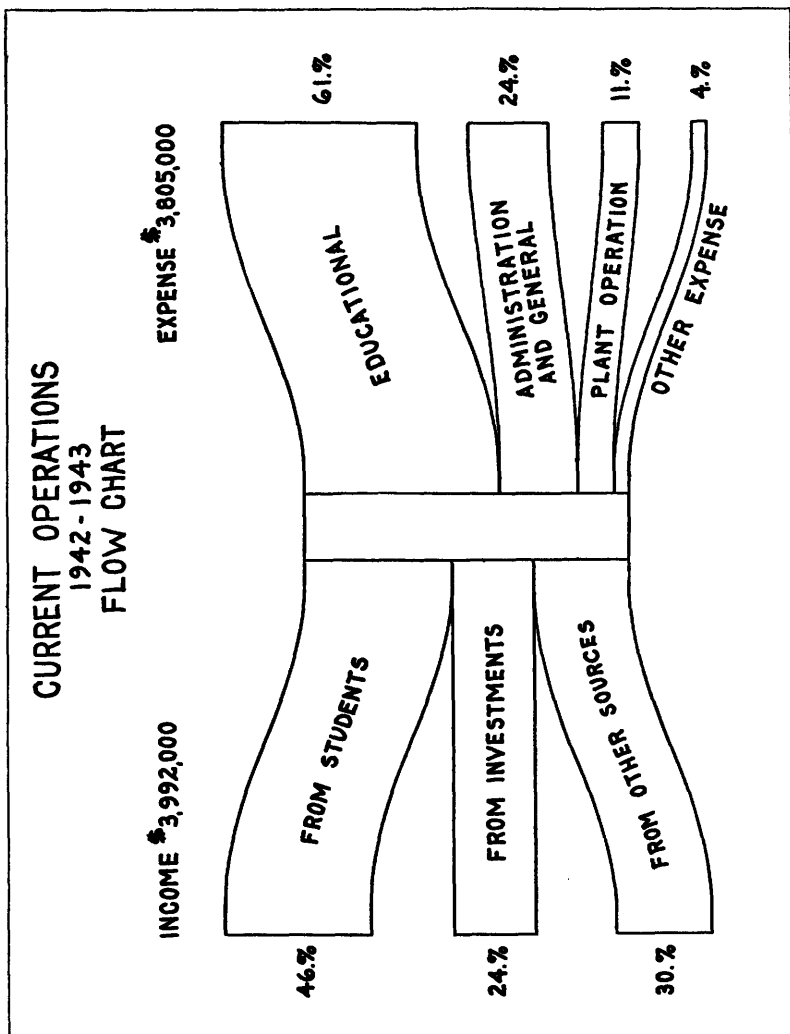
The financial condition of the Institute as of June 30, 1943, also the financial transactions during the year ended on that date are shown by the statements and schedules submitted herewith in accordance with Section VI of the By-Laws of the Corporation.

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

## EDUCATIONAL PLANT

There were no additions to the Educational Plant during the year. The Institute however completed its payment of one-half of the cost of the Chemical Engineering Building (No. 12). The total stands at \$17,053,000. There were many temporary structures erected on the campus for government research projects, but inasmuch as these buildings are not M. I. T. properties they are not included in the Educational Plant Assets.

The sources of the greater part of this plant capital are indicated in Schedule A-9, Principal Gifts and Appropriations for the Educational Plant.





### CURRENT OPERATIONS

The flow chart on the opposite page indicates the sources of budgeted income and the expenses of the operation of the Institute for the past year. It excludes the income and expense of Dining Services, Dormitories, and of Current Funds, which cover all war and other research projects. (See Schedule A-3.)

Income from Students, including loans and scholarships, \$1,814,000, was slightly in excess of last year, but Income from Investments fell off \$115,000. This was because of the substantial increase in Government Bond holdings as well as continued borrowing from Investment Cash on about the same scale as last year to finance war research projects. (See Schedule A.) Income from other sources increased \$421,000 because of war training and research contracts with the Government.

Educational expenses were up \$43,000 and General and Special Administrative Expenses decreased \$7,500.

The Current Surplus was increased \$192,000 as a result of all operations and now stands at \$210,000.

This published report omits the detail of operations resulting from war research contracts with the Government and with certain large industrial companies. The extent of these operations is shown in Schedule A-7, and reflected in the Balance Sheet (pp. 144-145).

### ENDOWMENT FUNDS

The book value of the Endowment and other funds is \$37,943,000, an increase of \$677,000 during the year. Capital gift additions during the year provided \$616,000 of this. Income added to certain funds and some fund additions accounted for the balance.

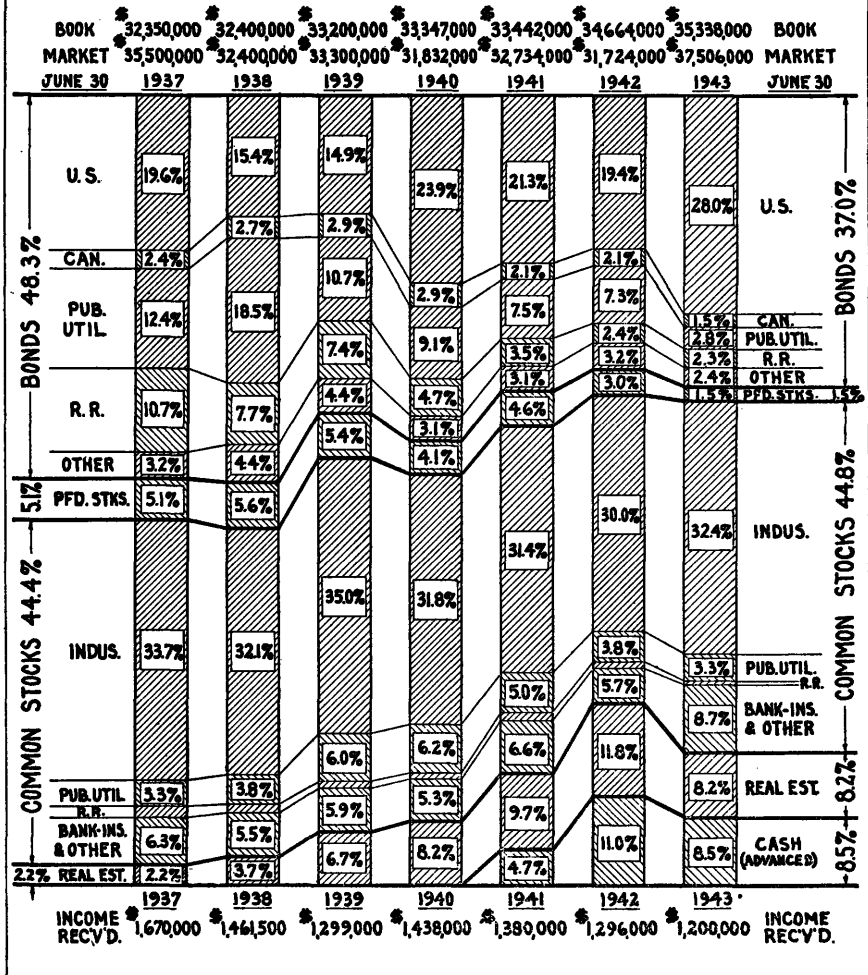
## INVESTMENTS

## SUMMARY OF INVESTMENTS AS OF JUNE 30, 1943

<i>General Investments</i>	<i>Book</i>	<i>Market</i>	<i>Per Cent at Market</i>
<i>Bonds —</i>			
United States Government . . . . .	\$10,376,300	\$10,486,950	28.0
Canadian (all issues) . . . . .	557,420	570,811	1.5
Public Utility . . . . .	997,734	1,049,145	2.8
Railroad . . . . .	854,440	893,625	2.3
Other . . . . .	889,726	911,893	2.4
	<u>\$13,675,630</u>	<u>\$13,912,425</u>	<u>37.0</u>
Preferred Stocks . . . . .	<u>\$576,233</u>	<u>\$565,848</u>	<u>1.5</u>
<i>Common Stocks —</i>			
Industrial . . . . .	\$ 9,835,817	\$12,134,528	32.4
Public Utility . . . . .	1,443,617	1,238,483	3.3
Railroad . . . . .	131,923	142,525	0.4
Bank, Insurance and Other . . . . .	3,400,155	3,238,215	8.7
	<u>\$14,811,512</u>	<u>\$16,753,752</u>	<u>44.8</u>
Mortgages and Real Estate . . . . .	<u>\$ 3,085,174</u>	<u>\$ 3,085,174</u>	<u>8.2</u>
Cash — Advanced (Schedule A) . . . . .	<u>\$ 3,158,285</u>	<u>\$ 3,189,300</u>	<u>8.5</u>
Total General Investments . . . . .	<u>\$35,306,834</u>	<u>\$37,506,499</u>	<u>100</u>
<i>Special Investments</i> . . . . .	<u>\$ 2,636,390</u>	<u>\$ 2,683,401</u>	<u>...</u>
TOTAL INVESTMENTS . . . . .	<u>\$37,943,224</u>	<u>\$40,189,900</u>	<u>...</u>

Changes 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.

SUMMARY  
OF  
GENERAL INVESTMENTS AT MARKET



### INVESTMENTS

The book value of the Institute's investments increased \$688,000 during the year, while the market value increased nearly \$6,000,000. This results, for the general investments, in an increase in United States Government bonds of 8.6 per cent — of all bonds, however, but 2.6 per cent — and of all stocks of 3.5 per cent. The percentage of mortgages and of cash advanced decreased 6.1 per cent to offset the above.

The market value of the general investments was 106 per cent of the book value compared with 95 per cent in 1940, 98 per cent in 1941 and 91 per cent last year.

### INVESTMENT INCOME

The income available for distribution to the pooled funds permitted an allocation of 3.60 per cent as against 3.93 per cent last year and 4.10 per cent the year before. The yield on all investments held as of June 30, 1943, figured at market value was 3.77 per cent contrasted with 4.22 per cent last year and 4.36 per cent the year before. As previously indicated, the high percentage of United States Government bonds held in the account is the cause of this reduction.

### GENERAL

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

Respectfully submitted,

HORACE S. FORD, *Treasurer.*

September 15, 1943

GIFTS AND BEQUESTS RECEIVED DURING YEAR ENDED  
JUNE 30, 1943

## CAPITAL

Contributions to M. I. T. Alumni Fund, 1942-43 (additional).	\$36,001.08
Contributions to M. I. T. Alumni Fund (Gymnasium).....	412.50
Contributions to M. I. T. Alumni Fund, 1943-44.....	69,364.60
Contributions to Class of 1922 Scholarship Fund.....	2,165.00
Contribution to Class 1919 Fund (Anonymous "H").....	5,000.00
Contributions to Class of 1917 Scholarship Fund.....	860.50
W. A. Conant Estate for W. A. Conant Scholarship Fund....	2,850.00
Arthur J. Conner for Arthur J. Conner Fund.....	5,000.00
Jennie A. Douglass Estate for James Watt Scholarship Fund.	99.76
Charles W. Eaton Estate for C. W. Eaton Fund.....	500.00
Barnett D. Gordon for Scholarship Fund.....	5,000.00
Anonymous.....	300,000.00
William T. Henry Estate for William T. Henry Fund.....	11,195.00
Charles R. Main Estate for Class of 1909 Scholarship Fund..	500.00
Alexander G. Mercer Estate for Hall-Mercer Scholarship Fund	908.31
Robert M. Milne Estate for Robert M. Milne Fund.....	75,856.47
Harriette A. Nevins Estate for George Blackburn Memorial Fund.....	100.00
Christel Orvis Estate for Christel Orvis Fund.....	539.42
Charles A. Tripp Estate for Charles A. Tripp Fund.....	100,000.00
Theodore N. Vail Estate for Theodore N. Vail Fund.....	100.00
Marion Wescott Estate for Marion Wescott Fund.....	250.00
	<u>\$616,702.64</u>

## MISCELLANEOUS

Contributions to Class of 1917 Boat Fund.....	\$400.00
Contributions to Class of 1918 Organ Fund.....	170.00
Contributions to Class of 1938 Scholarship Fund.....	653.82
Contributions to Industrial Economics Graduate Program Fund	3,000.00
Contributions to Industrial Relations Fund.....	50,870.51
Contributions to Markle Cyclotron Research.....	8,900.00
Contributions to Oxy-Cellulose Research Fund.....	1,950.00
American Oncologic Hospital for E. E. Oncologic Fund.....	6,000.00
American Petroleum Institute for Research.....	5,575.00
Argentine Duperial Company for Duperial Scholarship Fund..	1,565.68
Godfrey L. Cabot for Research Associates.....	1,000.00
Continental Foods for Biology Lipton Fund.....	375.00
Converse Rubber Company for Research Associates.....	1,000.00
Corn Industries Research Foundation for Biology Research....	800.00
Charles G. Dawes for Cosmic Terrestrial Research Fund.....	500.00
A. V. deForest for M. E. Special No. 1254.....	2,000.00
E. I. duPont de Nemours & Company for duPont Fellowship..	3,500.00
Eastman Kodak Company for Chemical Engineering Depart- ment.....	1,000.00
J. Forstmann & Company for M. E. Forstmann Fund.....	5,000.00
A. M. Gaudin for Mineral Dressing Special.....	500.00

General Radio Company for I. and O.E.E. COOP. Course . . . . .	\$1,200.00
Gulf Oil Corporation for Special Research (Physics Department) . . . . .	1,100.00
T. C. Haffenreffer for Deans' Fund Special . . . . .	1,500.00
W. J. Hamburger for Textiles Equipment Special Fund . . . . .	500.00
Charles Hayden Foundation for Memorial Scholarship Fund . . . . .	20,000.00
Charles H. Hood Educational Trust for Health Education . . . . .	400.00
Godfrey M. Hyams Trust for Hyams Radiation Project . . . . .	13,000.00
Johnson Research Foundation for Biology Research . . . . .	2,750.00
Captain C. S. Joyce for Naval Architecture . . . . .	2,080.00
Nathaniel Krass for Krass Undergraduate Scholarship Fund . . . . .	100.00
Kroger Grocery & Baking Company for Kroger Biology Fellowship . . . . .	1,600.00
Lederle Laboratories, Inc. for Biology Research . . . . .	2,500.00
Lever Brothers Company for Lever Brothers Fellowship . . . . .	3,000.00
A. D. Little, Inc. for Friends of the Library . . . . .	100.00
Magnaflex Corporation for M. E. Special No. 1254 . . . . .	10,000.00
N. M. Marsilius for B. and E. Adm. Dept. Special and D. R. Dewey Fund . . . . .	1,500.00
James C. Melvin Trust for Melvin Trust Scholarships, 1942-43 . . . . .	3,750.00
C. Lillian Moore for Grimmons Fund . . . . .	1,561.90
F. J. Moore, Mrs., for Emma B. Moore Ration Research . . . . .	1,000.00
National Academy of Sciences for National Research Council — Draper . . . . .	2,000.00
National Lime Association for Building Engineering and Construction . . . . .	5,000.00
Research Corporation for Chemistry Research . . . . .	22,233.00
Revere Copper & Brass, Inc. for Metallurgy Research . . . . .	1,600.00
Rockefeller Foundation for Biology Research . . . . .	51,456.18
Sheffield Foundation for Sheffield Foundation Research Project . . . . .	3,750.00
S. Slater & Sons, Inc. for M. E. Slater Fund . . . . .	5,000.00
Alfred P. Sloan, Jr. for Sloan Graduate Fellowship . . . . .	1,000.00
Textile Foundation for M. E. Textile Fund Grant . . . . .	5,000.00
William Underwood Company for William Underwood Biology Fellowship . . . . .	2,500.00
United Engineering Trustees, Inc. for M. E. Research . . . . .	2,500.00
Vanadium Alloys Steel Company for Metallurgy Vanadium Fellowship . . . . .	2,375.00
Vitreous China Plumbing Fixture Association for Clay Research . . . . .	500.00
Granger Whitney, Mrs., for Granger Whitney Fund . . . . .	200.00
H. P. Wood for Business and Engineering Administration Department . . . . .	50.00
	<u>\$267,566.09</u>
<b>TOTAL CAPITAL AND MISCELLANEOUS GIFTS . . . . .</b>	<u><b>\$884,268.73</b></u>



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

## ASSETS

	<i>June 30, 1942</i>	<i>June 30, 1943</i>
Cash .....	\$44,647.58	\$57,636.70
Investments (Schedule A-1) .....	1,548,034.45	1,671,880.13
<b>Total</b> .....	<u>\$1,592,682.03</u>	<u>\$1,729,516.83</u>

<sup>1</sup> Market Value June 30, 1943, \$1,700,658.00.

## LIABILITIES

Teachers' Annuity Fund (5% salary deduction, plus interest) .....	\$909,085.04	\$1,001,289.20
*M. I. T. Pension Fund (3% appropriation, plus interest) .....	577,806.80	636,195.83
Special Reserves for Annuity Payments .....	61,929.44	55,733.70
<b>Total Liabilities</b> .....	<u>\$1,548,821.28</u>	<u>\$1,693,218.73</u>
Reserve Fund .....	43,860.75	36,298.10
<b>Total</b> .....	<u>\$1,592,682.03</u>	<u>\$1,729,516.83</u>

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

## RECEIPTS AND EXPENDITURES FOR 1942-1943

## RECEIPTS

5% salary deductions added to Teachers' Annuity Fund .....	\$83,204.29	
3% appropriations added to M. I. T. Pension Fund .....	50,073.70	
Income from investments .....	57,414.46	
Net profits on sales of securities .....	2,364.68	
<b>Total Receipts</b> .....	<u>\$193,057.13</u>	

## EXPENDITURES

Paid on account of withdrawal or decease of members .....	\$10,711.92	
Used to purchase annuities for retiring members .....	32,837.09	
Pensions paid directly to former retired members .....	8,173.24	
Losses on Sales of Securities .....	2,887.58	
Amortization of Bond Premiums .....	1,612.50	
<b>Total Expenditures</b> .....	<u>\$56,222.33</u>	
<b>Net Increase of Ledger Assets</b> .....	<u>\$136,834.80</u>	

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

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



## BURSAR'S STATEMENT

*To the Treasurer:*

The following principal Schedules

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

together with their respective supporting schedules (A-1, B-1, etc.) have been drawn from the Institute's books of account. These summarize the financial condition of the Institute as of June 30, 1943, as well as the transactions during the year.

D. L. RHIND, *Bursar.*

W. A. HOKANSON, *Assistant Bursar.*

September 15, 1943

*SCHEDULE A*  
BALANCE SHEET  
JUNE 30, 1943

ENDOWMENT FUNDS, ASSETS	
Securities and Real Estate . . . . . (A-1)	\$34,784,938.66
Cash: Advanced for Current Purposes (per contra) . . . . .	3,060,285.95
Advanced for Plant Construction (per contra) . . . . .	98,000.00
Total . . . . .	\$37,943,224.61
STUDENT LOAN ASSETS	
Notes Receivable . . . . . (A-3)	\$ 820,819.14
CURRENT AND DEFERRED ASSETS	
Cash: For General Purposes . . . . .	\$ 793,007.69
For U. S. Government Research (per contra) . . . . .	1,300,000.00
Accounts Receivable, Less Advances, U. S. Gov. . . . . (A-4)	2,664,561.06
Accounts Receivable, Others . . . . . (A-4)	157,045.18
Notes Receivable . . . . .	20,000.00
Students' Fees and Deposits, Receivable . . . . .	2,467.74
Deposit on Fire Insurance Account . . . . .	41,212.25
Expenditures on U. S. Government and Other Con- tracts in Progress . . . . . (A-6)	1,188,575.13
Expenditures on Other Uncompleted Projects and Inventories . . . . . (A-6)	225,568.45
Total . . . . .	\$6,392,437.50
EDUCATIONAL PLANT ASSETS	
Land, Buildings and Equipment . . . . . (A-8)	\$17,053,465.04
Total . . . . .	\$17,053,465.04
Total Assets . . . . .	\$62,209,946.29

AGENCY FUNDS, ASSETS	
Joseph Hewett Fund:	
Securities . . . . . (A-1)	\$ 211,167.25
Cash . . . . .	1,515.25
	\$ 212,682.50
M. I. T. Pension Association:	
Securities . . . . . (A-1)	\$1,671,880.13
Cash . . . . .	57,636.70
	1,729,516.83
George S. Witmer Fund:	
Securities . . . . . (A-1)	\$ 38,113.66
Cash . . . . .	5,175.22
	43,288.88
Students' Deposits:	
Cash . . . . .	57,837.13
Total . . . . .	\$2,043,325.34

<sup>1</sup> Held for safe-keeping only.

*SCHEDULE A*  
BALANCE SHEET  
JUNE 30, 1943

ENDOWMENT FUNDS, CAPITAL

Endowment and Other Funds . . . . . (A-2) \$37,943,224.61

Total . . . . . \$37,943,224.61

STUDENT LOAN CAPITAL

Total . . . . . (A-3) \$ 820,819.14

CURRENT LIABILITIES AND SURPLUS

Advance on O.S.R.D. Contract for July 1943 (per contra) . . . . . \$1,300,000.00

Accounts Payable . . . . . 663,718.88

Students' Fees and Deposits . . . . . (A-5) 328,034.35

United States Victory Tax Payable . . . . . (A-7) 104,382.48

War Savings Bond Deposits . . . . . (A-7) 25,421.21

Current Funds . . . . . (A-7) 700,149.82

Borrowed from Investment Cash (per contra) . . . . . 3,060,285.95

Current Surplus (Schedule C) . . . . . 210,444.81

Total . . . . . \$ 6,392,437.50

EDUCATIONAL PLANT CAPITAL

Endowment for Educational Plant . . . . . \$16,955,465.04

Borrowed from Investment Cash (per contra) . . . . . 98,000.00

Total . . . . . \$17,053,465.04

Total Capital, Liabilities and Surplus . . . . . \$62,209,946.29

AGENCY FUNDS, CAPITAL

Joseph Hewett Fund . . . . . \$ 212,682.50

M. I. T. Pension Association . . . . . 1,729,516.83

George S. Witmer Fund . . . . . 43,288.88

<sup>1</sup> Students' Deposits . . . . . 57,837.13

Total . . . . . \$ 2,043,325.34

<sup>1</sup> Held for safe-keeping only.

## SCHEDULE B

## †OPERATING INCOME FOR YEAR 1942-43

	<i>Supporting Schedules</i>	
<b>EDUCATIONAL AND GENERAL</b>		
<b>FROM STUDENTS</b>		
Fees — Cash.....	\$1,550,060.41	
Fees Receivable.....	2,366.70	
Scholarship Awards.....	174,928.50	
Student Loans.....	79,101.00	
	<hr/>	
Total, Tuition Fees.....	\$1,806,456.61	
Locker, Examination and Other Fees....	8,325.52	
	<hr/>	
		\$1,814,782.13
<b>FROM INVESTMENTS</b>		
Income — General and Special		
Investments.....(A-1)	\$1,310,516.17	
Less: Income Added to Funds.....(A-2)	349,212.87	
	<hr/>	
		961,303.30
<b>FROM OTHER SOURCES</b>		
Federal Aid — Acts 1862 and 1890.....	\$22,088.35	
Appropriations from Funds, etc....(B-1)	334,164.35	
U. S. Government Contracts.....	691,155.73	
Rentals and Other Income.....(B-2)	29,358.13	
Army and Navy Training Programs.....	99,836.58	
(\$124,836.58 less Reserve \$25,000)		1,176,603.14
	<hr/>	
Total, Educational and General.....		\$3,952,688.57
<b>AUXILIARY ACTIVITIES</b>		
Dormitories (*excl. Graduate House) (B-11)	\$187,770.98	
Dining Service, Walker Memorial... (B-13)	378,449.93	
Dining Service, Graduate House.... (B-14)	166,619.66	
	<hr/>	
Total, Auxiliary Activities.....		732,840.57
		<hr/>
<i>Total Operating Income</i> .....		<u>\$4,685,529.14</u>

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

†Not including receipts for Major and Current Funds.

**SCHEDULE B**  
**†OPERATING EXPENSE FOR YEAR 1942-1943**

	<i>Supporting Schedules</i>	
<b>EDUCATIONAL AND GENERAL</b>		
<b>EDUCATIONAL EXPENSES</b>		
Salaries . . . . .	(B-3)	\$1,956,204.87
Departmental Expenses . . . . .	(B-4)	245,964.96
Library and Museum . . . . .	(B-5)	98,927.02
		\$2,301,096.85
<b>GENERAL EXPENSES</b>		
Salaries of Officers . . . . .		\$148,808.00
Clerical and Office Expense, Admin- istration . . . . .	(B-6)	176,003.74
General Administration Expense . . .	(B-7)	384,501.00
Special Administration Expense . . .	(B-7a)	189,111.05
		898,423.79
<b>PLANT OPERATION</b>		
Department of Buildings and Power (B-8)		\$432,387.37
Fire Insurance . . . . .		4,554.44
		436,941.81
<b>OTHER EXPENSES</b>		
Medical Department . . . . .	(B-9)	\$73,170.45
Undergraduate Budget Board . . . .	(B-10)	94,905.75
		168,076.20
<b>Total, Educational and General . . . . .</b>		<b>\$3,804,538.65</b>
<b>AUXILIARY ACTIVITIES</b>		
Dormitories (*excl. Graduate House) (B-11)		\$148,503.27
Dining Service, Walker Memorial . . .	(B-13)	378,449.93
Dining Service, Graduate House . . .	(B-14)	166,619.66
<b>Total Auxiliary Activities . . . . .</b>		<b>693,572.86</b>
<b>Total Operating Expenses . . . . .</b>		<b>\$4,498,111.51</b>
<b>Excess Income over Expense (Schedule C) . . . . .</b>		<b>187,417.63</b>
<b>Total . . . . .</b>		<b>\$4,685,529.14</b>

† Not including disbursements for Major and Current Funds.

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

*SCHEDULE C*  
CURRENT SURPLUS

BALANCE, June 30, 1942.....		\$ 18,216.42
<i>Add:</i>		
Adjustment of Previous Years' Operations:		
1941-1942 War Reserve Fund.....	\$51,238.14	
Appropriations unexpended.....	514.00	
Rebates received in respect of City of Boston .		
Property Taxes (net) .....	9,649.28	
Salary Adjustments (net) .....	2,366.28	
Recoveries of Student Fees.....	532.40	
Sailing Pavilion Boat Fund.....	400.00	
Royalties received .....	200.24	
Miscellaneous (net) .....	60.80	
	\$64,961.14	
<i>Less:</i> Carnegie Pension Adjustment.....	4,350.38	
Excess Income 1942-1943 (Schedule B).....		60,610.76
		187,417.63
		\$266,244.81
<i>Deduct:</i>		
Additional 1942-1943 Departmental Appropriations, reserved for 1943-1944.....		55,800.00
BALANCE, June 30, 1943.....		\$210,444.81

SCHEDULE A-1  
INVESTMENTS — GENERAL

<i>Par Value</i>				<i>Book Value</i>	<i>Net Income</i>
<b>U. S. GOVERNMENT BONDS</b>					
\$2,000,000	U. S. Treasury . . . . .	1¾s	1948	\$2,008,800.00	\$15,649.00
1,080,000	U. S. Treasury . . . . .	2¼s	1955	1,082,500.00	24,300.00
1,250,000	U. S. Treasury . . . . .	2s	1952	1,250,000.00	.....
1,000,000	U. S. Treasury . . . . .	2½s	1954	1,005,000.00	25,000.00
1,750,000	U. S. Treasury . . . . .	2½s	1969	1,750,000.00	7,331.82
250,000	United States G. . . . .	2½s	1953-5	250,000.00	3,125.00
280,000	Commodity Credit ..	1½s	1945	280,000.00	3,150.00
2,750,000	U. S. Treas. Notes. . .	1½s	1946	2,750,000.00	30,379.12
	Income from bonds sold				59,211.69
	<b>Total U. S. Government Bonds . . . . .</b>			<b>\$10,376,300.00</b>	<b>\$168,146.63</b>
<b>CANADIAN GOVERNMENT AND OTHER BONDS</b>					
\$250,000	Canada . . . . .	2¼s	1944	\$249,322.50	\$5,625.00
35,000	Ottawa . . . . .	5s	1945	35,000.00	1,750.00
24,325	Toronto . . . . .	4s	1948	28,622.25	973.32
50,000	Gatineau Power . . . . .	3¾s	1969	49,125.00	1,875.00
200,000	Shawinigan W. & P. . .	4½s	1967	201,350.00	9,000.00
	Income from bonds sold or matured				4,361.11
	<b>Total Canadian and Other Bonds . . . .</b>			<b>\$557,419.75</b>	<b>\$23,584.43</b>
<b>INDUSTRIAL BONDS</b>					
\$200,000	Eastern Gas and Fuel	4s	1956	\$176,382.02	\$8,000.00
99,000	National Dairy Prod.	3¼s	1960	102,960.00	3,217.50
58,000	National Oil Prod. . .	3¼s	1955	58,100.00	1,885.00
37,000	National Oil Prod. . .	3¼s	1957	37,700.00	1,202.50
100,000	Schenley Distillers. . .	4s	1952	100,000.00	4,000.00
	Income from bonds sold or called				2,636.88
	<b>Total Industrial Bonds . . . . .</b>			<b>\$475,142.02</b>	<b>\$20,941.88</b>
<b>Shares</b>					
<b>INDUSTRIAL PREFERRED STOCKS</b>					
315	American Tobacco . . . . .			\$43,725.65	\$1,890.00
20	Crane Conv. . . . .			2,107.00	.....
500	Poor & Co. A. . . . .			9,965.00	1,375.00
500	U. S. Steel . . . . .			51,706.42	3,500.00
	Income from stocks sold				8,047.50
	<b>Total Industrial Preferred Stocks . . . .</b>			<b>\$107,504.07</b>	<b>\$14,812.50</b>

*SCHEDULE A-1 — (Continued)*

<i>Shares</i>		<i>Book Value</i>	<i>Net Income</i>
<b>INDUSTRIAL COMMON STOCKS</b>			
3,030	American Can . . . . .	\$307,408.67	\$9,090.00
5,000	Borg Warner . . . . .	178,181.68	12,280.00
2,000	Caterpillar Tractor . . . . .	92,194.13	4,000.00
5,200	Central Aguirre Associates . . . . .	134,514.33	11,440.00
100	Christiana Securities . . . . .	250,000.00	6,910.00
3,000	Chrysler Corp. . . . .	162,997.30	9,000.00
2,000	Dewey & Almy Chemical . . . . .	55,000.00	2,000.00
3,000	Dow Chemical . . . . .	380,418.76	10,494.00
2,200	Draper Corp. . . . .	101,780.20	6,600.00
2,872	du Pont de Nemours . . . . .	352,284.24	11,488.00
12,000	Eastman Kodak . . . . .	1,053,505.96	60,000.00
12,080	General Electric . . . . .	283,516.80	16,912.00
5,000	General Motors . . . . .	177,670.67	10,000.00
900	Hazel Atlas Glass . . . . .	97,273.12	4,500.00
2,000	Hercules Powder . . . . .	146,973.25	4,800.00
7,500	Humble Oil & Refining . . . . .	486,789.80	15,000.00
2,000	Inland Steel . . . . .	214,296.56	9,000.00
758	International Business Machines . . . . .	89,705.22	5,523.00
3,100	International Harvester . . . . .	123,863.98	7,750.00
7,240	International Nickel, Canada . . . . .	261,895.60	12,307.99
2,000	Johns Manville . . . . .	175,691.60	4,000.00
6,000	Kennecott Copper . . . . .	253,773.59	18,000.00
4,000	Kroger Grocery and Baking . . . . .	132,053.95	8,000.00
2,500	Liquid Carbonic . . . . .	37,825.90	3,125.00
4,137	Monsanto Chemical . . . . .	300,309.15	9,308.25
1,000	Montgomery Ward . . . . .	58,169.33	6,800.00
2,000	National Lead . . . . .	65,726.17	1,000.00
2,500	National Steel . . . . .	192,305.99	7,500.00
5,100	Owens Illinois Glass . . . . .	298,685.89	10,200.00
2,400	J. C. Penney . . . . .	216,229.29	12,000.00
3,000	Phillips Petroleum . . . . .	115,193.57	6,000.00
2,500	Pittsburgh Plate Glass . . . . .	138,661.89	9,140.00
5,753	Procter & Gamble . . . . .	265,767.26	11,506.00
5,000	St. Joseph Lead . . . . .	219,990.15	10,000.00
2,500	Sears Roebuck . . . . .	192,877.83	12,771.25
1,000	Sherwin Williams . . . . .	100,988.10	3,000.00
4,165	Standard Oil, Cal. . . . .	140,714.83	6,872.25



SCHEDULE A-1 — (Continued)

<i>Shares</i>			<i>Book Value</i>	<i>Net Income</i>	
<b>INDUSTRIAL COMMON STOCKS (Continued)</b>					
3,000	Standard Oil, Ind.....		\$89,606.25	\$3,750.00	
12,000	Standard Oil, N. J.....		531,455.94	24,000.00	
1,500	Timken Roller Bearing.....		106,312.70	3,000.00	
5,200	Tybor Stores, Inc. ....		2,600.00	260.00	
6,520	Union Carbide & Carbon.....		377,929.12	19,560.00	
700	United Aircraft.....		28,341.79	2,450.00	
2,000	United Carbon.....		137,565.94	6,000.00	
5,000	United Fruit.....		228,928.70	16,375.00	
3,844	United Shoe Machinery.....		262,187.28	12,012.50	
3,000	Westinghouse Electric.....		215,654.30	12,000.00	
	Income from stocks sold.....			24,030.00	
	<b>Total Industrial Common Stocks.....</b>		<b>\$9,835,816.78</b>	<b>\$491,755.24</b>	
<i>Par Value</i>					
<b>PUBLIC UTILITY BONDS</b>					
\$150,000	Alabama Power.....	3½s	1972	\$152,375.00	\$5,250.00
50,000	Am. Tel. & Tel.....	3s	1956	54,000.00	1,500.00
50,000	Am. Tel. & Tel.....	3¾s	1961	50,850.00	1,625.00
28,000	Conn. Light & Power..	7s	1951	26,371.38	1,960.00
100,000	Cons. Edison, N. Y....	3¾s	1946	100,200.00	3,250.00
77,000	North American.....	3½s	1949	77,500.00	2,695.00
200,000	Panhandle Eastern				
	Pipe Line.....	2¾s	1953	202,000.00	—147.44
75,000	Providence Gas.....	4s	1963	74,437.50	3,000.00
200,000	Puget Sound Pwr. & Lt.	4¾s	1972	208,200.00	1,227.75
50,000	Syracuse Lighting.....	5s	1951	51,800.00	2,500.00
	Income from bonds sold or called....				41,633.20
	<b>Total Public Utility Bonds.....</b>			<b>\$997,733.88</b>	<b>\$64,493.51</b>
<i>Shares</i>					
<b>PUBLIC UTILITY PREFERRED STOCKS</b>					
1,000	Cons. Edison N. Y.....			\$100,725.47	\$5,000.00
1,000	Public Service N. J., 5%.....			101,926.84	5,000.00
1,000	United Corp., Pref.....			46,425.59	1,000.00
	Income from stocks sold.....				9,500.00
	<b>Total Public Utility Preferred Stocks....</b>			<b>\$249,077.90</b>	<b>\$20,500.00</b>

## SCHEDULE A-1 — (Continued)

<i>Shares</i>				<i>Book Value</i>	<i>Net Income</i>
<b>PUBLIC UTILITY COMMON STOCKS</b>					
5,000	Am. Gas & Elec. ....			\$203,626.96	\$8,000.00
2,000	American Tel. & Tel. ....			264,297.56	18,000.00
11,550	Boston Edison .....			417,566.89	23,100.00
10,000	Commonwealth Edison .....			285,340.24	14,000.00
5,152	Detroit Edison .....			150,463.09	6,125.40
1,000	Lynn Gas & Electric .....			90,000.00	5,000.00
1,000	Western Mass. ....			32,322.00	1,600.00
	Income from stocks sold .....				19,857.75
<i>Total Public Utility Common Stocks</i> ....				<u>\$1,443,616.74</u>	<u>\$95,683.15</u>
<i>Par Value</i>					
<b>RAILROAD BONDS</b>					
\$50,000	Atch. Top. & Santa Fe. ....	4s	1995	\$48,235.00	\$2,000.00
50,000	B. & O., P., L. E. & W. Va. ....	4s	1951	48,668.75	2,000.00
100,000	Boston & Maine .....	5s	1955	90,000.00	2,750.00
50,000	Northern Pacific .....	4s	1997	45,128.29	2,000.00
100,000	Oreg. R.R. & Navigation .....	4s	1946	99,410.83	4,000.00
100,000	Pennsylvania .....	4½s	1960	111,900.00	4,500.00
50,000	Pere Marquette .....	5s	1956	44,410.34	2,500.00
50,000	Southern Pacific .....	3¾s	1946	49,375.00	1,875.00
50,000	Southern Pacific .....	4s	1955	47,625.00	2,000.00
100,000	Union Pacific .....	4s	1947	100,000.00	4,000.00
75,000	Washington Term. ....	3½s	1945	68,196.37	2,625.00
100,000	Washington Term. ....	4s	1945	101,500.00	4,000.00
	Income from bonds sold .....				1,000.00
<i>Total Railroad Bonds</i> .....				<u>\$854,449.58</u>	<u>\$35,250.00</u>
<i>Shares</i>					
<b>RAILROAD PREFERRED STOCKS</b>					
2,000	Atch., Topeka & S. Fe. ....			\$139,627.30	\$10,000.00
1,000	Pere Marquette, Pr. Pref. ....			80,024.40	.....
<i>Total Railroad Preferred Stocks</i> .....				<u>\$219,651.70</u>	<u>\$10,000.00</u>
<b>RAILROAD COMMON STOCKS</b>					
1,500	Chesapeake & Ohio .....			\$73,380.45	\$5,250.00
400	Norfolk & Western .....			58,542.78	4,000.00
	Income from stocks sold .....				750.00
<i>Total Railroad Common Stocks</i> .....				<u>\$131,923.23</u>	<u>\$10,000.00</u>

## SCHEDULE A-1 — (Continued)

<i>Par Value</i>			<i>Book Value</i>	<i>Net Income</i>
	<b>OTHER BONDS</b>			
\$200,000	Adams Express . . . . . 4¼s	1946	\$199,388.81	\$8,500.00
26,775	Lawyers Mtge. Inv. Corp. 5½s	1940	11,803.67	1,137.94
125,000	Niagara Shares Corp. . . . . 5½s	1950	122,391.71	6,875.00
81,000	Railway & Lt. Securities. 3¼s	1955	81,000.00	2,457.54
	Income from bonds sold, called or matured			1,529.00
	<i>Total Other Bonds</i> . . . . .		<u>\$414,584.19</u>	<u>\$20,499.48</u>
<i>Shares</i>				
	<b>BANK AND FINANCE STOCKS</b>			
2,245	Amerex Holding Corp. . . . .		\$51,541.47	\$ . . . . .
3,000	Bankers Trust, N. Y. . . . .		183,645.00	4,200.00
2,000	Central Hanover Bk. & Tr., N. Y. . . . .		233,650.00	6,400.00
5,000	Chase National, N. Y. . . . .		261,212.50	7,000.00
3,000	Chemical Bank & Trust, N. Y. . . . .		190,618.75	5,400.00
1,000	Commercial Credit Corp. . . . .		40,175.65	. . . . .
600	Commercial Investment Trust . . . . .		24,586.39	. . . . .
2,600	Cont. Ill. Nat. Bank, Chicago. . . . .		172,201.50	4,000.00
4,936	First National, Boston. . . . .		297,874.96	9,872.00
1,000	Guaranty Trust, N. Y. . . . .		312,043.04	12,000.00
500	Harris Trust & Savings, Chicago. . . . .		146,450.00	6,000.00
6,000	National City, N. Y. . . . .		260,712.50	6,000.00
100	New England Trust, Boston. . . . .		40,000.00	3,000.00
	Income from stocks sold. . . . .			8,000.00
	<i>Total Bank and Finance Stocks</i> . . . . .		<u>\$2,214,711.76</u>	<u>\$71,872.00</u>
	<b>INSURANCE AND OTHER STOCKS</b>			
275	Boston. . . . .		\$180,786.00	\$5,775.00
1,700	Continental. . . . .		68,383.05	1,700.00
1,500	Firemans Fund. . . . .		102,950.00	2,250.00
2,500	Hartford. . . . .		156,168.76	6,250.00
3,000	Ins. Co. of North America. . . . .		197,300.00	3,750.00
500	National Union. . . . .		80,000.00	1,250.00
2,500	Phoenix. . . . .		192,724.50	6,500.00
1,000	Springfield Fire & Marine. . . . .		116,500.00	3,178.00
1,000	Stone & Webster, Inc. . . . .		29,507.65	750.00
580	Boston R. E. Trust. . . . .		61,123.16	630.00
	<i>Total Insurance and Other Stocks</i> . . . . .		<u>\$1,185,443.12</u>	<u>\$32,033.00</u>

*SCHEDULE A-1 — (Continued)*

	<i>Book Value</i>	<i>Net Income</i>
<b>MORTGAGE NOTES</b>		
Edward Babb & Co.....	\$48,000.00	\$2,193.75
Bigelow.....	4,300.00	215.00
Common St.....	9,750.00	223.62
McKenzie.....	2,250.00	133.15
Mt. Vernon Street.....	6,650.00	343.46
Palfrey, J. G.....	12,125.00	559.69
Walton Trust.....	49,000.00	2,060.00
M. I. T. Dormitory.....	150,000.00	6,000.00
Alpha Tau Omega.....	16,700.00	955.25
Beta Theta Pi.....	13,500.00	687.50
Delta Kappa Epsilon.....	27,000.00	1,273.09
Delta Tau Delta.....	3,000.00	150.00
Kappa Sigma.....	11,250.00	594.10
Phi Beta Delta.....	5,548.25	288.78
Phi Beta Epsilon.....	1,750.00	106.25
Phi Delta Theta.....	5,250.00	290.62
Phi Gamma Delta.....	5,625.00	348.51
Phi Kappa Sigma.....	6,750.00	350.00
Phi Mu Delta.....	4,990.00	189.07
Theta Chi.....	9,000.00	467.92
Income from Mortgages paid.....	.....	4,097.25
<i>Total Mortgage Notes</i> .....	<u>\$392,438.25</u>	<u>\$21,527.01</u>
<b>REAL ESTATE</b>		
111 Bay State Road, Boston.....	\$20,400.00	\$816.00
Broad and High Streets, Boston.....	100,000.00	5,853.34
Franklin Street, Boston.....	289,750.00	5,565.31
Newbury Street, Boston.....	45,000.00	-2,382.15
Memorial Drive, Cambridge.....	130,512.45	-1,298.74
Memorial Drive, Cambridge.....	40,000.00	-1,514.55
Graduate House, Cambridge.....	640,000.00	10,538.22
Bexley Hall, Cambridge.....	184,548.93	9,530.00
*Gloversville, N. Y.....	110,519.53	5,469.19
Harrisonburg, Va.....	30,814.12	1,495.00
New London, Conn.....	265,548.61	12,700.00
Plattsburg, N. Y.....	225,228.14	11,250.00
Taunton, Mass.....	217,872.66	9,918.00
Willimantic, Conn.....	176,978.54	8,043.10
Worcester, Mass.....	215,562.80	9,810.00
Income from Real Estate sold.....		12,614.41
<i>Total Real Estate</i> .....	<u>\$2,692,735.78</u>	<u>\$98,407.13</u>

\*Not including first mortgage of \$35,150.00 with Connecticut Mutual Life Insurance Co. of Hartford, Conn.

*SCHEDULE A-1 — (Continued)*

	<i>Book Value</i>	<i>Net Income</i>
<b>RECAPITULATION, GENERAL INVESTMENTS</b>		
U. S. Treasury and Other Bonds . . .	\$10,376,300.00	\$168,146.63
Canadian Gov. and Other Bonds . . .	557,419.75	23,584.43
Industrial Bonds . . . . .	475,142.02	20,941.88
Industrial Preferred Stocks . . . . .	107,504.07	14,812.50
Industrial Common Stocks . . . . .	9,835,816.78	491,755.24
Public Utility Bonds . . . . .	997,733.88	64,493.51
Public Utility Preferred Stocks . . . .	249,077.90	20,500.00
Public Utility Common Stocks . . . . .	1,443,616.74	95,683.15
Railroad Bonds . . . . .	854,449.58	35,250.00
Railroad Preferred Stocks . . . . .	219,651.70	10,000.00
Railroad Common Stocks . . . . .	131,923.23	10,000.00
Other Bonds . . . . .	414,584.19	20,499.48
Bank and Finance Stocks . . . . .	2,214,711.76	71,872.00
Insurance and Other Stocks . . . . .	1,185,443.12	32,033.00
Mortgage Notes . . . . .	392,438.25	21,527.01
Real Estate . . . . .	2,692,735.78	98,407.13
<i>Total General Investments . . . . .</i>	<i>\$32,148,548.75</i>	<i>\$1,199,505.96</i>

**INVESTMENTS — SPECIAL**

*Par Value  
or Shares*

**INVESTMENTS, BABSON FUND**

950	American Public Welfare Trust . . . . .	\$10,000.00	\$237.50
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**INVESTMENTS (Real Estate), ALBERT FARWELL BEMIS FUND**

Miscellaneous building lots and land in Wellesley and Weston carried at		\$36,466.56	
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**INVESTMENTS, MALCOLM COTTON BROWN FUND**

\$2,500	United States G. . . . .	2½s	1954	\$2,500.00	\$62.50
45	General Electric . . . . .			1,529.55	63.00
<i>Total Brown Fund . . . . .</i>				<i>\$4,029.55</i>	<i>\$125.50</i>

## SCHEDULE A-1 — (Continued)

<i>Par Value or Shares</i>				<i>Book Value</i>	<i>Net Income</i>
<b>INVESTMENTS, COFFIN MEMORIAL FUND</b>					
\$6,000	U. S. Treasury . . . . .	3s	1948	\$6,000.00	\$180.00
350	Light & Pr. Sec. Co., Pfd. . . . .			35,000.00	2,100.00
7	du Pont . . . . .			1,114.41	28.00
<i>Total Coffin Fund . . . . .</i>				<u>\$42,114.41</u>	<u>\$2,308.00</u>
<b>INVESTMENTS, DRAPER FUND</b>					
\$29,900	United States G. . . . .	2½s	1954	\$29,900.00	\$747.50
24,000	United States G. . . . .	2½s	1955	24,000.00	. . . . .
10,000	Ontario . . . . .	5s	1959	9,950.00	500.00
8,000	Cons. Edison, N. Y. . . . .	3¼s	1946	8,000.00	260.00
20,000	Montana Power . . . . .	3¾s	1966	19,852.49	750.00
10,000	Texas Power & Light . . . . .	5s	1956	10,140.00	1480.00
	Income from bonds sold . . . . .				520.78
<i>Total Draper Fund . . . . .</i>				<u>\$101,842.49</u>	<u>\$3,258.28</u>
<b>INVESTMENTS, ARTHUR D. LITTLE MEMORIAL FUND</b>					
466	A. D. Little, Inc., Pfd. . . . .			\$46,600.00	\$2,796.00
5,543	A. D. Little, Inc., Com. . . . .			110,860.00	30,486.50
<i>Total Little Fund . . . . .</i>				<u>\$157,460.00</u>	<u>\$33,282.50</u>
<b>INVESTMENTS, RICHARD LEE RUSSEL FUND</b>					
\$3,000	Mortgage Note (participation) . . . . .			\$3,000.00	\$150.00
<b>INVESTMENTS, SOLAR ENERGY FUND</b>					
100	Godfrey L. Cabot, Inc. . . . .			\$647,700.00	\$20,000.00
<b>INVESTMENTS, FRANCES E. AND SAMUEL M. WESTON FUNDS</b>					
\$8,950	Mortgage Note, Bartlett . . . . .			\$8,950.00	\$357.96
<b>INVESTMENTS, JONATHAN WHITNEY FUND</b>					
\$100,000	United States G. . . . .	2½s	1954	\$100,000.00	\$1,875.00
100,000	United States G. . . . .	2½s	1955	100,000.00	. . . . .
16,000	U. S. Treasury . . . . .	2½s	1958	16,000.00	400.00
32,000	U. S. Treasury . . . . .	2½s	1968	32,000.00	466.00
28,000	U. S. Treasury . . . . .	2½s	1969	28,000.00	117.32
20,000	Canada . . . . .	2½s	1948	20,000.00	—6.95
20,000	Canada . . . . .	3s	1953	20,100.00	—7.49
25,000	Montana Power . . . . .	3¾s	1966	24,826.99	937.50
25,000	Pacific Gas & Elec. . . . .	3¾s	1961	25,300.00	1877.50

† Net after Premium Amortization.

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SCHEDULE A-1 — (Continued)

<i>Par Value or Shares</i>				<i>Book Value</i>	<i>Net Income</i>
<b>INVESTMENTS, JONATHAN WHITNEY FUND (Continued)</b>					
\$50,000	Kansas City Term.....	4s	1960	\$42,750.00	\$2,000.00
25,000	Southern Pacific.....	4s	1955	24,471.99	1,000.00
25,000	Virginian Ry.....	3¾s	1966	25,300.00	1877.50
250	Boston Edison.....			8,250.00	500.00
250	Bankers Trust, N. Y.....			14,187.50	350.00
100	du Pont.....			15,279.10	400.00
250	First National, Boston.....			11,525.00	500.00
500	General Electric.....			13,188.05	700.00
50	Guaranty Trust, N. Y.....			14,850.00	600.00
300	Standard Oil, N. J.....			13,074.45	600.00
200	Union Carbide & Carbon.....			13,888.00	600.00
150	United Fruit.....			10,690.25	450.00
	Income from bonds sold.....				6,485.56
	<i>Total Whitney Fund.....</i>			<u>\$573,681.33</u>	<u>\$19,721.94</u>

<b>INVESTMENTS, TECHNOLOGY LOAN FUND</b>					
\$100,000	United States G.....	2½s	1954	\$100,000.00	\$1,875.00
100,000	United States G.....	2½s	1955	100,000.00	.....
80,000	U. S. Treasury.....	2½s	1958	80,000.00	2,000.00
55,000	U. S. Treasury.....	2½s	1968	55,000.00	740.08
30,000	U. S. Treasury.....	2½s	1969	30,000.00	125.70
80,000	U. S. Treasury.....	2½s	1954	82,350.00	1,650.00
50,000	U. S. Treasury.....	2½s	1972	50,000.00	1,250.00
20,000	U. S. Treasury.....	2¾s	1954	20,733.35	383.33
14,000	Pac. Gas & Elec.....	3¾s	1961	14,000.00	525.00
300	American Can.....			22,935.23	900.00
200	du Pont.....			29,304.00	800.00
1,000	General Electric.....			25,813.25	1,400.00
50	Guaranty Trust, N. Y.....			12,825.00	600.00
500	National City, N. Y.....			12,375.00	500.00
207	Engineers Pub. Service.....			15,000.00	1,138.52
1,000	North American.....			36,447.80	1,341.00
600	Standard Oil, N. J.....			26,456.99	1,200.00
1,250	Stone & Webster, Inc.....			36,698.75	937.50
400	Union Carbide and Carbon.....			27,726.00	1,200.00
300	United Fruit.....			21,360.20	900.00
	Income from bonds sold or called.....				2,536.72
	<i>Total Technology Loan Fund.....</i>			<u>\$799,025.57</u>	<u>\$22,002.85</u>

<sup>1</sup> Net after Premium Amortization.

## SCHEDULE A-1 — (Continued)

<i>Par Value or Shares</i>				<i>Book Value</i>	<i>Net Income</i>
<b>INVESTMENTS, EDWIN A. WYETH FUND</b>					
\$42,000	United States, G. . . . .	2½s	1954	\$42,000.00	\$837.50
25,000	United States, G. . . . .	2½s	1955	25,000.00	.....
16,000	U. S. Treasury . . . . .	2½s	1968	16,000.00	215.30
100	Hartford Fire . . . . .			8,556.25	200.00
100	American Can . . . . .			11,944.73	300.00
125	American Tel. & Tel. . . . .			12,953.12	1,125.00
200	General Electric . . . . .			7,832.20	280.00
250	General Motors . . . . .			8,500.00	500.00
200	Standard Oil, N. J. . . . .			10,133.70	400.00
100	Union Carbide and Carbon . . . . .			4,640.00	300.00
100	United Shoe Machinery . . . . .			8,941.25	312.50
125	Bankers Trust, N. Y. . . . .			5,968.75	175.00
25	Guaranty Trust, N. Y. . . . .			6,400.00	300.00
10,000	Central N. Y. Power. . . . .	3¾s	1962	10,150.00	1325.00
10,000	Cons. Edison, N. Y. . . . .	3¾s	1946	10,000.00	325.00
13,000	Miss. River Power . . . . .	5s	1951	13,050.00	1600.00
10,000	Texas Pr. & Lgt. . . . .	5s	1956	10,050.00	1450.00
15,000	Balt. & Ohio . . . . .	4s	1948	15,000.00	600.00
5,000	Can. Pac. Eq. Tr. . . . .	5s	1944	5,000.00	250.00
10,000	Kansas City Term. . . . .	4s	1960	10,000.00	400.00
10,000	Union Pacific . . . . .	4s	1947	10,000.00	400.00
	Income from investments sold . . . . .				1,270.38
	<i>Total Wyeth Fund</i> . . . . .			\$252,120.00	\$9,565.68
<b>Grand Total, General and Special Investments.</b>				\$34,784,938.66	\$1,310,516.17
				(Schedule A)	(Schedule B)

## AGENCY FUNDS

<i>Par Value or Shares</i>				<i>Book Value</i>	<i>Net Income</i>
<b>INVESTMENTS, JOSEPH HEWETT FUND</b>					
\$50,000	United States, G. . . . .	2½s	1954	\$50,000.00	\$1,250.00
9,000	Dom. of Canada . . . . .	2½s	1948	9,000.00	—3.13
10,000	Dom. of Canada . . . . .	3s	1953	10,040.00	—14.17
12,000	Adams Express . . . . .	4¾s	1946	12,000.00	510.00
15,000	Cent. N. Y. Power. . . . .	3¾s	1962	15,000.00	562.50
15,000	Puget Sound Pr. & Lt. . . . .	4¾s	1972	15,600.00	154.56

<sup>1</sup>Net after Premium Amortization.



## SCHEDULE A-1 — (Continued)

<i>Par Value or Shares</i>				<i>Book Value</i>	<i>Net Income</i>
INVESTMENTS, JOSEPH HEWETT FUND (Continued)					
\$15,000	Alabama Power . . . . .	3½s	1972	\$15,150.00	\$1475.00
23,500	Texas Power & Light . . . . .	5s	1956	23,800.00	1,125.00
4,000	Can. Pac. Ry . . . . .	5s	1944	4,000.00	200.00
100	Bankers Trust, N. Y. . . . .			4,775.00	140.00
20	Guaranty Trust, N. Y. . . . .			5,130.00	240.00
100	American Can. . . . .			7,520.00	300.00
50	du Pont de Nemours . . . . .			8,271.55	200.00
300	General Electric . . . . .			8,107.50	420.00
200	Standard Oil, N. J. . . . .			8,709.00	400.00
100	Union Carbide and Carbon . . . . .			6,944.20	300.00
100	United Fruit . . . . .			7,120.00	300.00
	Income from bonds sold or called . . . . .				1,505.49
	<i>Total Hewett Fund . . . . .</i>			<u>\$211,167.25</u>	<u>\$7,965.25</u>
				(Schedule A)	

## INVESTMENTS, M. I. T. PENSION ASSOCIATION

\$177,500	U. S. Treasury . . . . .	2½s	1972	\$177,500.00	\$4,437.50
40,000	U. S. Treasury . . . . .	2½s	1958	40,000.00	1,000.00
90,000	U. S. Treasury . . . . .	2½s	1968	90,000.00	1,211.04
10,000	U. S. Treasury . . . . .	4s	1954	10,400.00	400.00
100,000	United States, G. . . . .	2½s	1954	100,000.00	1,875.00
100,000	United States, G. . . . .	2½s	1955	100,000.00	.....
9,000	Dom. of Canada . . . . .	3s	1958	8,865.00	-3.75
33,000	Dom. of Canada . . . . .	2½s	1948	33,000.00	-11.45
37,000	Dom. of Canada . . . . .	3s	1953	37,185.00	-14.92
35,000	Alabama Power . . . . .	3½s	1972	35,500.00	1,225.00
50,000	Central N. Y. Power . . . . .	3¾s	1962	50,000.00	1,875.00
50,000	Detroit Edison . . . . .	4s	1965	51,800.00	2,000.00
27,000	Miss. River Power . . . . .	5s	1951	27,000.00	1,350.00
70,000	Pac. Gas & Elec. . . . .	3¾s	1961	75,100.00	2,625.00
25,000	Texas Pr. & Lgt. . . . .	5s	1956	25,400.00	1,250.00
25,000	Balt. & Ohio . . . . .	4s	1948	25,000.00	1,000.00
25,000	Can. Pacific Eq. . . . .	5s	1944	25,000.00	1,250.00
50,000	Kansas City Term. . . . .	4s	1960	51,400.00	2,000.00
50,000	Pennsylvania Co. . . . .	4s	1963	50,000.00	2,000.00
35,000	Southern Pacific . . . . .	4s	1955	33,638.79	1,400.00

<sup>1</sup> Net after Premium Amortization.

## SCHEDULE A-1 — (Continued)

<i>Shares</i>		<i>Book Value</i>	<i>Net Income</i>
INVESTMENTS, M. I. T. PENSION ASSOCIATION (Continued)			
200	du Pont . . . . .	\$29,504.20	\$800.00
200	Eastman Kodak . . . . .	28,500.00	1,050.00
600	General Motors . . . . .	29,332.24	1,200.00
1,200	General Electric Co. . . . .	52,597.76	1,680.00
188	Int. Business Machines . . . . .	26,189.25	1,369.50
800	National Biscuit . . . . .	21,220.31	960.00
400	Sears Roebuck . . . . .	29,391.89	1,700.00
800	Standard Oil, N. J. . . . .	41,923.73	1,600.00
500	Union Carbide and Carbon . . . . .	41,575.54	1,500.00
500	United Fruit . . . . .	38,575.21	1,500.00
500	United Shoe Machinery . . . . .	35,910.62	1,562.50
200	Am. Tel. & Tel. Co. . . . .	34,184.26	1,800.00
400	Bankers Trust Co. . . . .	23,687.50	560.00
500	Chemical Bank and Trust . . . . .	25,187.50	900.00
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	337.50
200	Hartford Fire . . . . .	18,300.00	300.00
200	Insurance Co. of N. A. . . . .	14,000.00	250.00
200	Phoenix Insurance . . . . .	16,900.00	250.00
	Real Estate, Albany, N. Y. . . . .	62,761.33	2,873.25
	Income from investments sold or called		6,753.29
	<i>Total Pension Association</i> . . . . .	<u>\$1,671,880.13</u>	<u>\$57,414.46</u>
		(Schedule A)	

## INVESTMENTS, GEORGE S. WITMER FUND

<i>Par Value or Shares</i>			<i>Book Value</i>	<i>Net Income</i>
\$5,800	United States, G. . . . .	2½s 1954	\$5,800.00	\$131.25
2,000	Niagara Shares Corp. . . . .	5½s 1950	2,000.00	110.00
16,000	Washington, D. C., Mtge. . . . .		16,000.00	925.00
50	General Electric . . . . .		1,718.25	70.00
25	General Motors . . . . .		1,310.96	50.00
40	Standard Oil, N. J. . . . .		1,812.60	80.00
30	Union Carbide and Carbon . . . . .		2,051.85	90.00
30	Bankers Trust, N. Y. . . . .		1,665.00	42.00
	Real Estate, Sanford, Fla. . . . .		5,755.00	
	<i>Total Witmer Fund</i> . . . . .		<u>\$38,113.66</u>	<u>\$1,498.25</u>
			(Schedule A)	

SCHEDULE A-2  
 ENDOWMENT FUNDS FOR GENERAL PURPOSES

No.	Restricted Funds	Funds, June 30, 1942	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1943
101	George Robert Armstrong.	\$5,000.00	.....	.....	.....	\$5,000.00
103	George Blackburn Mem...	961,149.84	.....	100.00	.....	961,249.84
104	Clara H. Briggs.....	12,512.25	.....	.....	.....	12,512.25
105	Charles Choate.....	35,858.15	.....	.....	.....	35,858.15
107	Eben S. Draper.....	103,454.86	.....	638.50	280.00	103,813.36
109	Coleman du Pont.....	221,325.48	.....	.....	.....	221,325.48
111	Eastman Contract.....	9,498,869.55	.....	.....	.....	9,498,869.55
113	George Eastman (Building)	431,797.54	.....	32,000.00	294,673.50	169,124.04
115	Charles W. Eaton.....	260,648.19	.....	500.00	.....	261,148.19
117	Educational Endowment..	7,573,834.60	.....	.....	.....	7,573,834.60
119	Martha Ann Edwards.....	30,000.00	.....	.....	.....	30,000.00
121	William Endicott.....	25,000.00	.....	.....	.....	25,000.00
123	Francis Appleton Foster...	1,000,000.00	.....	.....	.....	1,000,000.00
125	John W. Foster.....	299,650.64	.....	.....	.....	299,650.64
127	Alexis H. French.....	5,000.00	.....	.....	.....	5,000.00
129	Jonathan French.....	25,212.48	.....	.....	.....	25,212.48
131	Henry C. Frick.....	1,831,053.42	.....	.....	.....	1,831,053.42
133	General Endowment.....	1,527,449.00	.....	.....	.....	1,527,449.00
135	Eliot Granger.....	21,568.43	.....	.....	.....	21,568.43
136	Charles Hayden.....	1,000,000.00	.....	.....	.....	1,000,000.00
137	John Marshall Hills.....	366,181.10	.....	.....	.....	366,181.10
138	James Fund.....	163,654.21	.....	.....	.....	163,654.21
139	Katherine B. Lowell.....	5,000.00	.....	.....	.....	5,000.00
141	Thomas McCammon.....	15,000.00	.....	.....	.....	15,000.00
142	M. I. T. Alumni Equipment	12,991.25	468.00	.....	13,459.25	.....
143	M. I. T. Alumni (Gym.)...	.....	.....	412.50	412.50	.....
144	M. I. T. Alumni (1940-43)..	74,111.94	3,114.00	62,634.91	31,757.61	108,103.24
145	M. I. T. Alumni (1943-44)..	.....	270.00	69,973.10	17,214.55	53,028.55
146	Kate M. Morse.....	25,000.00	.....	.....	.....	25,000.00
147	Everett Morss.....	25,000.00	.....	.....	.....	25,000.00
149	Richard Perkins.....	50,000.00	.....	.....	.....	50,000.00
150	J. W. and B. L. Randall..	83,452.36	.....	.....	.....	83,452.36
151	Wm. Barton Rogers Mem.	250,225.00	.....	.....	.....	250,225.00
152	Saltonstall Fund.....	64,700.21	582.30	.....	.....	65,282.51
153	Samuel E. Sawyer.....	4,764.40	.....	.....	.....	4,764.40
155	Andrew Hastings Spring...	50,000.00	.....	.....	.....	50,000.00
156	George G. Stone.....	4,677.35	.....	.....	.....	4,677.35
157	Seth K. Sweetser.....	25,061.62	.....	.....	.....	25,061.62
159	William J. Walker.....	23,613.59	.....	.....	.....	23,613.59
161	Horace Herbert Watson...	34,076.69	.....	.....	.....	34,076.69
163	Albion B. K. Welch.....	5,000.00	.....	.....	.....	5,000.00
165	Everett Westcott.....	171,394.00	.....	.....	.....	171,394.00
167	Marion Westcott.....	238,202.00	.....	250.00	.....	238,452.00
168	George Wigglesworth.....	26,201.93	94.32	.....	.....	26,296.25
169	Edwin A. Wyeth.....	252,630.21	3,715.24	2,537.19	4,178.70	254,703.94
		<u>\$26,840,322.29</u>	<u>\$8,243.86</u>	<u>\$169,046.20</u>	<u>\$361,976.11</u>	<u>\$26,655,636.24</u>

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

## SCHEDULE A-2 — (Continued)

No.	Unrestricted Funds	Funds, June 30, 1942	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1943
170	Anonymous (H) . . . . .	\$ . . . . .	\$ . . . . .	\$5,000.00	\$ . . . . .	\$5,000.00
171	Anonymous (M) . . . . .	1,500.00	.....	.....	.....	1,500.00
172	Edmund D. Barbour . . . . .	20,736.94	.....	.....	.....	20,736.94
173	Stephen L. Bartlett . . . . .	126,251.04	.....	.....	1,825.10	124,425.94
175	William T. Henry . . . . .	.....	.....	11,195.00	.....	11,195.00
176	Ellis Hollingsworth . . . . .	10,000.00	.....	.....	.....	10,000.00
197	Industrial Fund . . . . .	112,966.67	4,068.00	230,252.79	.....	347,287.46
190	John Wells Morss . . . . .	50,000.00	.....	.....	.....	50,000.00
191	Christel Orvis . . . . .	.....	.....	539.42	.....	539.42
195	Emerette O. Patch . . . . .	2,276.61	.....	.....	.....	2,276.61
196	Charles A. Tripp . . . . .	.....	.....	100,000.00	.....	100,000.00
197	Frank G. Webster . . . . .	25,000.00	.....	.....	.....	25,000.00
		<u>\$348,731.26</u>	<u>\$4,068.00</u>	<u>\$346,987.21</u>	<u>\$1,825.10</u>	<u>\$697,961.37</u>

## FUNDS FOR DESIGNATED AND SPECIAL PURPOSES

## SPECIAL DEPOSIT AND AGENCY FUNDS

207	Army and Navy Reserve.	\$ . . . . .	\$ . . . . .	\$25,000.00	\$ . . . . .	\$25,000.00
209	Special War Reserve 1941-42	532,438.60	14,148.00	.....	139,441.99	407,144.61
210	Endowment Reserve . . . . .	353,054.52	26,276.36	280,243.24	411,829.52	247,744.60
211	Income Equalization Reserve	43,268.44	1,555.20	.....	.....	44,823.64
212	Albert . . . . .	2,706.40	.....	130.88	2,837.28	.....
*214	Alpha Chi Sigma House . . . . .	3,510.46	126.00	.....	.....	3,636.46
215	Alumni Tennis Courts . . . . .	5,196.50	187.20	.....	5,383.70	.....
216	Anonymous (1924) . . . . .	2,456.37	86.40	.....	.....	2,542.77
*217	Ass'n of Class Secretaries . . . . .	2,425.18	86.40	.....	.....	2,511.58
*218	Basket Ball . . . . .	3,625.76	126.00	.....	125.76	3,626.00
219	Bess Bigelow . . . . .	30,657.39	1,101.60	.....	.....	31,758.99
220	Biology-Rockefeller Found.	53,958.00	1,944.00	.....	6,099.97	49,802.03
221	Major Briggs . . . . .	33,552.12	1,162.80	.....	1,200.00	33,514.92
222	Ednah Dow Cheney . . . . .	16,708.88	601.20	.....	104.37	17,205.71
223	Class of 1914 . . . . .	827.32	28.80	.....	.....	856.12
224	Class of 1918 (Organ) . . . . .	754.48	32.40	627.00	.....	1,413.88
225	Class of 1923 . . . . .	13,349.62	486.00	382.77	150.93	14,067.46
226	Class of 1924 . . . . .	24,536.01	882.00	257.71	133.30	25,542.42
227	Class of 1925 . . . . .	15,322.00	550.80	87.88	106.86	15,853.82
229	Class of 1926 . . . . .	19,712.30	709.20	52.20	.....	20,473.70
230	Class of 1927 . . . . .	19,149.46	687.60	.....	.....	19,837.06
231	Class of 1928 . . . . .	38,021.40	1,368.00	.....	.....	39,389.40
232	Class of 1929 . . . . .	14,024.71	529.20	668.65	.....	15,222.56
233	Class of 1930 . . . . .	2,610.22	144.00	8,894.92	.....	11,649.14
237	Class of 1934 . . . . .	494.42	18.00	.....	.....	512.42
238	Class of 1935 . . . . .	404.80	14.40	.....	.....	419.20
239	Class of 1936 . . . . .	560.05	18.00	.....	.....	578.05
240	Class of 1939 . . . . .	773.86	28.80	57.88	.....	860.54
241	Arthur J. Conner . . . . .	7,125.76	324.00	5,000.00	.....	12,449.76

Note. Where no investment income is indicated the amount allocated has been carried directly to Current Income.  
\* Funds deposited with the Institute, for endowment purposes only.

SCHEDULE A-2 — (Continued)

No.		Funds, June 30, 1942	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1943
<b>SPECIAL DEPOSIT AND AGENCY FUNDS</b>						
<i>(Continued)</i>						
245	Cosmic Terr. Research. . .	\$15,887.01	\$288.00	\$1,729.06	\$9,000.00	\$8,904.07
246	Davis R. Dewey Memorial	.....	7.20	500.00	.....	507.20
*247	Drama Club Theatre . . . .	465.64	18.00	.....	.....	483.64
248	Matilda A. Fraser. . . . .	859.89	28.80	.....	.....	888.69
249	Hayden Fd. (Dental Clinic)	4,368.96	36.00	1,008.00	4.00	5,408.96
250	Anonymous . . . . .	.....	3,600.00	300,000.00	.....	303,600.00
251	Industrial Economics. . . .	6,066.05	288.00	3,000.00	1,550.00	7,804.05
252	Industrial Relations. . . . .	144,691.46	5,940.00	50,870.51	24,009.39	177,492.58
*255	M. I. T. Employees. . . . .	126.35	.....	.....	41.00	85.35
260	M. I. T. Teachers' Insurance	8,107.52	.....	33,382.48	33,395.80	8,094.20
261	M. I. T. Teachers' Insurance (Special) . . . . .	76,173.46	2,916.00	27,956.53	11,789.26	95,256.73
†263	M. I. T. Alumni Association Permanent Funds. . . . .	96,313.03	3,384.00	.....	1,968.00	97,729.03
264	Henry A. Morss Nautical. Class of 1917, Special. . . .	2,144.05	75.60	.....	.....	2,219.65
	Class of 1934, Special. . . .	120.96	3.60	2.50	127.06	.....
268	Class of 1934, Special. . . .	660.40	21.60	.....	.....	682.00
270	Class of 1898 Loan. . . . .	10,457.68	374.40	.....	.....	10,832.08
272	Class of 1874. . . . .	242.35	7.20	.....	.....	249.55
273	Class of 1887. . . . .	2,739.32	90.00	.....	150.00	2,679.32
274	President's Fund, Special.	10,564.86	378.00	.....	.....	10,942.86
277	W. P. Ryan, Special. . . . .	2,637.41	86.40	1,000.00	1,350.00	2,373.81
	Sears Terminal Reserve . .	2,937.27	.....	267.64	3,204.91	.....
279	Sedgwick Memorial Lecture	13,037.79	471.60	155.99	.....	13,665.38
281	Lillie C. Smith. . . . .	5,714.85	205.20	.....	.....	5,920.05
†283	Walter B. Snow. . . . .	7,487.92	270.00	.....	130.88	7,627.04
285	Technology Matrons' Teas	8,982.32	327.60	125.00	353.70	9,081.22
286	W. B. S. Thomas. . . . .	2,396.38	79.20	.....	125.44	2,350.14
290	Undergraduate Activities Trust. . . . .	1,490.37	54.00	.....	.....	1,544.37
†292	Undergraduate Publication Trust. . . . .	17,554.68	594.00	.....	2,000.00	16,148.68
294	Undergraduate Dues, Res. Athletics. . . . .	10,714.15	396.00	2,500.00	.....	13,610.15
296	Undergraduate Dues, Res. Contingent. . . . .	17,264.31	619.20	.....	.....	17,883.51
298	Charles Dann Waterbury.	13,974.90	504.00	.....	.....	14,478.90
		<u>\$1,725,406.37</u>	<u>\$74,285.96</u>	<u>\$743,900.84</u>	<u>\$656,613.12</u>	<u>\$1,886,980.05</u>
<b>FUNDS FOR SALARIES</b>						
301	Samuel C. Cobb For General Salaries. . . .	\$36,551.31	.....	.....	.....	\$36,551.31
303	Sarah H. Forbes For General Salaries. . . .	500.00	.....	.....	.....	500.00
305	George A. Gardner For General Salaries. . . .	20,000.00	.....	.....	.....	20,000.00
309	James Hayward Professorship of Engineering	18,800.00	.....	.....	.....	18,800.00

Note. Where no investment income is indicated the amount allocated has been carried directly to Current Income.  
 \* Funds deposited with the Institute, for endowment purposes only.  
 † Funds deposited with the Institute, for investment purposes only.

## SCHEDULE A-2 — (Continued)

No.		Funds, June 30, 1942	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1943
<b>FUNDS FOR SALARIES (Continued)</b>						
311	William P. Mason Professorship of Geology	\$18,800.00	.....	.....	.....	\$18,800.00
313	Henry B. Rogers For General Salaries . . .	25,000.00	.....	.....	.....	25,000.00
315	Nathaniel Thayer Professorship of Physics	25,000.00	.....	.....	.....	25,000.00
317	Elihu Thomson Professorship of Elec. Eng.	23,680.87	.....	.....	.....	25,680.87
		<u>\$168,332.18</u>	.....	.....	.....	<u>\$168,332.18</u>
<b>FUNDS FOR LIBRARY</b>						
321	Walter S. Barker . . . . .	\$10,445.96	\$374.40	\$ . . . . .	\$ . . . . .	\$10,820.36
325	Frank Harvey Cilley . . . . .	85,094.55	3,060.00	.....	3,667.00	84,487.55
327	Charles Lewis Flint . . . . .	5,780.44	208.80	.....	.....	5,989.24
341	William Hall Kerr . . . . .	4,238.44	151.20	.....	72.62	4,317.02
343	George A. Osborne . . . . .	11,060.69	396.00	.....	27.05	11,429.64
345	Arthur Rotch, Architectural	7,083.80	252.00	.....	244.66	7,091.14
349	John Hume Tod . . . . .	3,425.07	122.40	.....	2.68	3,544.79
351	Theodore N. Vail Mem. Library	70,627.72	2,541.60	100.00	2,000.00	71,269.32
		<u>\$197,756.67</u>	<u>\$7,106.40</u>	<u>\$100.00</u>	<u>\$6,014.01</u>	<u>\$198,949.06</u>
<b>FUNDS FOR DEPARTMENTS</b>						
401	William Parsons Atkinson	\$13,082.20	\$ . . . . .	\$ . . . . .	\$ . . . . .	\$13,082.20
403	Frank Walter Boles Memorial	34,065.58	1,224.00	.....	793.05	34,496.53
405	William E. Chamberlain . . .	7,309.77	.....	.....	.....	7,309.77
407	Chemical Engineering Practice	257,772.97	.....	.....	.....	257,772.97
409	Crosby Honorary Fund . . . .	1,955.29	72.00	.....	.....	2,027.29
410	Susan E. Dorr . . . . .	95,955.67	.....	.....	.....	95,955.67
411	George Eastman . . . . .	400,000.00	.....	.....	.....	400,000.00
412	Harold H. Fletcher . . . . .	10,161.13	363.60	.....	.....	10,524.73
413	Arthur E. Kennelly . . . . .	69,548.56	2,509.20	128.30	18.48	72,167.58
414	Arthur Dehon Little Memorial	157,460.00	33,282.50	20,583.22	.....	211,325.72
416	John Lawrence Mauran . . . .	2,966.99	108.00	.....	.....	3,074.99
417	George Henry May . . . . .	5,000.00	.....	.....	.....	5,000.00
419	Susan Minns . . . . .	40,000.00	.....	.....	.....	40,000.00
420	Forris Jewett Moore . . . . .	25,124.80	900.00	.....	.....	26,024.80
422	Edward D. Peters . . . . .	5,837.79	212.40	127.19	.....	6,177.38
423	Pratt Naval Architectural	392,523.76	2,800.00	.....	1,200.00	394,123.76
425	Richards Memorial . . . . .	827.25	28.80	13.00	.....	869.05
426	Frances E. Roper . . . . .	2,000.00	.....	.....	.....	2,000.00
427	Arthur Rotch . . . . .	25,000.00	.....	.....	.....	25,000.00
429	W. T. Sedgwick . . . . .	79,198.49	2,851.20	.....	.....	82,049.69
430	Sloan Automotive . . . . .	.....	450.00	12,535.65	.....	12,985.65
431	Edmund K. Turner . . . . .	273,542.90	2,462.00	.....	.....	276,004.90
433	William Lyman Underwood	13,447.92	.....	.....	.....	13,447.92
434	William R. Ware . . . . .	15,000.03	540.00	69.00	579.35	15,029.68
		<u>\$1,927,781.10</u>	<u>\$47,803.70</u>	<u>\$33,456.36</u>	<u>\$2,590.88</u>	<u>\$2,006,450.28</u>

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

SCHEDULE A-2 — (Continued)

No.		Funds, June 30, 1942	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1943
<b>FUNDS FOR RESEARCH</b>						
441	Albert Farwell Bemis . . . . .	\$306,419.19	\$11,030.40	\$ . . . . .	\$ . . . . .	\$317,449.59
442	Albert Farwell Bemis Land Account . . . . .	42,179.24	. . . . .	. . . . .	5,712.68	36,466.56
443	Samuel Cabot . . . . .	52,695.50	1,897.20	. . . . .	. . . . .	54,592.70
449	Ellen H. Richards . . . . .	23,902.39	860.40	. . . . .	670.50	24,092.29
451	Charlotte B. Richardson . . . . .	47,767.08	1,717.20	. . . . .	. . . . .	49,484.28
452	William Barton and Emma Savage Rogers . . . . .	151,872.50	5,464.80	. . . . .	. . . . .	157,337.30
453	Solar Energy . . . . .	652,518.34	20,000.00	. . . . .	12,100.00	660,418.34
454	Henry N. Sweet . . . . .	10,255.27	367.20	. . . . .	. . . . .	10,622.47
456	Textile Research Fund . . . . .	1,658.33	57.60	. . . . .	. . . . .	1,715.93
		<u>\$1,289,267.84</u>	<u>\$41,394.80</u>	<u>. . . . .</u>	<u>\$18,483.18</u>	<u>\$1,312,179.46</u>
<b>FUNDS FOR FELLOWSHIPS</b>						
462	American Institute of Baking	\$74.63	\$ . . . . .	\$ . . . . .	\$ . . . . .	\$74.63
463	William Sumner Bolles . . . . .	28,665.67	1,029.60	. . . . .	. . . . .	29,695.27
464	Malcolm Cotton Brown . . . . .	3,389.48	125.50	. . . . .	. . . . .	3,514.98
465	Francis W. Chandler . . . . .	11,057.39	396.00	. . . . .	400.00	11,053.39
466	Collamore . . . . .	14,702.73	529.20	. . . . .	600.00	14,631.93
467	Dalton Graduate Chemical du Pont de Nemours . . . . .	7,677.94	273.60	. . . . .	300.00	7,651.54
469	Rebecca R. Joslin . . . . .	10,436.18	374.40	. . . . .	3,500.00	1,083.36
474	Wilfred Lewis . . . . .	6,131.16	219.60	. . . . .	. . . . .	10,810.58
476	Moore . . . . .	33,681.27	1,209.60	. . . . .	400.00	6,350.76
478	Willard B. Perkins . . . . .	7,226.68	259.20	. . . . .	400.00	34,490.87
480	Proprietors Locks and Canals	2,100.67	75.60	. . . . .	1,200.00	6,285.88
484	Henry Bromfield Rogers . . . . .	25,752.88	925.20	. . . . .	750.00	1,426.27
486	Richard Lee Russel . . . . .	3,526.35	150.00	. . . . .	415.00	26,263.08
488	Henry Saltonstall . . . . .	11,377.11	406.80	. . . . .	450.00	3,676.35
490	James Savage . . . . .	13,509.73	486.00	. . . . .	. . . . .	11,333.93
492	Sloan . . . . .	. . . . .	. . . . .	1,000.00	1,000.00	13,995.71
493	Susan H. Swett . . . . .	10,561.30	378.00	. . . . .	. . . . .	. . . . .
495	Frank Hall Thorp . . . . .	10,843.26	388.80	. . . . .	400.00	10,939.30
497	Luis Francisco Verges . . . . .	10,396.57	374.40	. . . . .	. . . . .	10,832.06
498		<u>\$211,111.00</u>	<u>\$7,601.50</u>	<u>\$4,500.00</u>	<u>\$8,331.64</u>	<u>\$214,880.86</u>
<b>FUNDS FOR SCHOLARSHIPS</b>						
501	Elisha Atkins . . . . .	\$5,076.08	\$180.00	\$ . . . . .	\$200.00	\$5,056.08
503	Billings Student . . . . .	50,423.34	1,814.40	. . . . .	2,000.00	50,237.74
504	Jonathan Bourne . . . . .	10,097.75	363.60	. . . . .	400.00	10,061.35
505	Albert G. Boyden . . . . .	602,398.34	21,686.40	. . . . .	11,908.18	612,176.56
506	Harriet L. Brown . . . . .	7,709.80	277.20	. . . . .	300.00	7,687.00
508	Nino Teshler Catlin . . . . .	997.71	36.00	. . . . .	. . . . .	1,033.71
509	Lucius Clapp . . . . .	4,957.72	180.00	. . . . .	200.00	4,937.72
510	Class of 1896 . . . . .	†7,263.11	259.20	350.00	. . . . .	†7,872.31
511	Class of 1909 . . . . .	3,052.77	115.20	501.60	. . . . .	3,669.57
512	Class of 1917 . . . . .	. . . . .	. . . . .	1,032.06	. . . . .	1,032.06

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

## SCHEDULE A-2—(Continued)

No.	FUNDS FOR SCHOLARSHIPS (Continued)	Funds, June 30, 1942	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1943
513	Class of 1922.....	\$1,023.58	\$82.80	\$2,165.00	\$.....	\$3,271.38
514	Class of 1938.....	693.58	25.20	57.75	.....	776.53
515	William A. Conant.....	.....	36.00	2,850.00	.....	2,886.00
516	Lucretia Crocker.....	80,619.48	2,901.60	.....	2,150.00	81,371.08
517	Isaac W. Danforth.....	5,003.48	180.00	.....	.....	5,183.48
520	Ann White Dickinson.....	40,116.03	1,443.60	.....	1,500.00	40,059.63
521	Thomas M. Drown.....	50,460.69	1,814.40	.....	2,000.00	50,275.09
522	Farnsworth.....	5,281.54	190.80	.....	200.00	5,272.34
523	Charles Lewis Flint.....	5,100.87	183.60	.....	200.00	5,084.47
524	Sarah S. Forbes.....	3,431.47	122.40	.....	100.00	3,453.87
525	Barnett D. Gordon.....	.....	90.00	5,000.00	.....	5,090.00
527	Hall-Mercer.....	63,813.20	2,304.00	908.31	2,400.00	64,625.51
528	Charles Hayden Memorial.....	86,284.36	3,600.00	20,000.00	19,490.00	90,394.36
531	George Hollingsworth.....	5,041.98	180.00	.....	200.00	5,021.98
533	T. Sterry Hunt.....	3,031.01	108.00	.....	100.00	3,039.01
534	William F. Huntington.....	5,046.33	180.00	.....	200.00	5,026.33
536	Joy Scholarships.....	17,904.85	648.00	.....	1,000.00	17,552.85
538	William Litchfield.....	5,210.21	187.20	.....	200.00	5,197.41
539	Elisha T. Loring.....	5,020.38	180.00	.....	200.00	5,000.38
541	Lowell Institute Scholarship.....	3,040.40	108.00	.....	.....	3,148.40
542	Rupert A. Marden.....	2,045.73	72.00	.....	.....	2,117.73
543	George Henry May.....	18,648.03	309.60	655.50	200.00	19,413.13
545	James H. Mirrlees.....	2,557.23	90.00	.....	100.00	2,547.23
546	Fred W. Morrill.....	2,007.30	72.00	.....	.....	2,079.30
547	Nichols Scholarship.....	5,022.52	180.00	.....	100.00	5,102.52
548	Charles C. Nichols.....	5,192.95	187.20	.....	200.00	5,180.15
550	John Felt Osgood.....	5,002.88	180.00	.....	100.00	5,082.88
551	George L. Parmelee.....	17,132.06	615.60	.....	600.00	17,147.66
552	Richard Perkins.....	50,140.86	1,803.60	.....	1,800.00	50,144.46
553	Thomas Adelbert Read.....	21,286.97	763.20	.....	800.00	21,250.17
554	John Roach.....	6,227.99	223.20	.....	250.00	6,201.19
555	William P. Ryan Memorial.....	15,275.37	151.20	112.00	1,000.00	14,538.57
556	John P. Schenkl.....	43,888.23	1,580.40	.....	1,599.00	43,869.63
557	Thomas Sherwin.....	5,121.13	183.60	.....	50.00	5,254.73
558	Horace T. Smith.....	33,052.45	1,188.00	.....	1,200.00	33,040.45
559	Sons and Daughters New England Colony.....	664.28	21.60	.....	.....	685.88
560	Samuel E. Tinkham.....	2,422.71	86.40	.....	100.00	2,409.11
562	F. B. Tough.....	749.44	25.20	.....	.....	774.64
563	Susan Upham.....	1,046.75	36.00	.....	.....	1,082.75
565	Vermont Scholarship.....	26,145.45	939.60	.....	1,250.00	25,835.05
567	Ann White Vose.....	60,027.27	2,160.00	.....	2,200.00	59,987.27
568	Arthur M. Waitt.....	9,695.09	349.20	.....	350.00	9,694.29
569	James Watt.....	13,253.72	478.80	99.76	400.00	13,438.28
570	Herman E. Weihmiller.....	1,000.00	32.40	.....	200.00	832.40
571	Louis Weissbein.....	4,019.86	144.00	.....	150.00	4,013.86

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



SCHEDULE A-2 — (Continued)

No.	FUNDS FOR SCHOLARSHIPS (Continued)	Funds, June 30, 1942	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1943
573	Frances Erving Weston . . . . .	\$8,090.58	\$506.37	\$ . . . . .	\$300.00	\$8,296.95
574	Samuel Martin Weston . . . . .	5,231.41	330.39	. . . . .	200.00	5,361.80
576	Amasa J. Whiting . . . . .	4,520.77	162.00	. . . . .	100.00	4,582.77
577	Granger Whitney . . . . .	. . . . .	. . . . .	200.00	200.00	. . . . .
578	Elizabeth Babcock Willmann	5,537.24	198.00	. . . . .	200.00	5,535.24
		<u>\$1,433,112.33</u>	<u>\$52,547.16</u>	<u>\$33,931.98</u>	<u>\$58,597.18</u>	<u>\$1,460,994.29</u>
<b>FUNDS FOR PRIZES</b>						
580	Babson . . . . .	\$10,568.75	\$237.50	\$ . . . . .	\$450.00	\$10,356.25
581	Robert A. Boit . . . . .	5,725.21	205.20	. . . . .	120.00	5,810.41
583	Class of 1904 . . . . .	669.86	21.60	. . . . .	15.00	676.46
584	William Emerson . . . . .	2,307.15	82.80	. . . . .	50.00	2,339.95
585	Roger Defriez Hunneman . . . . .	997.19	36.00	. . . . .	50.00	983.19
687	James Means . . . . .	3,466.48	122.40	. . . . .	. . . . .	3,588.88
689	Arthur Rotch . . . . .	7,741.52	277.20	. . . . .	200.00	7,818.72
691	Arthur Rotch, Special . . . . .	12,299.08	442.80	. . . . .	. . . . .	12,741.88
692	Henry Webb Salisbury . . . . .	1,158.81	39.60	. . . . .	45.52	1,152.89
693	Samuel W. Stratton . . . . .	1,689.02	57.60	. . . . .	. . . . .	1,746.62
		<u>\$46,623.07</u>	<u>\$1,522.70</u>	. . . . .	<u>\$930.52</u>	<u>\$47,215.25</u>
<b>FUNDS FOR RELIEF</b>						
600	Louie G. Applebee . . . . .	\$415.72	\$14.40	\$ . . . . .	\$ . . . . .	\$430.12
601	Edward Austin . . . . .	426,799.79	15,372.00	. . . . .	17,100.00	425,071.79
603	Thomas Wendell Bailey . . . . .	2,227.68	79.20	. . . . .	100.00	2,206.88
604	Charles Tidd Baker . . . . .	35,089.86	1,260.00	. . . . .	650.00	35,699.86
606	Levi Boles . . . . .	10,037.40	360.00	. . . . .	300.00	10,097.40
608	Bursar's Fund . . . . .	†24,320.07	871.20	2,009.37	1,025.00	†26,175.64
610	Mabel Blake Case . . . . .	25,605.24	921.60	. . . . .	1,000.00	25,526.84
612	Fred L. and Florence L. Coburn	5,211.31	187.20	. . . . .	200.00	5,198.51
614	Coffin Memorial . . . . .	42,075.23	2,308.00	. . . . .	1,500.00	42,883.23
615	George R. Cooke . . . . .	3,521.33	126.00	. . . . .	140.00	3,507.33
616	Dean's Fund . . . . .	†6,009.91	248.40	1,304.95	1,318.00	†7,145.26
618	Carl P. Dennett . . . . .	†990.58	36.00	61.00	. . . . .	†1,087.58
620	Dormitory Fund . . . . .	2,704.47	97.20	. . . . .	100.00	2,701.67
621	Frances and William Emerson	†101,999.10	3,672.00	25.00	4,001.00	†101,695.10
623	Norman H. George . . . . .	94,689.94	3,409.20	. . . . .	3,500.00	94,599.14
625	Arthur B. Gilmore . . . . .	9,996.50	360.00	. . . . .	300.00	10,056.50
627	John A. Grimmons . . . . .	†5,944.69	244.80	1,788.87	. . . . .	†7,978.36
629	James H. Haste . . . . .	192,489.17	6,930.00	100.00	6,925.00	192,594.17
631	David L. Jewell . . . . .	27,006.49	972.00	. . . . .	1,000.00	26,978.49
633	Llora Culver Krueger . . . . .	4,095.86	144.00	. . . . .	600.00	3,639.86
635	Edward F. and Mary R. Miller	10,393.00	374.40	. . . . .	150.00	10,617.40
638	Robert W. Milne . . . . .	. . . . .	288.00	75,856.47	. . . . .	76,144.47
640	Charles A. Richards . . . . .	31,718.59	1,141.20	. . . . .	1,100.00	31,759.79
642	William B. Rogers . . . . .	†43,882.70	1,548.00	261.62	1,200.00	†44,492.32
644	Anna Spooner . . . . .	10,946.11	392.40	. . . . .	300.00	11,038.51

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

## SCHEDULE A-2—(Continued)

FUNDS FOR RELIEF (Continued)		Funds, June 30, 1942	Investment Income Added to Principal	Other Receipts	Expended or Transferred	Funds, June 30, 1943
646	Summer Surveying Camp	†\$2,174.27	\$79.20	\$162.48	\$ . . . . .	†\$2,415.95
648	Teachers' Fund . . . . .	109,974.98	3,956.40	.....	.....	113,931.38
650	Technology Loan Fund .	†788,105.77	22,002.85	206,676.73	118,234.73	†898,550.62
652	Alice Brown Tyler . . . .	1,803.34	64.80	.....	15.42	1,852.72
654	Thomas Upham . . . . .	412,713.45	14,857.20	.....	.....	427,570.65
656	Samson R. Urbino . . . . .	1,018.35	36.00	.....	50.00	1,004.35
658	Jonathan Whitney . . . . .	571,772.74	19,721.94	5,897.20	19,387.91	578,003.97
660	Morrill Wyman . . . . .	71,226.51	2,563.20	.....	2,800.00	70,989.71
		<u>\$3,077,860.15</u>	<u>\$104,638.79</u>	<u>\$294,143.69</u>	<u>\$182,997.06</u>	<u>\$3,293,645.57</u>
Totals . . . . .		<u>\$37,266,304.26</u>	<u>\$349,212.87</u>	<u>\$1,626,066.28</u>	<u>\$1,298,358.80</u>	<u>\$37,943,224.61</u>
			(Schedule B)			(Schedule A)

## RECAPITULATION OF FUNDS

	Funds June 30, 1942	Funds June 30, 1943
Restricted . . . . .	\$26,840,322.29	\$26,655,636.24
Unrestricted . . . . .	348,731.26	697,961.37
Special Deposit Funds . . . . .	1,725,406.37	1,886,980.05
Salaries . . . . .	168,332.18	168,332.18
Libraries, etc. . . . .	197,756.67	198,949.06
Departments . . . . .	1,927,781.10	2,006,450.28
Research . . . . .	1,289,267.84	1,312,179.46
Fellowships . . . . .	211,111.00	214,880.86
Scholarships . . . . .	1,433,112.33	1,460,994.29
Prizes . . . . .	46,623.07	47,215.25
Relief . . . . .	3,077,860.15	3,293,645.57
	<u>\$37,266,304.26</u>	<u>\$37,943,224.61</u>

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

SCHEDULE A-3  
STUDENT NOTES RECEIVABLE

Fund	Notes Receivable June 30, 1942	Loans Made 1942-43	Loans Repaid 1942-43	Notes Receivable June 30, 1943	Interest Received 1942-43
Technology Loan Fund . . . . .	\$883,339.11	\$98,991.00	\$181,350.53	\$800,979.58	\$18,448.75
Bursar's Fund . . . . .	5,038.70	1,025.00	1,837.10	4,226.60	172.27
Rogers Fund . . . . .	2,874.75	.....	133.20	2,741.55	128.42
Dean's Fund . . . . .	2,435.06	1,318.00	1,260.00	2,493.06	44.95
Summer Camp Fund . . . . .	245.00	.....	145.00	100.00	17.48
Grimmons Scholarship Loan Fund	250.00	.....	150.00	100.00	76.97
Dennett Fund . . . . .	665.00	.....	12.70	652.30	48.30
G. H. May Scholarship Fund . . . .	4,820.50	200.00	655.50	4,365.00	.....
Medical Special Fund . . . . .	4,126.53	.....	721.17	3,405.36	31.68
Class of 1896 Fund . . . . .	1,500.00	.....	350.00	1,150.00	.....
Emerson Fund . . . . .	300.00	.....	.....	300.00	.....
William P. Ryan Memorial Fund .	317.69	.....	112.00	205.69	.....
President's Fund . . . . .	250.00	.....	150.00	100.00	5.00
Total . . . . .	<u>\$906,162.34</u>	<u>\$101,534.00</u>	<u>\$186,877.20</u>	<u>\$820,819.14</u>	<u>\$18,973.82</u>

(Schedule A)

*SCHEDULE A-4*  
ACCOUNTS RECEIVABLE

United States Government:		
Division of Industrial Coöperation:		
Office of Scientific Research and Development:		
Radiation Lab. . . . .	\$8,286,590.57	
Less: Advance Pay-		
ments thereon	<u>6,496,103.76</u>	
		\$1,790,486.81
All Others . . . . .	<u>288,591.25</u>	
		\$2,079,078.06
United States Army, Navy and N.A.C.A. Contracts	<u>298,571.29</u>	\$2,377,649.35
Special Tuition Fees . . . . .		42,989.77
Research Contracts . . . . .		243,921.94
		<u>\$2,664,561.06</u>
<i>Total United States Government (Schedule A)</i> . . . . .		
Others:		
Aero Engineering Department, Wind Tunnel Accounts . . . . .		\$11,214.00
Anesthesia Committee . . . . .		1,500.17
Division of Industrial Coöperation, Industrial Corporations . . . . .		116,602.50
General Electric Company . . . . .		7,000.00
Henry J. Kaiser . . . . .		1,571.00
National Research Council . . . . .		1,750.00
Research Corporation . . . . .		1,800.00
Sheffield Foundation . . . . .		1,250.00
Sylvania Electric Products Company . . . . .		1,547.20
University of Chicago . . . . .		1,340.21
Miscellaneous Accounts . . . . .		11,470.10
		<u>\$157,045.18</u>
<i>Total Others (Schedule A)</i> . . . . .		

*SCHEDULE A-5*

STUDENTS' FEES IN ADVANCE, AND DEPOSITS RETURNABLE

1943 Summer Term:		
Tuition Fees . . . . .	\$300,151.50	
Students' Deposits . . . . .	20,492.28	
Dormitory Rentals . . . . .	<u>160.00</u>	
		\$320,803.78
1942-43 Students' Deposits, Returnable . . . . .		4,530.57
1943-44 Tuition Fees . . . . .		<u>2,700.00</u>
		\$328,034.35
<i>Total (Schedule A)</i> . . . . .		

*SCHEDULE A-6*

ADVANCES AND INVENTORIES FOR 1943-1944

Expenditures on United States Government and Other Contracts in Progress:		
United States Government:		
Army and Navy Programs in Progress:		
Meteorology A . . . . .	\$25,320.63	
Meteorology B . . . . .	13,313.70	
Navy V-12 . . . . .	1,650.11	
Army—A.S.T.P. . . . .	120,223.24	
Harbor Building, Special . . . . .	37,909.09	
Harbor Building, Navy . . . . .	37,829.29	\$236,246.06
Engineering Science and Management War Training . . .		26,080.87
Research in Progress		
Office of Scientific Research and Development:		
Radiation Laboratory . . . . .	\$146,473.28	
All Other Contracts . . . . .	183,125.75	
	<u>\$329,599.03</u>	
United States Army and Navy and N.A.C.A. . . . .	200,034.37	529,633.40
United States Army Chemical Warfare Service . . . . .		70,094.38
D. I. C. Industrial Corporations, Research in Progress . . .		113,245.72
Unallocated Expenditures, Government and Other Contracts		213,274.70
<i>Total (Schedule A)</i> . . . . .		<u>\$1,188,575.13</u>
Expenditures on Other Uncompleted Projects:		
Cafeteria—Adjoining Barbour Field House . . .	\$34,359.62	
Graduate House, Mess Hall . . . . .	31,622.63	
Electrical Engineering Dept., Special No. 1642 . . . . .	2,615.46	
Premiums Paid on Unexpired Insurance . . . . .	4,745.38	
Technology Press, Special No. 1494 . . . . .	1,062.77	
1943-1944 Purchases and Expenses . . . . .	20,002.40	\$94,408.26
<i>Inventories:</i>		
Supplies:		
Undergraduate Dormitories . . . . .	\$10,268.78	
Graduate House . . . . .	4,671.11	
Letter Shop . . . . .	1,213.69	
Department of Buildings and Power . . . . .	39,584.21	
Photographic . . . . .	7,200.65	
Division of Laboratory and Office Supplies . . . . .	30,334.15	
Civil Engineering Camp . . . . .	107.99	
Walker Games, Candy, etc. . . . .	783.78	
Lecture Notes . . . . .	1,497.61	
Food and Utensils:		
Walker Dining Service . . . . .	8,388.70	
Graduate House . . . . .	9,759.48	
Postage Stamps . . . . .	538.83	
Fuel Oil . . . . .	14,601.41	
Coal . . . . .	2,209.80	131,160.19
<i>Total (Schedule A)</i> . . . . .		<u>\$225,568.45</u>

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SCHEDULE A-7  
CURRENT FUNDS

<i>Department Accounts</i>	<i>Balance June 30, 1942</i>	<i>Receipts or Transfers</i>	<i>Expenditures or Transfers</i>	<i>Balance June 30, 1943</i>
<b>Aeronautical Engineering:</b>				
Aerodynamic Research.....	\$267.88	.....	.....	\$267.88
C.A.A. Inter-American Program .....		\$22,417.50	\$22,417.50	.....
C.A.A. Pilot-Train. Prog. ....	1,904.56	15,848.08	1,000.00	16,752.64
C.A.A. Pilot Train. Prog. 12728. ....		11.00	11.00	.....
C.A.A. Pilot Train. Prog. 13229. ....		701.45	701.45	.....
C.A.A. Pilot Train. Prog. 14219. ....		810.00	810.00	.....
C.A.A. Pilot Train. Prog. 15767. ....		139.40	139.40	.....
C.A.A. Pilot Train. Prog. 16120. ....		9,192.61	9,192.61	.....
C.A.A. Pilot Train. Prog. 16120A .....		13,229.54	13,229.54	.....
C.A.A. Pilot Train. Prog. 16120B .....		13,273.42	13,273.42	.....
C.A.A. Pilot Train. Prog. 16120D .....		13,725.46	13,725.46	.....
Instrument Lab.— Maintenance .....		3,800.00	3,777.40	22.60
National Res. Council, Draper..	706.36	3,750.00	3,974.12	482.24
Special 500-762 Acct., Draper..	1,468.51	.....	.....	1,468.51
Spec. Appr. No. 1875, Overbeck .....		175.00	175.00	.....
Special Appr. No. 1938 .....		15,000.00	42.22	14,957.78
Structural Lab. Equipment....	780.18	.....	254.84	525.34
Summer Shop Course, Markham .....	65.67	.....	.....	65.67
Vibration Research No. 1333... ..	257.03	422.00	509.67	169.36
Wind Tunnel.....	54,262.70	126,492.08	73,562.58	107,192.20
Wind Tunnel Add. Special 1936. ....		14,000.00	14,000.00	.....
<b>Architecture:</b>				
Housing Res. Special No. 1899.. ..		7,500.00	2,011.96	5,488.04
Traveling Fellowship.....	1,975.00	.....	.....	1,975.00
<b>Bemis Research:</b>				
Expense Account.....		222.03	222.03	.....
Salary Account.....		9,000.00	9,000.00	.....
<b>Biology and Biological Engineering:</b>				
Bartlett Arkel Fund.....	4,389.06	500.00	1,670.21	3,218.85
Biological Shop Account.....	573.34	127.96	148.30	553.00
Biological Shop Sp. Appr. 1648 .....	2,517.19	.....	.....	2,517.19
Corn Industries Res. Found. ....	612.16	800.00	657.80	754.36
Diversey Corp. Fellowship.....	2,000.00	437.50	1,584.83	852.67
Dow Chemical Co. Fellowship.. ..	297.56	333.32	630.88	.....
Eastman Nutrition Research.....		2,203.48	2,203.48	.....
Electron Microscope Research.. ..		6,099.97	6,099.97	.....
Equipment Special.....	189.97	2,002.20	1,684.63	507.54
Food Research.....	1,009.75	44.50	294.65	759.60
Food Technology Research.....		1,898.99	1,898.99	.....
Haskins Fellowship.....		2,083.33	416.69	1,666.64
Johnson Co. Research.....	1,148.09	2,750.76	3,898.85	.....
Kellogg Co. Research.....	435.97	2.10	438.07	.....
Kroger Grocery and Baking Co. Fellowship.....	604.81	1,600.00	1,387.71	817.10

## SCHEDULE A-7 — (Continued)

<i>Department Accounts</i>	<i>Balance June 30, 1942</i>	<i>Receipts or Transfers</i>	<i>Expenditures or Transfers</i>	<i>Balance June 30, 1943</i>
<b>Biology and Biological Engineering</b>				
<i>(Continued):</i>				
Lederle Laboratories Research..	\$676.99	\$2,912.22	\$2,757.52	\$831.69
Lever Bros. Fellowship.....	419.20	3,308.34	2,325.54	1,402.00
Lipton Co. Research.....	503.29	388.67	891.96	.....
Moore, Emma B., Ration Res....	.....	1,000.00	.....	1,000.00
Nutrition Research.....	267.12	1,553.35	1,177.05	643.42
Proctor Special Fund.....	149.51	60.00	141.62	67.89
Rockefeller Fd., Biological Eng.	3,768.82	36,239.38	21,597.50	18,410.70
Rockefeller Fd., Nutrition Res..	1,520.40	9,063.07	8,570.53	2,012.94
Royalty Receipts Pat. 665135 Sp.	4,523.18	3,144.99	2,772.49	4,895.68
Rubber Research Special 1915 ..	.....	20,000.00	14,775.35	5,224.65
Underwood, William, Fellowship	.....	2,500.00	.....	2,500.00
Williams-Waterman Fellowship	741.60	381.90	1,123.50	.....
<b>Building Engineering and Construction:</b>				
Fire Protection Eng. Conference	635.97	50.00	685.97	.....
National Lime Association ....	707.43	5,015.00	5,222.53	499.90
Timber Engineering Co., Inc....	4,574.61	1,341.82	5,679.44	236.99
Tucker (Ross Francis) Mem. Fd.	194.97	.....	9.20	185.77
<b>Bus. and Eng. Administration:</b>				
Case Research.....	65.51	.....	36.16	29.35
Graduate Fellowship Account..	4,724.94	.....	4,724.94	.....
Human Relationships Account....	69.03	.....	.....	69.03
Macomber, J. R., Fund.....	42.16	.....	30.95	11.21
Mass Production Study Acct....	.....	1,052.33	1,052.33	.....
Office of Emergency Manage., Special A-35.....	331.45	.....	35.82	295.63
Puerto Rico Fellowships.....	.....	28,640.00	3,425.74	25,214.26
Sloan Book Account.....	137.70	461.77	266.00	333.47
Special Account M.....	.....	1,000.00	.....	1,000.00
Special Appro. 1931.....	.....	1,000.00	526.49	473.51
Special Appro. 1943.....	.....	1,452.87	999.47	453.40
Sponsored Fellow., Operating..	255.84	2,672.59	232.46	2,695.97
Sponsored Fellow., Research...	533.90	3,790.34	2,124.70	2,199.54
War Production Res. No. 1850.	26.97	.....	26.97	.....
<b>Chemical Engineering:</b>				
Allied Ch. and Dye Corp. Fellow.	375.00	.....	.....	375.00
Alsifilm Research.....	199.86	.....	.....	199.86
Colloid Chemistry Special 1207.	281.28	.....	.....	281.28
Colloid Research Special 1635 ..	605.25	262.59	831.69	36.15
Fuels Research.....	2,354.26	.....	.....	2,354.26
Special Research No. 1421.....	250.00	.....	.....	250.00
Streaming Double Ref. Res.....	70.86	4.38	75.24	.....

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SCHEDULE A-7 — (Continued)

<i>Department Accounts</i>	<i>Balance June 30, 1942</i>	<i>Receipts or Transfers</i>	<i>Expenditures or Transfers</i>	<i>Balance June 30, 1943</i>
<b>Chemistry:</b>				
Davis Special Account . . . . .	\$129.38	\$795.00	\$620.42	\$303.96
Hoffman-La Roche Fund . . . . .		1,800.00	1,750.00	50.00
Inorganic Equipment Account . . . . .	796.81	134.49		931.30
Oxycellulose Research . . . . .	745.17	1,950.00	1,999.31	695.86
Physical Chemistry Royalties . . . . .	1,449.63	2,173.92		3,623.55
Polymerization Research . . . . .	1,915.25			1,915.25
Polysodium Research . . . . .		13,233.00	851.89	12,381.11
Research Corp. Vitamins A and D Research . . . . .	122.10	10,800.65	10,295.20	627.55
Special 1617, Compressor . . . . .	569.61		569.61	
Warren Fund, Schumb . . . . .	54.19		54.19	
<b>Civil Engineering:</b>				
Cement Research Special 1056 . . . . .	750.46	800.00	157.81	1,392.65
Equipment Special 1326 . . . . .	338.82			338.82
Freeman Hydraulic Research . . . . .	800.00			800.00
River Hydraulic Laboratory . . . . .	497.13	500.00	51.79	945.34
Soil Mechanic Laboratory . . . . .		1,383.76	1,259.46	124.30
Special Research No. 1364 . . . . .	2,630.67		49.25	2,581.42
Structural Laboratory . . . . .	511.72	1,200.00	1,593.40	118.32
Summer Camp Const. Reserve . . . . .		3,000.00		3,000.00
<b>Economics:</b>				
Babson Fund . . . . .		450.00	450.00	
Rockefeller Fd. Grant 41042 . . . . .	5,282.33	7,688.99	11,150.62	1,820.70
<b>Electrical Engineering:</b>				
Balsbaugh Research . . . . .	356.43	48,518.34	45,513.35	3,361.42
Balsbaugh Res. Sp. 1940 Alsifilm . . . . .		1,950.00	1,950.00	
Balsbaugh Res. Sp. 1952 Equip. . . . .		1,521.00	1,521.00	
Book Titles Special No. 1853 . . . . .	742.43		664.82	77.61
Coating Metals Special No. 1946 . . . . .		500.00	438.00	62.00
Communications Laboratory, U. H. F. Research . . . . .	5,000.00	26.68	2,980.71	2,045.97
Course Revision Special No. 1250 . . . . .	4,024.72	924.69	4,031.27	918.14
Course VI-A Travel Account . . . . .	352.94	1,000.00	313.54	1,039.40
Differential Analyzer . . . . .	6,703.77	36,919.62	39,233.16	4,390.23
Edgerton Film Research . . . . .	205.76	539.76		745.52
Fire Control Lab. Special 1588 . . . . .		13.11	13.11	
Hyams Radiation Research . . . . .		13,691.77	*12,305.74	1,386.03
Int. Business Mach. Co. Special . . . . .		13,192.42	13,192.42	
Int. Tel. and Tel. Res. 1940-41 . . . . .	399.38			399.38
Int. Tel. and Tel. Research . . . . .	985.68		119.98	865.70
Micro Calibration Research . . . . .		800.00	644.93	155.07
Micro Wave Research . . . . .	6,357.64		.58	6,357.06
Network Analyzer . . . . .	8,973.20	2,409.14	1,487.95	9,894.39
Network Analyzer Special . . . . .	1,301.93			1,301.93
Notes Account Special 1642 . . . . .		*5,042.80	5,042.80	

\*Includes balances of work in progress at beginning and end of year.

## SCHEDULE A-7 — (Continued)

<i>Department Accounts</i>	<i>Balance June 30, 1942</i>	<i>Receipts or Transfers</i>	<i>Expenditures or Transfers</i>	<i>Balance June 30, 1943</i>
<b>Electrical Engineering (Continued):</b>				
Oncologic Research.....		*\$6,258.53	\$6,258.53	.....
Oscillograph Special 1864.....	\$2,736.64	.....	1,405.20	\$1,331.44
Patent Application Special 1887	500.00	.....	500.00	.....
Photoelectric Cells Research				
Special 1874A.....	5,000.00	.....	842.02	4,157.98
Radio Research Special 1550 ..	1,724.15	.....	.....	1,724.15
Rapid Selection Research.....	6,990.52	.....	8.90	6,981.62
Research Corp., Arith. Mach. Sp.	744.99	4.76	317.67	432.08
Research Corp., High Voltage				
Research.....	483.16	23.68	127.06	379.78
Round Hill Research.....	117.13	.....	.....	117.13
Servos Royalty Account.....	.....	823.47	.....	823.47
Servos Special, Brown.....	4,284.11	187.45	415.25	4,056.31
Shop Equip. Special (Lathe)...	800.00	.....	.....	800.00
Special Appro. 1872, Dwight ..	172.89	.....	171.44	1.45
U. H. F. Dielectrics Research				
Special 1874B.....	6,000.00	.....	.....	6,000.00
U. S. Navy Differential Analyzer	.....	3,930.14	3,930.14	.....
U. S. Navy Fire Control Res....	353.59	1,000.00	55.09	1,298.50
von Hippel Research Sp. 1219 ..	.....	1,600.00	1,349.15	250.85
<b>English and History:</b>				
International Relations Library	94.89	.....	3.00	91.89
Special 1536.....	19.67	.....	19.67	.....
<b>Geology:</b>				
Carnegie Institution of				
Washington, Research.....	2,906.41	.....	2,906.41	.....
Geological Research Special 1863	4,995.33	.....	443.95	4,551.38
National Res. Council, Research	546.39	.....	484.33	62.06
<b>Graphics:</b>				
National Res. Council, Grant ..	184.21	.....	.....	184.21
<b>Mathematics:</b>				
Applied Mathematics Program.	10,000.00	5,000.00	3,300.00	11,700.00
Journal of Math. and Physics..	2,230.43	2,308.29	2,438.64	2,100.08
Putnam Fund.....	362.90	.....	19.66	343.24
<b>Mechanical Engineering:</b>				
A. S. M. E. Research.....	202.29	50.00	59.70	192.59
Automotive Lab. Special 1953 ..	.....	7,500.00	1,790.00	5,710.00
Cavitation Research.....	886.47	925.00	487.94	1,323.53
deForrest Research Special 1254	645.71	12,765.00	5,089.71	8,321.00
Disc Research.....	1,631.47	2,500.00	508.13	3,623.34
Forstmann Research.....	.....	5,023.89	2,526.36	2,497.53
Gas Turbine Research.....	.....	24,000.00	1,856.01	22,143.99

\*Includes balance of work in progress at beginning of year.



## SCHEDULE A-7— (Continued)

<i>Department Accounts</i>	<i>Balance June 30, 1942</i>	<i>Receipts or Transfers</i>	<i>Expenditures or Transfers</i>	<i>Balance June 30, 1943</i>
<b>Mechanical Engineering (Continued):</b>				
Keenan Research . . . . .	\$30.00	\$ . . . . .	\$21.25	\$8.75
Shop Maintenance Account . . .	2,861.39	7,123.86	5,924.19	4,061.06
Slater Research . . . . .	1,249.79	5,008.73	5,099.90	1,158.62
Sloan Building Special 1951 . . .	.....	6,325.00	.....	6,325.00
Special Research . . . . .	524.96	501.35	292.97	733.34
Strain Recorder Special 1939 . .	.....	1,680.00	1,680.00	.....
Testing Machine Special 1624 . .	438.96	.....	349.15	89.81
Testing Machine Special 1963 . .	.....	1,700.00	.....	1,700.00
Testing Materials Lab. Special . .	.....	2,679.31	.....	2,679.31
Testing Materials Lab. Sp. 1523 .	500.72	.....	153.50	347.22
Textile Equipment Special . . . .	.....	500.00	87.00	413.00
Textile Foundation Research . . .	2,332.96	5,024.04	4,010.23	3,346.77
U. S. Navy Torpedo Research . .	31.66	.....	4.01	27.65
Waltham Watch Co. Fund . . . . .	.....	500.00	500.00	.....
<b>Medical:</b>				
Special Needy Student Fund . . .	†1,118.22	752.85	25.00	†1,846.07
<b>Metallurgy:</b>				
Chipman Research Special 1337 . .	593.91	1,040.00	1,008.64	625.27
Clay Research . . . . .	745.11	800.00	425.05	1,120.06
Dust Removal Special 1945 . . .	.....	800.00	.....	800.00
<b>Engineering Foundation</b>				
Welding Research . . . . .	731.30	5,150.00	2,008.83	3,872.47
Equipment Special No. 1234 . . .	442.86	445.95	348.75	540.06
Equipment Special No. 1259 . . .	436.76	2,812.22	3,248.98	.....
Equipment Special, Hayward . . .	380.00	25.00	.....	405.00
Magnet Generator Purch. Acct. . .	.....	14,260.00	.....	14,260.00
Magnetic Lab. Special 1222 . . .	111.57	888.00	615.70	383.87
Mineral Dressing Research . . . .	.....	2,784.14	2,579.54	204.60
Mineral Dressing Special . . . . .	.....	500.00	500.00	.....
<b>Revere Copper and Brass Co.</b>				
Research . . . . .	218.18	1,600.00	956.23	861.95
Sheffield Foundation Research . .	.....	5,000.00	4,050.79	949.21
Special Research No. 1354 . . . .	517.83	.....	5.00	512.83
Special Research No. 1818 . . . .	6,784.83	49.46	2,817.07	4,017.22
Vanadium Corp. Fellowship . . .	175.00	2,500.00	2,551.71	123.29
<b>Meteorology:</b>				
Cosmic Ray Research . . . . .	.....	500.00	.....	500.00
Forest Fire Service Special . . .	1,053.52	.....	.....	1,053.52
Pamphlets Deposit Special . . . .	.....	488.00	24.00	464.00
Special Appro. 1817 . . . . .	1,250.00	.....	1,032.21	217.79
Weather Bureau Research . . . . .	74.50	4,250.00	3,987.37	337.13
Weather Bureau Special . . . . .	.....	4,951.97	4,951.97	.....

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

## SCHEDULE A-7 — (Continued)

<i>Department Accounts</i>	<i>Balance June 30, 1942</i>	<i>Receipts or Transfers</i>	<i>Expenditures or Transfers</i>	<i>Balance June 30, 1943</i>
<b>Military Science:</b>				
Army Enlisted Reserve Corp... \$.....		\$261.65	\$261.65	\$.....
Freshman Uniform Account... 437.25		351.26	282.71	505.80
Senior Uniform Account..... 191.64		15,954.72	16,146.36	.....
Senior Uniform Upkeep Acct... 122.15		12.82	.....	134.97
<b>Naval Architecture:</b>				
Propeller Tunnel Special 1548A. 1,347.17		845.00	162.84	2,029.33
Special Fund (Anonymous).... 534.92		2,080.00	.....	2,614.92
<b>Physics:</b>				
American Petroleum Insti. Fund .....		5,575.00	3,200.00	2,375.00
Carnegie Institution of Washington, Boyce..... 1,767.23		.....	.....	1,767.23
Carnegie Institution of Washington, Vallarta..... 860.00		.....	.....	860.00
Crystal Research..... 458.23		268.00	43.68	682.55
Glass Industry Fellowship..... 250.00		.....	.....	250.00
Gulf Oil Corp. Research..... .....		1,100.00	.....	1,100.00
Markle Cyclotron Research..... .....		41,970.14	*25,761.03	16,209.11
Nuclear Research..... 9,839.56		60.00	17.02	9,882.54
Radioactivity Research..... 1,621.45		2,344.75	820.39	3,145.81
Roentgen Ray Research..... 232.26		.....	.....	232.26
Rumford Grant, Harrison..... 15.26		.....	13.58	1.68
Spectroscopy Special..... 3,649.10		7,276.70	281.28	10,644.52
Zeeman Effect Program Special 1755..... 660.25		.....	.....	660.25
<b>Public Health:</b>				
Boston Health Service..... 424.05		231.00	480.89	174.16
Hood Scholarship..... 400.00		400.00	800.00	.....
Kellogg Foundation Scholarship 7,200.00		.....	5,614.00	1,586.00
<b>Solar Energy Research:</b>				
Chemistry..... 765.03		1,200.00	680.44	1,284.59
Electrical Engineering..... .....		1,500.00	843.56	656.44
Geology..... 501.22		.....	10.40	490.82
Headquarters Account..... 898.90		1,000.00	614.26	1,284.64
Metallurgy..... 190.93		300.00	378.02	112.91
<i>Miscellaneous Accounts</i>				
Additional Group Insurance Fund 68.82		13,105.60	13,174.42	.....
Air Travel Insurance Special..... .....		2,438.33	2,438.33	.....
Air Travel Insurance Special 1903. 2,150.00		2,372.50	4,522.50	.....
Alterations Special 1779..... 5,444.08		15,289.89	20,733.97	.....
Alumni Fund, Salaries..... .....		4,200.00	4,200.00	.....
Alumni Fund, Bulletin Special 1560 845.57		.....	.....	845.57
Bemis Real Estate Reserve..... 3,544.43		.....	183.20	3,361.23
Blue Cross Hospitalization Prog... .....		20,219.76	18,952.76	1,267.00

\* Includes balance of work in progress at beginning of year.

## SCHEDULE A-7 — (Continued)

Miscellaneous Accounts	Balance June 30, 1942	Receipts or Transfers	Expenditures or Transfers	Balance June 30, 1943
Boat House Equipment Account..	\$235.94	\$20.00	\$18.00	\$237.94
Building Key Account .....	3,136.49	1,476.75	1,393.86	3,219.38
Building Thirty-Two Special 1962 .....		2,000.00		2,000.00
Carnegie Foundation Pensions .....		59,509.84	59,509.84	
Class of 1892 Fund .....	1,857.00	613.00	2,470.00	
Coal Conversion Special 1912 .....		40,000.00	36,035.57	3,964.43
Compton, Karl T., Special .....	367.69		367.69	
Cosmic Terrestrial Research .....	750.01	8,860.94	8,101.71	1,509.24
Dean's Fund Special .....		1,500.00	1,500.00	
Delta Tau Delta Special (1942-43 Income) .....	75.00		75.00	
Division of Industrial Cooperation:				
Industrial Contracts .....	36,186.64	*865,719.38	*881,200.42	20,705.60
All Army, Navy, N. A. C. A. and O. S. R. D. Contracts .....		*15,002,647.88	14,997,110.03*	5,537.85
Dormitory Equipment Reserve ..		19,525.47		19,525.47
Duperial Scholarship .....		1,565.68	1,365.68	200.00
Employees Special Allowance ..		49,129.00	49,129.00	
Faculty Flower Fund .....		20.00	20.00	
General Radio Co. Fund .....	2,000.00			2,000.00
Graduate House Dining Service Reserve .....	1,481.61	1,144.39	2,303.77	322.23
Greater Boston United War Fund ..		4,351.50	4,351.50	
Gridiron Account .....		1,862.00	1,862.00	
Guard Service .....	23,379.89		23,195.65	184.24
Guide Service Special 1558 .....	335.96		165.16	170.80
Gymnasium Special .....	915.53			915.53
Historic Memorials .....	160.40		78.03	82.37
Kasch Fellowships .....	330.00			330.00
Krass Scholarship .....		100.00	100.00	
Lecture Fund .....	860.00			860.00
Library Accounts:				
Crafts Library .....	479.53			479.53
Dewey Library .....	34.83		1.79	33.04
Humanities Library .....	184.69			184.69
Library Growth Account .....	11,976.38	3,676.44	2,416.55	13,236.27
Special No. 1 Account .....	405.95	253.95	222.39	437.51
Walker Library .....	558.48	3,022.14	2,168.42	1,412.20
Little, A. D., Memorial Inc. Acct..	22,083.22	33,282.50	55,365.72	
Lowell Institute School .....		4,020.00	4,020.00	
Melvin Trust Scholarships .....		3,750.00	3,750.00	
Museum Committee Account .....	162.45	5,136.43	2,855.39	2,443.49
Nautical Association .....		327.00		327.00
Patent Committee .....	77.51			77.51

\* Includes balances of work in progress at beginning and end of year.

## SCHEDULE A-7 — (Continued)

Miscellaneous Accounts	Balance June 30, 1942	Receipts or Transfers	Expenditures or Transfers	Balance June 30, 1943
Pension Asso. 1943-44 Receipts...	\$ .....	\$ 305.00	\$ .....	\$305.00
Photographic Service .....	2,230.03	95,431.01	96,952.23	708.81
Photographic Service Reserve....	.....	7,000.00	.....	7,000.00
President's Fund .....	†1,173.05	155.00	326.42	†1,001.63
President's Portrait Fund .....	818.35	.....	587.95	230.40
President's Special 1796 .....	938.10	931.13	1,869.23	.....
Research Associates 1943 .....	1,000.00	2,000.00	.....	3,000.00
Sabotage Insurance .....	.....	565.00	565.00	.....
Safety Committee Special 1775 .....	21,768.20	15,488.51	36,149.60	1,107.11
Sailing Trophy Fund .....	3.52	.....	.....	3.52
Salaries Payable .....	.....	37,357.90	37,357.90	.....
Salvage Fund .....	.....	980.61	169.42	811.19
Senior Week Option Account .....	.....	305.00	305.00	.....
Society of Arts .....	.....	2.47	2.47	.....
Special Appropriation 1890 .....	290.00	.....	290.00	.....
Steam and Electric System Special 1879 .....	101,462.77	.....	46,544.56	54,918.21
Storage Space Special 1823 .....	372.00	6.75	378.75	.....
Suspense Account .....	.....	35,184.74	35,184.74	.....
Swimming Pool Equipment .....	80.90	.....	.....	80.90
Tax Reserve Account (Cambridge R. E. Taxes) .....	3,985.32	.....	3,985.32	.....
Technique .....	.....	670.50	603.50	67.00
Technology Christian Association .....	.....	978.25	969.25	9.00
Technology Club of Philadelphia .....	100.00	.....	.....	100.00
Technology Press Special 1468 .....	3,964.98	1,446.26	.....	5,411.24
Technology Press Special 1468A .....	919.24	269.35	.36	1,188.23
Technology Press Special 1494 .....	.....	*2,555.65	*2,555.65	.....
Track House Special 1917 .....	.....	1,000.00	1,000.00	.....
Undergraduate Dues .....	.....	19,673.50	18,347.50	1,326.00
United States Victory Tax .....	.....	194,203.95	89,821.47	104,382.48
United States War Savings Bonds .....	5,849.45	430,588.84	411,017.08	25,421.21
United States Government Accounts:				
Army and Navy Train. Programs;				
Army — A. S. T. P. ....	.....	*120,715.01	*120,715.01	.....
Army — Meteorology A .....	.....	*25,320.63	*25,320.63	.....
Army — Meteorology B .....	.....	*98,829.70	98,829.70	.....
Harbor Building, Navy .....	.....	*98,126.11	98,126.11	.....
Harbor Building, Special .....	.....	*123,993.55	*123,993.55	.....
Navy — Aero Engineering and Aviation Engines .....	.....	17,688.00	17,688.00	.....
Navy — V12 .....	.....	*1,650.00	1,650.00	.....
Chemical Warfare Service				
Development Laboratory .....	55.35	*444,658.46	444,713.81	.....
Chemical Warfare Service				
Development Lab. Special .....	.....	3,112.41	3,112.41	.....

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

\* Includes balances of work in progress at beginning and end of year.

SCHEDULE A-7 — (Continued)

<i>Miscellaneous Accounts</i>	<i>Balance June 30, 1942</i>	<i>Receipts or Transfers</i>	<i>Expenditures or Transfers</i>	<i>Balance June 30, 1943</i>
<b>United States Government Accounts: (Continued)</b>				
Coördinator, Commercial and Cultural Relations, American Republics, N. D. Car. 59 . . . . .		\$2,723.28	\$2,723.28	\$ . . . . .
Engineering Science and Man. Defense Training . . . . .		138,081.92	*138,081.92	. . . . .
Engineering Science and Man. War Training . . . . .		*292,044.94	292,044.94	. . . . .
Visiting Committees Reports, Special . . . . .	441.51	. . . . .	139.06	302.45
Walker Memorial Dining Service Reserve . . . . .	2,310.48	39,428.11	8,747.32	32,991.27
War Damage Insurance Sp. . . . .		11,131.39	11,131.39	. . . . .
	<u>\$533,905.37</u>	<u>\$19,263,862.86</u>	<u>\$18,967,814.72</u>	<u>\$829,953.51</u>

*Summary*

United States Victory Tax Payable . . . . .	\$104,382.48
United States War Savings Bond Deposits . . . . .	25,421.21
Current Funds . . . . .	700,149.82
	<u>\$829,953.51</u>

(Schedule A)

\* Includes balances of work in progress at beginning and end of year.

## SCHEDULE A-8

## EDUCATIONAL PLANT ASSETS

Land in Cambridge:		
Campus — east of Massachusetts Avenue ..	\$1,125,766.67	
Campus — west of Massachusetts Avenue..	850,014.82	
	<hr/>	\$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 .....	208,566.27	
Mechanic Arts Building .....	83,658.89	
Nuclear Research Laboratory .....	34,891.27	
Cyclotron Laboratory .....	20,247.92	
Solar Energy Laboratory .....	10,500.00	
Hyams Radiation Laboratory .....	13,500.00	
Research Building .....	76,835.88	
Hydraulic and Compression Laboratories . .	68,301.88	
	<hr/>	9,173,677.44
Educational Equipment .....		2,039,953.60
Undergraduate Dormitories .....		1,308,923.79
Infirmary, Recreational and Athletic Buildings:		
Homberg Memorial Infirmary .....	\$188,441.60	
Walker Memorial .....	714,587.02	
Alumni Swimming Pool .....	364,477.21	
Boat House .....	54,244.13	
Barbour Field House .....	84,042.54	
Sailing Pavilion .....	28,849.09	
Briggs Field House and Track .....	114,440.13	
	<hr/>	1,549,081.72
Summer Camp:		
East Machias, Maine .....	\$120,558.00	
	<hr/>	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 .....	286,999.85	
	<hr/>	885,489.00
<b>Total, June 30, 1943 (Schedule A) .....</b>	<b>\$17,053,465.04</b>	

<sup>1</sup>Not including Graduate House (see investments, page 154), nor Buildings 20, 22 and 24, built for and used by U. S. Government Research.

## SCHEDULE A-9

PRINCIPAL GIFTS AND APPROPRIATIONS  
FOR EDUCATIONAL PLANT

For Land:	
T. C. duPont.....	\$625,000.00
A. F. and Ida F. Estabrook Funds.....	105,000.00
Maria A. Evans.....	169,080.60
Edmund D. Barbour Fund.....	234,634.18
From Miscellaneous Contributors.....	277,222.89
Appropriations from Funds —	
Blake, \$5,000; Lyman, \$5,000; Kimball, \$10,000; McGregor, \$2,500; Philbrick, \$2,000; Richards, \$1,000; Perkins, \$3,252.32;	
Current Income, \$6,500.....	35,252.32
	\$1,446,189.99
For Educational Buildings (including Homberg Infirmary, President's House, Power Plant and buildings other than Dormitories and those used for Student Recreational and Athletic Purposes):	
*George Eastman.....	\$5,778,222.86
T. C. and P. S. duPont, Charles Hayden, Arthur Winslow for Mining Engineering Building.....	225,000.00
Maria A. Evans Fund.....	100,000.00
C. A. Stone and E. S. Webster.....	187,500.00
Sale of Land and Building in Boston (1938)..	972,283.33
Pratt Fund, for School of Naval Architecture	675,150.00
Guggenheim Fund, for Aeronautical Labora- tory.....	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 Labora- tory.....	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 Appropri- ations 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.....	
	53,247.92
†Subscriptions to Wright Brothers Memorial Wind Tunnel.....	95,795.00
Appropriation for Wind Tunnel — Current Income.....	
	9,000.00

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

† Otherwise paid for from Eastman Building Fund.

SCHEDULE A-9 — (Continued)

For Educational Buildings (Continued):

Miscellaneous Appropriations from Current Income for: Compression Lab., \$31,000; Tractor Garage, \$6,400 .....	\$37,400.00	
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
		\$8,990,896.28

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. Alumni Fund .....	500,000.00	
	82,119.38	
Appropriations from Funds —		
Drew, \$305,171.52; Peabody, \$52,238.89; duPont, \$12,500; Tuttle, \$50,000; Thayer, \$25,000; Dorr, \$49,573.47 .....	494,483.88	
Appropriations from Current Income —		
\$205,000; \$42,945.10; \$28,539.31 .....	276,484.41	
Miscellaneous Contributions .....	14,429.80	
		2,122,861.67

For Summer Camps:

Appropriations from Current Income —		
For Civil Engineering Camp, Maine .....	\$73,807.19	
		73,807.19

For Dormitories:

Maria A. Evans Fund .....	\$261,192.55	
T. C. duPont .....	100,000.00	
Alumni Dormitory Fund .....	566,945.66	
Edmund D. Barbour Fund .....	258,599.40	
Appropriations from Funds —		
Robb, \$28,750; Thorndike, \$15,000; Hodges, \$57,316.26; Wood, \$28,750 .....	129,816.26	
Appropriated, Current Income .....	17,367.82	
		1,333,921.69

For Recreational and Athletic Buildings:

Walker Memorial Fund .....	\$167,303.96	
Improvement Fund, for Walker Memorial ..	24,491.34	
Alumni Fund, for Walker Memorial .....	490,000.00	



*SCHEDULE A-9—(Continued)*

<b>For Recreational and Athletic Buildings (Continued):</b>		
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	
	<hr/>	\$1,344,406.85
<b>Miscellaneous:</b>		
From Sale of Land and Buildings in Boston 1916.....	\$656,919.45	
Other Contributions, Appropriations, etc....	986,461.92	
	<hr/>	1,643,381.37
<b>Total June 30, 1943 (Schedule A).....</b>		<u><u>\$16,955,465.04</u></u>

## SCHEDULE B-1

APPROPRIATIONS FROM FUNDS AND OTHER CREDITS FOR  
TEACHING, RESEARCH AND ADMINISTRATION

Administration . . . . .				\$13,512.02
E. S. M. W. T.	\$12,891.23	D. I. C.	\$120.79	
Am. Optical Society	500.00			
Aeronautical Engineering . . . . .				26,641.30
Wind Tunnel	22,167.29	Nat. Res. Council	1,880.00	
C. A. A. Pilot		D. I. C.	1,200.01	
Training Program	1,000.00	Miscellaneous	394.00	
Architecture . . . . .				594.00
E. S. M. W. T.	594.00			
Biology . . . . .				35,180.82
Rockefeller Nutri.	5,158.00	Special Appro.		
Electron Microscope	4,958.35	1915	1,154.12	
Williams-Waterman		D. I. C.	5,633.67	
Res.	443.36	Lever Bros. Fell.	300.00	
Lipton Fund	650.00	Rockefeller Res.	12,524.98	
Lederle Fund	866.64	Johnson Res.	2,041.70	
Corn Industries Res.	250.00	Royalty Receipts		
		Account	1,200.00	
Building Construction . . . . .				5,374.00
National Lime Asso.	4,200.00	Timber Eng. Co.	440.00	
E. S. M. W. T.	734.00			
Business and Engineering Administration . . . . .				1,476.00
D. I. C.	1,000.00	E. S. M. W. T.	476.00	
Chemical Engineering . . . . .				18,093.18
D. I. C.	8,505.68	C. W. Service	8,647.50	
N.E. Gas Turbine Res.	940.00			
Chemistry . . . . .				31,605.36
Polysodium Fund	475.80	DuPont Fell.	666.64	
Richards Fund	320.50	D. I. C.	19,289.65	
Oxy Cellulose		Res. Corp. Vit. Res.	8,430.27	
Fund	1,350.00	C. W. Service	1,072.50	
Civil Engineering . . . . .				3,817.72
D. I. C.	3,817.72			
Economics . . . . .				5,516.00
Rockefeller Grant	3,200.00	Indus. Rela. Sec.	1,700.00	
Babson Fund	450.00	E. S. M. W. T.	166.00	

*SCHEDULE B-1 — (Continued)*

Electrical Engineering.....				\$55,760.51
Balsbaugh Res.	\$12,594.62	Hyams Research	\$3,200.00	
Navy Diff. Anal.	306.00	E. S. M. W. T.	14,252.33	
Com. Lab. U. H. F.	135.00	D. I. C.	15,255.56	
Diff. Anal.	9,753.00	Miscellaneous	264.00	
English and History.....				2,000.00
Industrial Rela. Sec.	2,000.00			
Industrial Relations Section.....				27,359.39
Industrial Rela. Fd.	22,309.39	Rockefeller Grant	5,050.00	
Library.....				2,667.00
Vail Fund	2,000.00	Cilley Fund	667.00	
Mathematics.....				8,160.48
E. S. M. W. T.	1,966.00	D. I. C.	6,194.48	
Mechanical Engineering.....				21,213.37
Special No. 1254	4,455.60	E. S. M. W. T.	1,400.00	
Slater Fund	3,416.67	D. I. C.	6,774.47	
Forstmann Woolen	1,800.00	Textile Res.	3,366.63	
Metallurgy.....				20,549.92
Revere Brass and		Special 1818	1,160.00	
Copper Fellowship	600.00	D. I. C.	12,979.92	
Engineering Foundation		Sheffield Fund	2,750.00	
Welding Research	785.00			
Vanadium Alloys Co.				
Fund	2,275.00			
Meteorology.....				5,468.03
D. I. C.	1,737.53	Weather Bur. Res.	3,730.50	
Naval Architecture.....				1,834.63
E. S. M. W. T.	563.00	D. I. C.	1,271.63	
Physics.....				36,690.62
Markle Cyclotron	3,573.32	D. I. C.	29,917.30	
Am. Pet. Inst. Res.	3,200.00			
Public Health.....				50.00
Boston Health Service	50.00			
Solar Energy Research.....				10,600.00
Solar Energy Fund	10,600.00			
<b>Total (Schedule B).....</b>				<u><u>\$334,164.35</u></u>

*SCHEDULE B-2*

## RENTALS AND OTHER INCOME

Photographic Service, Rental . . . . .	\$7,000.00
Land Rentals . . . . .	5,536.49
General Electric Company for Course VI-A . . . . .	7,000.00
Boston Edison Company for Course VI-A . . . . .	1,200.00
Eastman Kodak Co. for Chemical Engineering . . . . .	1,000.00
General Radio Co. for Electrical Engineering . . . . .	1,200.00
Trustees of H. C. Frick Estate . . . . .	4,671.64
United States Navy Fire Control Research . . . . .	750.00
Anonymous for Chemical Engineering . . . . .	1,000.00
<i>Total</i> (Schedule B) . . . . .	<u><u>\$29,358.13</u></u>

*SCHEDULE B-3*  
SALARIES OF TEACHERS, ACCESSORY TO TEACHING  
AND LABORATORY SERVICE

<i>Department</i>	<i>Teachers Salaries</i>	<i>Wages Accessory to Teaching</i>	<i>Wages Laboratory Service</i>	<i>Total</i>
Summer Session 1942.....	\$113,623.51	.....	.....	\$113,623.51
Aeronautical Engineering.....	93,812.68	\$4,018.34	\$3,486.12	101,317.14
Architecture.....	61,080.83	7,259.80	1,355.97	69,696.60
Bemis Research.....	2,000.00	.....	.....	2,000.00
Biology and Biological Eng....	71,601.30	3,347.18	4,741.34	79,689.82
Business and Eng. Admins....	49,525.79	5,229.46	.....	54,755.25
Building Eng. and Construction	21,180.00	1,140.00	.....	22,320.00
Chemical Engineering.....	84,762.40	5,370.00	7,029.04	97,161.44
Chemical Eng. Practice School.	13,120.00	.....	.....	13,120.00
Chemistry.....	149,210.94	8,339.00	13,172.87	170,722.81
Civil Engineering.....	77,184.89	3,327.00	5,748.95	86,260.84
Division of Laboratory Supplies	.....	.....	21,993.30	21,993.30
Economics.....	59,050.00	2,740.00	.....	61,790.00
Electrical Engineering.....	171,969.82	10,742.59	19,881.03	202,593.44
English and History.....	59,135.59	2,017.59	.....	61,153.18
Gen. Eng. and General Science.	3,000.00	1,060.00	.....	4,060.00
General Studies.....	500.00	.....	.....	500.00
Geology.....	36,775.25	2,045.00	2,540.94	41,361.19
Graphics.....	25,332.50	670.00	.....	26,002.50
Industrial Relations Section...	24,557.93	.....	.....	24,557.93
Lantern Operation.....	.....	.....	1,826.62	1,826.62
Mathematics.....	71,699.64	1,743.00	.....	73,442.64
Mechanical Engineering.....	195,489.54	8,142.10	22,826.83	226,458.47
Metallurgy.....	89,024.28	3,658.12	5,367.92	98,050.32
Meteorology.....	66,036.50	4,557.97	1,134.00	71,728.47
Military Science.....	7,245.00	1,030.00	.....	8,275.00
Modern Languages.....	18,351.98	.....	.....	18,351.98
Naval Architecture.....	42,940.68	1,365.00	1,592.72	45,898.40
Physics.....	121,105.35	5,118.71	11,919.96	138,144.02
Public Health.....	11,550.00	1,200.00	.....	12,750.00
Solar Energy Research.....	6,600.00	.....	.....	6,600.00
<i>Totals.....</i>	<u>\$1,747,466.40</u>	<u>\$84,120.86</u>	<u>\$124,617.61</u>	<u>\$1,956,204.87</u>

(Schedule B)

## SCHEDULE B-4

## DEPARTMENT EXPENSES

Aeronautical Engineering . . . . .				\$7,733.20
General	\$3,259.20	Met. Inst. Lab.	\$3,800.00	
Staff Scholarships	274.00	Vibration Research	400.00	
Architecture . . . . .				9,738.88
General	1,938.88	Housing Research	7,500.00	
Staff Scholarships	300.00			
Bemis Research . . . . .				202.88
General	202.88			
Biology and Biological Engineering . . . . .				22,834.44
General	4,784.44	Special 1915 Rubber		
Staff Scholarships	1,050.00	Research	15,000.00	
Biol. Eng. Equip.	2,000.00			
Building Engineering and Construction . . . . .				776.13
General	776.13			
Business and Engineering Administration . . . . .				5,050.00
General	2,000.00	Special 1931	1,000.00	
Mass Production Study	750.00	Special 1943	1,300.00	
Chemical Engineering . . . . .				19,683.92
General	5,488.59	Practice School	7,881.33	
Staff Scholarships	6,314.00			
Chemistry . . . . .				23,077.05
General	15,373.05	Staff Scholarships	7,704.00	
Civil Engineering . . . . .				10,589.21
General	2,868.47	Summer Camp	4,320.74	
Staff Scholarships	1,000.00	Soil Mechanics	1,200.00	
Structural Laboratory	1,200.00			
Economics and Social Sciences . . . . .				2,955.19
General	1,939.19	Staff Scholarships	1,016.00	
Electrical Engineering . . . . .				31,506.67
General	13,767.67	von Hippel Sp. 1946	500.00	
Staff Scholarships	2,468.00	Balsbaugh Sp. 1952	1,521.00	
Diff. Analyser	9,000.00	Special 1927		
Alsifilm Research	1,950.00	Microphone Res.	800.00	
		von Hippel Research	1,500.00	
English and History . . . . .				1,348.38
General	948.38	Special Book Fund	400.00	
General Science and Engineering . . . . .				46.82
General	46.82			
General Studies . . . . .				219.64
General	219.64			

*SCHEDULE B-4 — (Continued)*

Geology.....				\$2,285.55
General	\$1,585.55	Staff Scholarships	\$700.00	
Graphics.....				471.02
General	471.02			
Humanics.....				51.03
General	51.03			
Industrial Relations Section.....				2,801.46
General	1,151.46	Staff Scholarships	1,650.00	
Mathematics.....				6,334.00
General	3,965.00	Jour. of Mathematics	1,600.00	
Staff Scholarships	769.00			
Mechanical Engineering.....				27,946.83
General	16,387.83	Strain Recorder		
Staff Scholarships	1,879.00	Special	1,680.00	
Automotive Lab. Special		Plasticity Research	500.00	
1953	7,500.00			
Metallurgy.....				8,935.70
General	4,093.70	Chipman Research	1,000.00	
Staff Scholarships	954.00	Magnetic Research	888.00	
Mineral Dressing Research	2,000.00			
Meteorology.....				17,607.01
General	15,415.01	Staff Scholarships	2,192.00	
Military Science.....				540.41
General	278.76	A. E. R. Corps	261.65	
Modern Languages.....				638.60
General	638.60			
Naval Architecture.....				1,100.21
General	1,100.21			
Physics.....				36,604.92
General	8,888.25	Markle Cyclotron		
Staff Scholarships	6,245.00	Research	21,471.67	
Public Health.....				885.81
General	735.81	Staff Scholarships	150.00	
Solar Energy Research.....				4,000.00
General	4,000.00			
<b>Total (Schedule B).....</b>				<u>\$245,964.96</u>

Departmental Expenses include certain appropriations carried to Current Funds, not fully expended at June 30, 1943.

*SCHEDULE B-5*  
LIBRARY AND MUSEUM

Library .....		\$83,724.79
Salaries of Officers .....	\$14,844.00	
Wages, Office and Clerical .....	47,235.79	
Expenses .....	21,645.00	
	<hr/>	
Museum .....		15,202.23
Museum Committee .....	\$8,620.00	
Dard Hunter Museum .....	5,000.00	
Pratt Museum .....	1,582.23	
	<hr/>	
<i>Total</i> (Schedule B) .....		<u>\$98,927.02</u>

*SCHEDULE B-6*  
CLERICAL AND OFFICE EXPENSE — ADMINISTRATION

	<i>Salaries</i>	<i>Expenses</i>	<i>Total</i>
President .....	\$7,347.83	\$2,630.45	\$9,978.28
Dean of Engineering .....	1,716.00	213.16	1,929.16
Dean of Science .....	2,797.61	264.99	3,062.60
Dean of Humanities .....	.....	262.04	262.04
Dean of Students .....	1,978.80	605.29	2,584.09
Dean of Graduate School .....	.....	194.73	194.73
Registrar .....	31,259.88	10,323.94	41,583.82
Director of Admissions .....	11,427.90	4,915.17	16,343.07
Treasurer and Bursar .....	49,063.97	11,261.55	60,325.52
Superintendent .....	8,856.34	1,512.98	10,369.32
News Service .....	1,352.00	674.08	2,026.08
Undergraduate Scholarship and Loan Fund Board .....	6,929.90	2,460.40	9,390.30
New Student Publicity .....	.....	1,805.94	1,805.94
Placement Bureau .....	8,373.30	2,855.69	11,228.99
Register of Former Students .....	.....	4,919.80	4,919.80
	<hr/>	<hr/>	<hr/>
<i>Total</i> (Schedule B) .....	<u>\$131,103.53</u>	<u>\$44,900.21</u>	<u>\$176,003.74</u>



## SCHEDULE B-7

## GENERAL ADMINISTRATION EXPENSE

Bulletins .....				\$5,280.20
President's Report	\$4,079.20	General Catalogue	\$244.00	
Directory	957.00			
Other Publicity .....				3,071.29
Honoraria	750.00	Tech Review to		
Tech Review to Schools	1,500.00	Tech Clubs	560.00	
		Spectroscopy Conf.	261.29	
General Expense .....				259,629.74
Allowances	15,000.00	Employees Pensions	31,620.32	
Pensions	18,407.00	Graduation, etc.	8,598.78	
<sup>1</sup> Insurance, etc.	30,730.94	Travel	6,162.11	
Taxes, Cambridge	6,740.67	Telephone Service	42,916.20	
<sup>2</sup> Auditing	9,685.40	Dues, Fees, etc.	2,976.78	
Staff Pensions	82,968.29	Services (net)	3,823.25	
Special Expense .....				116,519.77
Special Contribution	200.00	Obstacle Course	873.15	
Alumni Fund	2,100.00	Building 32 Special	2,000.00	
New Equipment	4,529.76	Group Air Insurance	2,338.47	
<sup>2</sup> Audit Expense D. I. C.				
No. 1	3,135.50	Foreign Students	585.00	
War Damage Insurance	11,128.89	Employees Allow.	49,129.00	
Honoraria	500.00	Coal Conversion	40,000.00	
<b>Total (Schedule B) .....</b>				<b><u>\$384,501.00</u></b>

<sup>1</sup> Includes Workmen's Compensation, General Liability and all coverages except Fire Insurance (see Schedule B).

## SCHEDULE B-7a

## SPECIAL ADMINISTRATION EXPENSE

President's Fund	\$931.13	<sup>2</sup> Audit Expense, D.I.C.	
Special Salary	2,000.00	No. 2, No. 3 and	
Armed Services Office	3,520.57	Radiation Lab.	\$18,579.10
Foreign Travel Insur.	2,185.00	Special Expense,	
		D. I. C. No. 2	10,018.30
		D. I. C. (Rad.)	151,876.95
<b>Total (Schedule B) .....</b>			<b><u>\$189,111.05</u></b>

<sup>2</sup>Audit Expense includes special accounting to meet expanded operations.

## SCHEDULE B-8

## DEPARTMENT OF BUILDINGS AND POWER

Building Service.....				\$144,152.11
Janitors	\$47,204.62	Heat'g and Vent'g	\$14,943.68	
Night Cleaners	43,678.10	Shop Foreman (net)	3,277.69	
Watchmen	14,572.75	Mail and Elevators	7,517.08	
Window Clean.	5,475.86	Shipper, Stock Room, Matron, Messenger	7,482.33	
Power Plant and Electric Power (net).....				166,050.45
Fuel Oil.....			\$76,897.88	
Coal.....			15,137.86	
Cambridge Electric Light Co., Power.....			89,550.32	
Salaries.....			22,099.60	
Repairs.....			7,932.24	
Water, Supplies, etc.....			3,652.47	
Total Operating Cost.....			\$215,270.37	
Less: Credits — Electric Power		\$21,188.63		
Steam		<u>28,031.29</u>		<u>49,219.92</u>
Repairs, Alterations and Maintenance.....				122,184.81
Buildings	\$64,548.72	Water and Gas	\$15,767.25	
President's House	3,731.91	Furniture	4,879.41	
Grounds, Roads, etc.	14,768.82	Elevators	2,861.03	
Mains and Conduits	12,730.12	Miscellaneous(net)	2,897.55	
Total (Schedule B).....				<u>\$432,387.37</u>

<sup>1</sup>Including Dormitories, Graduate House, Walker Memorial and Bexley Hall.

## SCHEDULE B-9

## MEDICAL DEPARTMENT

Salaries, Staff.....				\$25,479.56
Expense of Clinic.....				23,345.97
Salaries	\$11,577.73	X-Ray Operation	\$808.17	
Supplies, etc.	4,233.53	Physical Examinations	6,726.54	
Expense of Infirmary.....				24,344.92
Salaries	\$16,613.18	Food (net)	\$3,663.03	
Equipment	1,044.27	Laundry	3,024.44	
Total (Schedule B).....				<u>\$73,170.45</u>

*SCHEDULE B-10*

UNDERGRADUATE BUDGET BOARD

Athletic Coaches Salaries.....	\$24,720.00	
Undergraduate Dues.....	19,673.50	
Walker Memorial (excluding Dining Service) (net)	14,414.72	
Athletic Fields, Maintenance.....	20,253.30	
Sailing Pavilion and Activities (net) .....	3,246.24	
Boat House and Launches, Maintenance .....	7,166.21	
Musical Clubs.....	600.00	
Swimming Pool.....	3,951.87	
Publicity and Administration Expense.....	879.91	
<i>Total (Schedule B)</i> .....		<u>\$ 94,905.75</u>

*SCHEDULE B-11*

UNDERGRADUATE DORMITORY OPERATION

<b>Income:</b>		
Rentals.....	\$232,956.41	
Miscellaneous.....	3,244.01	\$236,200.42
<b>Less: Refunds.....</b>	<b>\$46,221.94</b>	
House Tax Allowance.....	2,207.50	48,429.44
<i>Total (Schedule B)</i> .....		<u>\$187,770.98</u>
<b>Expense:</b>		
Salaries.....	\$56,555.25	
Light, Heat, Power, Water.....	16,019.83	
Repairs.....	15,570.48	
Supplies (net).....	6,162.91	
Equipment.....	19,094.86	
Laundry.....	4,999.16	
Administration.....	4,575.31	
Mortgage Interest.....	6,000.00	
		<u>\$128,977.80</u>
Transferred to Dormitory Equip. Reserve.....		19,525.47
<i>Total (Schedule B)</i> .....		<u>\$148,503.27</u>
Balance.....		39,267.71
<i>Total</i> .....		<u>\$187,770.98</u>

<sup>1</sup>SCHEDULE B-12

## GRADUATE HOUSE OPERATION

## Income:

Rentals . . . . .	\$106,627.87	
Miscellaneous . . . . .	2,686.36	\$109,314.23
		<hr/>
Less: Refunds . . . . .	\$ 6,936.15	
House Tax Allowance . . . . .	960.00	7,896.15
		<hr/>
Total . . . . .		<u>\$101,418.08</u>

## Expense:

Salaries . . . . .	\$ 43,126.47	
Real Estate Tax . . . . .	10,092.61	
Light, Heat, Power and Water . . . . .	12,213.57	
Repairs . . . . .	6,416.01	
Supplies (net) . . . . .	4,168.03	
Equipment . . . . .	2,381.13	
Laundry . . . . .	4,197.54	
Administration . . . . .	4,188.61	
Depreciation . . . . .	4,095.89	
		<hr/>
Total . . . . .		\$ 90,879.86
Balance . . . . .		10,538.22
		<hr/>

*Total* . . . . . \$101,418.08

<sup>1</sup> Not included in Auxiliary Activities — see pp. 146-147.

*SCHEDULE B-13*  
WALKER DINING SERVICE

## Income:

Sale of Coupon Books (net) . . . . . \$70,896.39  
Cash . . . . . 307,553.54

*Total (Schedule B)* . . . . . \$378,449.93

## Expense:

Food . . . . . \$225,360.67  
Salaries . . . . . 80,250.00  
Light, Heat, Power, Water . . . . . 5,916.43  
Laundry . . . . . 4,573.77  
Equipment . . . . . 8,639.85  
Repairs . . . . . 3,209.57  
Administration . . . . . 3,617.80  
Occupancy . . . . . 6,000.00

Total Expense . . . . . \$337,568.09  
Add: Decrease in Inventory at June 30, 1943 . . . . . 3,031.72

\$340,599.81

Balance transferred to Walker Dining Service Reserve 37,850.12

*Total (Schedule B)* . . . . . \$378,449.93

*SCHEDULE B-14*  
GRADUATE HOUSE DINING SERVICE

## Income:

Cash . . . . . \$166,619.66

*Total (Schedule B)* . . . . . \$166,619.66

## Expense:

Food . . . . . \$105,200.64  
Salaries . . . . . 47,241.05  
Light, Heat, Power, Water . . . . . 2,386.72  
Laundry . . . . . 2,039.37  
Equipment . . . . . 4,217.87  
Repairs . . . . . 414.08  
Administration . . . . . 1,077.72

Total Expense . . . . . \$162,577.45  
Add: Decrease in Inventory at June 30, 1943 . . . . . 3,719.98

\$166,297.43

Balance transferred to Graduate House Dining  
Service Reserve . . . . . 322.23

*Total (Schedule B)* . . . . . \$166,619.66

### 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. 161-168, Schedule A-2.

- 212 ALBERT FUND, 1930-1940. Gifts from anonymous donor to pay fourteen years rental of M. I. T. Student House on Bay State Road, Boston
- 214 ALPHA CHI SIGMA HOUSE FUND (Alpha Zeta Chapter), 1935-1943, \$3,500. Deposited for investment purposes only.
- 215 ALUMNI TENNIS COURT FUND, 1941, \$5,000. Half of a proposed allotment of Alumni Fund for construction of Tennis Court.
- 462 AMERICAN INSTITUTE OF BAKING FUND, 1939-42. Contributions to provide fellowships in Food Technology on problems relating to baking.
- 170 ANONYMOUS (H) 1942, \$5,000. For general purposes of the Institute.
- 171 ANONYMOUS (M) 1941, \$1,500. For general purposes of the Institute.
- 216 ANONYMOUS, 1924, \$1,052.50. Gift of member of Class of 1924 to accumulate until twenty-fifth reunion of Class in 1949.
- 600 LOUIE G. APPLEBEE, 1941-42, \$400. Bequest for assisting deserving students.
- 101 GEORGE ROBERT ARMSTRONG FUND, 1902, \$5,000. Bequest of George W. Armstrong in honor of son. Income available for general purposes of the Institute.
- 207 ARMY AND NAVY RESERVE FUND, 1943, \$25,000. Special reserve for unforeseen expenses.
- 217 ASSOCIATION OF CLASS SECRETARIES FUND, 1940, \$2,252.79. Held for investment purposes only.
- 501 ELISHA ATKINS SCHOLARSHIP FUND, 1894, \$5,000. Bequest of Mary E. Atkins.
- 401 WILLIAM PARSONS ATKINSON FUND, 1918, \$13,000. Bequest of Charles F. Atkinson as a memorial to father — for English Department of the Institute.
- 601 EDWARD AUSTIN FUND, 1899, \$400,000. Bequest. Interest paid to needy, meritorious students and teachers to assist in payment of studies.
- 580 BABSON FUND, 1938, \$10,000. Gift of Babson's Statistical Organization, Inc. Income to be applied at intervals of not more than three years as prizes for one or more persons for certain studies and research in Economics.
- 603 THOMAS WENDELL BAILEY FUND, 1914, \$2,200. Bequest. Income used for rendering assistance to needy students in Department of Architecture.

- 604 CHARLES TIDD BAKER FUND, 1922, \$20,000. Bequest. One-half of net income for assistance of poor and worthy students and one-half to principal.
- 172 EDMUND DANA BARBOUR FUND, 1926, \$847,000. Bequest. Principal and income for general purposes of Institute. Over \$800,000 used for buildings and equipment.
- 321 WALTER S. BARKER FUND, 1927, \$10,000. Bequest. Income only available for purposes of the Library.  
SIDNEY BARTLETT FUND, 1889, \$10,000. Bequest. Appropriated for new dormitories, 1924.
- 173 STEPHEN L. BARTLETT FUND, 1939-41, \$369,822.40. Bequest. Principal and income unrestricted—\$240,000 appropriated for educational plant including swimming pool and current purposes.
- 218 BASKET BALL FUND. Excess receipts from Eastern Massachusetts basket ball competitions held for account of M. I. T. A. A. for investment purposes only.
- 441 ALBERT FARWELL BEMIS FUND, 1938, \$270,000. Bequest. To establish and maintain the Albert Farwell Bemis Foundation for research on housing. Increased in 1941 through proceeds of sale of land carried under No. 442.
- 442 ALBERT FARWELL BEMIS FUND—LAND ACCOUNT, 1938, \$119,450. Estimated book value of land in Wellesley, Newton and Dedham received under bequest. Proceeds of sales carried to No. 441.  
ALBERT FARWELL BEMIS, 1923. \$100,000. Gift. Used for new dormitory unit, 1923.
- 219 BESS BIGELOW FUND, 1936-38, \$25,000. Anonymous donation for special purposes subject to approval of President.
- 503 BILLINGS STUDENT FUND, 1900, \$50,000. Bequest of Robert C. Billings. Students receiving benefit are expected to abstain from use of alcohol or tobacco in any form.
- 220 BIOLOGY—ROCKEFELLER FUND, 1941, \$70,000. For purchase of electron microscope and research thereunder.
- 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.
- 581 ROBERT A. BOIT FUND, 1921, \$5,000. Bequest. Income to stimulate students' interest in best use of English Language through annual prizes or scholarships.
- 403 FRANK WALTER BOLES MEMORIAL FUND, 1915, \$25,200. Under agreement between Harriet A. Henshaw and M. I. T., income paid to committee of Department of Architecture, to purchase fine arts material and to supplement and strengthen instruction in architectural design.
- 606 LEVI BOLES FUND, 1915, \$10,000. Bequest of Frank W. Boles in memory of father. Income for assistance of needy and deserving students.

- 463 WILLIAM SUMNER BOLLES FUND, 1924, \$9,400. Bequest of William P. Bolles in memory of son, to maintain either fellowship, traveling scholarship or resident scholarship. Recipient to have character, ability or promise.
- 504 JONATHAN BOURNE FUND, 1915, \$10,000. Bequest of Hannah B. Abbe. Income to aid deserving students.
- 505 ALBERT G. BOYDEN FUND, 1931-41, \$602,729.05. Bequest. Estate of Elizabeth R. Stevens. Income for scholarships. Preference to students from Fall River and Swansea, Mass.
- 104 CLARA H. BRIGGS, 1941, \$12,512.25. Bequest. Income for general purposes.
- 221 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.
- 506 HARRIET L. BROWN FUND, 1922, \$6,000. Bequest. Income to needy and deserving young women students, as would otherwise be unable to attend. In case two or more applicants of equal merit, preference given to native of either Massachusetts or New Hampshire.
- 464 MALCOLM COTTON BROWN FUND, 1919, \$11,000. Under agreement between Caroline Cotton Brown, Charles A. Brown and M. I. T., to establish memorial to son, Lieutenant Brown, R. A. F., for advanced study and research in Physics.
- 608 BURSAR'S FUND, 1907, \$6,000. Bequest of Lyman S. Rhoads. Income and repayments used for loans to students in discretion of Bursar, subject to approval of President and Treasurer.
- 443 SAMUEL CABOT FUND, 1912, \$50,000. Gift of Helen N. Cabot in honor of husband. Income for purchase of apparatus and supplies required in conduct of research in Industrial Chemistry.
- HOWARD A. CARSON FUND, 1932, \$1,000. Bequest. Used for new equipment.
- 610 MABEL BLAKE CASE FUND, 1920, \$25,000. Bequest of Caroline S. Freeman. Income to aid deserving students (preferably women) who are in need of assistance.
- 508 NINO TESHER CATLIN FUND, 1926, \$1,000. Gift of Maria T. Catlin in memory of son. Income for needy and deserving students — not a condition but if possible, award to be made to member of Lambda Phi Fraternity.
- 405 WILLIAM E. CHAMBERLAIN FUND, 1917-19, \$6,000. Bequest. Income used for Department of Architecture.
- 465 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.
- WILLIAM L. CHASE FUND, 1925, \$11,590.09. Bequest, \$7,500 appropriated for Homberg Infirmary, 1927. Balance used for educational plant, 1928.



- 407 CHEMICAL ENGINEERING PRACTICE FUND, 1915-16, \$300,000. Gift of George Eastman for Chemical Engineering Stations provided Institute will carry forward this plan of education for a reasonable period.
- 222 EDNAH DOW CHENEY FUND, 1905-06, \$13,900. Bequest. Income for maintenance and care of Margaret Cheney Room for women students.
- 105 CHARLES CHOATE FUND, 1906-21, \$35,800. Bequest. Income for general purposes.
- 325 FRANK HARVEY CILLEY FUND, 1913, \$57,700. Bequest. Income and such part of principal as necessary for purchase of suitable books, photographs, statuary, etc., for library and gymnasium of Walker Memorial.
- 509 LUCIUS CLAPP FUND, 1905, \$4,900. Bequest. Income to worthy students who may not be able to complete their studies without help.
- 272 CLASS OF 1874 FUND, 1934, \$180. Held subject to use by Class of 1874.
- 273 CLASS OF 1887 FUND, 1941, \$2,668.58. Held for use of Class and for final distribution as provided in Declaration of Trust.
- 510 CLASS OF '96 FUND, 1923-41, \$2,397. Gift. Award subject to approval of Class Secretaries. Preference to descendants of members of Class. Scholarships to be considered a loan to be repaid when and if able.
- 270 CLASS OF 1898 FUND, \$5,535. By subscription of certain members of class from 1927-31. Income only for scholarship loans, as authorized by committee of class.
- 583 CLASS OF 1904 FUND, 1925, \$392. Contributions received by Professor Gardner for Architectural Department prizes.
- 511 CLASS OF 1909 SCHOLARSHIP FUND. Being accumulated through contributions and from proceeds of life insurance policies. Principal to be invested, income available for scholarship aid with preference to direct descendants of members of Class of 1909.
- 223 CLASS OF 1914 FUND. Held for investment purposes only.
- 512 CLASS OF 1917 SCHOLARSHIP FUND, 1942, \$1,032.06. 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.
- 224 CLASS OF 1918 (ORGAN) FUND. Subscriptions by class members toward purchase of an organ for Walker Memorial.
- 513 CLASS OF 1922 SCHOLARSHIP FUND, 1942, \$1,000. For scholarships.
- 268 CLASS OF 1934 FUND, SPECIAL. Held for investment purposes only.
- 514 CLASS OF 1938 SCHOLARSHIP FUND, 1938-42, \$599.14. Gift of Class of 1938. Income for scholarships.
- 225-240 inc.

#### CLASS FUNDS

*Note:* These funds are being accumulated for the several classes whose members took out life insurance toward a gift to the Institute on their Twenty-Fifth Reunions. From certain of these, a portion may be applied in accordance with the terms of the several plans toward

keeping alive policies that might lapse on account of non-payment or as otherwise designated. By vote of the Class of 1923, \$10,000 was appropriated in 1940 from their Class Fund toward construction of the sun garden adjoining new swimming pool.

- 301 SAMUEL C. COBB FUND, 1916, \$36,000. Bequest. Income for salaries of President and professors.
- 612 FRED L. AND FLORENCE L. COBURN FUND, 1932, \$5,000. Bequest. Income to aid needy and worthy students, preference being given to those residing in Somerville, Mass.
- 614 COFFIN MEMORIAL FUND, 1929, \$35,000. Gift of the Estate of Charles A. Coffin. For loans or other aid to students as determined by Executive Committee.
- 466 COLLAMORE FUND, 1916, \$10,000. Bequest of Helen Collamore. Income primarily to aid women students in post-graduate courses, secondarily, for purchase of instruments for Chemical Laboratory.  
HELEN COLLAMORE FUND, 1917, \$12,384.97. Bequest. Used for new dormitories, 1924.  
SAMUEL P. COLT FUND, 1920-22, \$20,000. Bequest. Used for new dormitories, 1924.
- 515 WILLIAM A. CONANT FUND, 1943, \$2,850. Bequest (to be increased). The income to provide for scholarship carrying annual stipend of \$800 for New England Protestant boys of Protestant parents, preference to be given to graduates of the public schools of Brookline.
- 241 ARTHUR J. CONNER, 1941-43, \$12,000. Gifts in anticipation of and for ultimate addition to residue of a trust for construction of a dormitory.
- 615 GEORGE R. COOKE, 1939-40, \$3,500. Gift of George R. Cooke, Jr. Income to be awarded, preferably in Civil Engineering or related field, to student preparing for Public Service and Government.
- 245 COSMIC TERRESTRIAL RESEARCH FUND, 1938-43, \$61,000. Gift (anonymous) for special research.  
CRANE AUTOMOTIVE FUND, 1928, \$5,000. Gift of Henry M. Crane. Used for purchase of equipment for Aeronautical Laboratory, 1928-40.
- 516 LUCRETIA CROCKER FUND, 1916, \$50,000. Bequest of Matilda H. Crocker. Income for establishment of scholarships for women in memory of sister.
- 409 CROSBY HONORARY FUND, 1916, \$1,633. Contributions in honor of William Otis Crosby (Professor Emeritus). Income for upbuilding of the Geological Department, especially its collections.  
EDWARD CUNNINGHAM FUND, 1917, \$15,000. Gift. For new building and equipment at Civil Engineering Summer Camp, Maine.
- 467 DALTON GRADUATE CHEMICAL FUND, 1896, \$5,000. Gift of Charles H. Dalton. Income for scholarships for American male graduates of M.I.T., for advanced chemical study and research — preference given to chemical research especially applicable to textile industries.
- 517 ISAAC W. DANFORTH FUND, 1903, \$5,000. Bequest of James H. Danforth. Income for scholarship purposes as a memorial to brother.  
N. LORING DANFORTH FUND, 1937, \$5,000. Bequest. Principal and income for general purposes. Appropriated for educational plant, 1940.

- 616 DEAN'S FUND, 1924, \$3,350. Contributions. To be loaned by Dean to needy students.
- 618 CARL P. DENNETT FUND, 1926, \$500. Gift. To be loaned to students, preferably Freshmen, at discretion of President.
- 246 DAVIS R. DEWEY MEMORIAL FUND, 1943, \$500. To provide a suitable memorial for the late Professor Dewey.
- 520 ANN WHITE DICKINSON FUND, 1898, \$40,000. Bequest. Income used to establish free scholarships. Such persons enjoying benefit shall be worthy young men of American origin.
- 620 DORMITORY FUND, 1903, \$2,700. Contributions. Income for scholarship purposes.  
 GEORGE B. DORR FUND, 1890, \$49,573.47. Bequest. Appropriated for educational plant, 1918.
- 410 SUSAN E. DORR FUND, 1914, \$95,000. Bequest. Income for use and benefit of Rogers Physical Laboratory.
- 468 DOW CHEMICAL COMPANY FUND, 1939-40. Gift. \$1,500 for fellowships.
- 247 DRAMA CLUB THEATRE FUND, 1938, \$400. Deposited by Drama Club of M.I.T. toward future purchase of theatrical equipment.
- 107 EBEN S. DRAPER FUND, 1915, \$100,000. Bequest. Income used for general purposes of the Institute.  
 CHARLES C. DREW FUND, 1920, \$305,171.52. Bequest. Appropriation to educational plant, 1921-24.
- 521 THOMAS MESSINGER DROWN FUND, 1928, \$50,000. Bequest of Mary Frances Drown. Income to establish scholarships for deserving undergraduate students.
- 109 COLEMAN DU PONT FUND, 1931-38, \$221,325. Bequest. Income for support and maintenance of the Institute.  
 PIERRE DU PONT FUND, 1938, \$25,000. Gift. Used for new equipment.
- 469 DU PONT DE NEMOURS FUND. For graduate scholarship in Chemical Engineering.  
 The total of the gifts of GEORGE EASTMAN to the Institute for both buildings and endowments was \$20,500,000.
- 111 EASTMAN CONTRACT FUND, 1924, \$9,500,000. Gift of George Eastman. Income for general purposes of the Institute.
- 113 GEORGE EASTMAN BUILDING FUND, 1916-17, \$2,500,000. Gift of George Eastman on condition that \$1,500,000 be raised by alumni and others. Balance to be used as needed for new educational buildings. \$1,225,000 used for George Eastman Research Laboratories in 1932, \$725,000 for New Rogers Building and Wind Tunnel in 1939, \$268,700 for one-half of building No. 24 in 1943.
- 411 GEORGE EASTMAN FUND, 1918, \$400,000. Gift of George Eastman. Income for Chemistry and Physics. Principal available for addition to EASTMAN BUILDING FUND after latter is exhausted.
- 115 CHARLES W. EATON FUND, 1929-43, \$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.)

- 117 EDUCATIONAL ENDOWMENT FUND, 1920-21, \$7,574,000. \$4,000,000 gift from George Eastman and balance contributed by alumni and others. Income for current educational expenses.
- 119 MARTHA ANN EDWARDS FUND, 1890, \$30,000. Gift. Income for general purposes.
- 621 FRANCES AND WILLIAM EMERSON FUND, 1930, \$100,000. Gift. Income for aid of regular and special students in Department of Architecture.
- 584 WILLIAM EMERSON PRIZE FUND, 1939, \$2,059. Contributed by friends as a fund for prizes to architectural students.  
F. W. EMERY FUND, 1916, \$120,000. Bequest. Used for buildings and equipment.
- 121 WILLIAM ENDICOTT FUND, 1916, \$25,000. Bequest. Income for general purposes.
- 210 ENDOWMENT RESERVE FUND, 1924. Created and otherwise increased by gains from sales or maturities of investments and decreased by premium amortization of bonds and losses and charges from sales or maturities. Belongs to all funds sharing general investments.  
ARTHUR F. ESTABROOK FUND, 1923-38, \$100,800. Bequest. Used for purchase of land and equipment.  
IDA F. ESTABROOK FUND, 1926-37, \$22,157.51. Bequest. Used for educational plant.
- 522 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.
- 412 HAROLD H. FLETCHER FUND, 1942, \$10,000. Bequest under will of Herbert H. Fletcher. To endow a bed in the Institute's Infirmary.
- 23 CHARLES LEWIS FLINT FUND, 1889, \$5,000. Bequest. Income for support of worthy student, preference given graduate of English High School, Boston.
- 327 CHARLES LEWIS FLINT FUND, 1889, \$5,000. Bequest. Income for purchase of books and scientific publications for library.
- 303 SARAH H. FORBES FUND, 1901, \$500. Gift of Malcolm Forbes as memorial to mother. Income for salaries.
- 524 SARAH S. FORBES FUND, 1913, \$3,400. Gift of Sarah S. Forbes, William B. Rogers and Henry S. Russell. Income for maintenance and education of scholar in M. I. T.
- 123 FRANCIS APPLETON FOSTER FUND, 1922, \$1,000,000. Bequest. Income for purposes of Institute.
- 125 JOHN W. FOSTER FUND, 1938, \$299,650. Bequest. Income for purposes of the Institute.
- 248 MATILDA A. FRASER FUND, 1942, \$859.89. Bequest. Towards construction of a women's dormitory.
- 127 ALEXIS H. FRENCH FUND, 1930, \$5,000. Bequest. Income for general purposes of Institute.

- CAROLINE L. W. FRENCH FUND, 1916, \$100,843.34. Bequest. Used for new equipment, 1928.
- 129 JONATHAN FRENCH FUND, 1915-16, \$25,000. Bequest of Caroline L. W. French. Income for purposes of the Institute.
- 131 HENRY CLAY FRICK FUND, 1925-38, \$1,831,000. Bequest. Institute received ten shares of a total of one hundred shares of his residuary estate. Income for general purposes.
- FRIENDS OF THE LIBRARY FUND. Contributions transferred to the Alumni Association for purchase of books and for other purposes of the Institute Library.
- WALTER L. FRISBIE FUND, 1923, \$7,614.98. Bequest. Used for educational plant, 1928.
- 305 GEORGE A. GARDNER FUND, 1898, \$20,000. Gift. Income for salaries of instructors.
- 133 GENERAL ENDOWMENT FUND, 1921, \$1,527,000. Contributions by alumni and others to meet George Eastman's condition relative to gift of \$2,500,000, his building fund (No. 108).
- 623 NORMAN H. GEORGE FUND, 1919-25, \$93,400. Bequest. Income for assistance of worthy and needy students.
- 625 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.
- 525 BARNETT D. GORDON FUND, 1942, \$5,000. The income to be used as scholarships for deserving students.
- 135 ELIOT GRANGER FUND, 1936, \$20,000. Bequest under will of Mary Granger in memory of deceased son. Income for the general purposes of the Institute.
- 627 JOHN A. GRIMMONS FUND, 1930-42. 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.
- 527 HALL-MERCER SCHOLARSHIP FUND, 1940-42, \$63,560.90. 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.
- 629 JAMES H. HASTE FUND, 1930, \$181,000. Bequest. Income for aid of deserving students of insufficient means.
- 136 CHARLES HAYDEN FUND, 1937, \$1,000,000. Bequest of Charles Hayden. Income for general educational purposes of the Institute.
- CHARLES HAYDEN, 1925, \$42,700.76. Gift. Used for educational plant.
- CHARLES HAYDEN, 1927, \$100,000. Gift for new dormitories.

- 528 CHARLES HAYDEN MEMORIAL SCHOLARSHIP FUND, 1940-43, \$100,000. From the Charles Hayden Foundation. For entrance scholarships and preference given to students from Boston and New York City.
- 249 CHARLES HAYDEN FOUNDATION DENTAL CLINIC FUND, 1940, \$10,000. To assist in establishment of and necessary equipment for a Dental Clinic available to entire student body, faculty and employees.
- 309 JAMES HAYWARD FUND, 1866, \$18,800. Bequest. Income for salaries.  
JAMES W. HENRY FUND, 1935, \$8,226. Bequest. Used for new equipment.
- 175 WILLIAM T. HENRY FUND, 1943, \$11,195. Income from Trust Fund held outside M.I.T. Fund and income for general purposes.
- 137 JOHN MARSHALL HILLS, 1941-42, \$366,181.10. Bequest. Income for general purposes of M. I. T.  
FREDERICK S. HODGES FUND, 1928, \$57,316.26. Bequest. Appropriated for new dormitories.
- 176 ELLIS HOLLINGSWORTH FUND, 1940, \$10,000. Bequest for unrestricted use.
- 531 GEORGE HOLLINGSWORTH FUND, 1916, \$5,000. Bequest of Rose Hollingsworth. Income used for scholarship.
- 585 ROGER DEFRIEZ HUNNEMAN PRIZE FUND, 1927, \$1,060. Gift of W. C. Hunneman in memory of Roger Defriez Hunneman, '23. Income paid as annual award to most meritorious student in Chemical Engineering who has shown most outstanding originality in his work as determined by that Department.  
ABBY W. HUNT FUND, 1936-38, \$76,000. Bequest. For general purposes. \$60,000 used for alterations, 1937. Balance for new equipment, 1938.
- 533 T. STERRY HUNT FUND, 1894, \$3,000. Bequest. Income to a student in Chemistry.
- 534 WILLIAM F. HUNTINGTON FUND, 1892, \$5,000. Gift of Susan E. Covell. Income to deserving students. Preference to be given to students in Civil Engineering.
- 211 INCOME EQUALIZATION RESERVE FUND, 1937. Created by appropriation of excess income from general investments for year 1936-37 toward maintenance of income for ensuing years.
- 187 INDUSTRIAL FUND, 1924-40. This fund succeeded "Tech Plan" Contracts, payments under which went to the Educational Endowment Fund. Now receives surplus from operations of Division of Industrial Coöperation and Research. Used for purchase of new equipment and support of special research.
- 251 INDUSTRIAL ECONOMICS FUND, 1940-43, \$15,250. Contributions in support of Graduate Program.
- 252 INDUSTRIAL RELATIONS FUND, 1938-43, \$258,000. Contributions in support of the Industrial Relations Section of the Department of Economics.

- CHARLES C. JACKSON, 1912, \$25,000. Gift. Used for purchase of new site.
- 138 JAMES FUND, 1898-99, \$163,000. Bequest of Julia B. H. James. Income for development of M. I. T.
- 631 DAVID L. JEWELL FUND, 1928, \$25,000. Bequest. Income for tuition of five young men who are worthy of assistance and who, were it not for such assistance, might be unable to pursue their studies at M. I. T.
- 474 REBECCA R. JOSLIN FUND, 1924-36, \$6,540. Gift and Bequest. Income awarded as a loan to advanced student in Chemical Engineering on recommendation of that Department — restricted to native and resident of Massachusetts. Beneficiary to abstain from using tobacco in any form.
- 536 JOY SCHOLARSHIPS, 1886, \$7,500. Gift of Nabby Joy. Income for scholarships for one or more women studying natural science at M. I. T.
- WILLIAM R. KALES, 1925-27, \$11,000. Gift for new dormitories.
- 413 ARTHUR E. KENNELLY FUND, 1940-42, \$66,384.06. Bequest. Income only to be used for the study of mathematics directed toward physics or physical applications.
- 341 WILLIAM HALL KERR FUND, 1896, \$2,000. Gift of Alice M. Kerr. Income for the annual purchase of books and drawings in machine design.
- DAVID P. KIMBALL FUND, 1924, \$10,000. Bequest. Used for educational plant, 1926.
- 633 LLORA CULVER KRUEGER SCHOLARSHIP FUND, 1936, \$5,573.75. Bequest. Both principal and income to be available for needy and worthy students from Schenectady and vicinity.
- 476 WILFRED LEWIS FUND, 1930, \$5,000. Gift of Emily Sargent Lewis. Income for maintenance of graduate student in Mechanical Engineering.
- 538 WILLIAM LITCHFIELD FUND, 1910, \$5,000. Bequest. Income for scholarship on competitive examination.
- 414 ARTHUR DEHON LITTLE MEMORIAL FUND, 1937, \$157,460. Bequest under will of Dr. A. D. Little. Income to be used in Departments of Chemistry and Chemical Engineering. (The income from 5,543 shares of common stock of A. D. Little, Inc., held by Voting Trustees for the benefit of the Institute under declaration of trust dated November 18, 1936 and in force for twenty years is included in this total.)
- HIRAM H. LOGAN FUND, 1933-38, \$19,455. Bequest. Principal and income for general purposes of M. I. T. Appropriated for educational plant, 1940.
- JOHN M. LONGYEAR, 1915-16, \$30,000. Gift. Used for land and equipment, 1916.
- 539 ELISHA T. LORING FUND, 1890, \$5,000. Bequest. Income for assistance of needy and deserving pupils.
- 541 LOWELL INSTITUTE FUND, 1923, \$2,300. Gift from alumni of Lowell Institute to establish scholarship for its graduates.

- 139 KATHARINE B. LOWELL FUND, 1895, \$5,000. Gift of Augustus Lowell in honor of Mrs. Lowell. Income for purchase of books and apparatus for Department of Physics.  
ARTHUR T. LYMAN FUND, 1913, \$5,000. Bequest. Used for educational plant, 1926.  
JAMES MCGREGOR FUND, 1913, \$2,500. Bequest. Used for educational plant, 1926.
- 542 RUPERT A. MARDEN FUND, 1933, \$2,000. Gift (anonymous). Income to aid worthy student — Protestant and of American origin — preference to student taking Coöperative Course in Electrical Engineering (Course VI-A).
- 311 WILLIAM P. MASON FUND, 1868, \$18,800. Bequest. Income to support a professorship in the Institute.  
M. I. T. ALUMNI FUND, 1907. Total subscriptions of alumni to 1924, \$632,500. \$632,000 appropriated for new equipment, Walker Memorial 1916 Reunion and Dormitories.
- 142 M. I. T. ALUMNI EQUIPMENT FUND, 1941, \$12,500. Transferred from Alumni Fund. To be accumulated for a major objective.
- 143 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.
- 144 M. I. T. ALUMNI FUND, 1940-43. First three years of plan adopted by the alumni of the Institute for the annual raising of funds for support of the Alumni Association and the *Technology Review* — the balance to be applied toward specific purposes other than operating expenses of the Institute.
- 145 M. I. T. ALUMNI FUND, 1943-44. Subscriptions to date of fourth year operation. (See No. 144.)
- 263 M. I. T. ALUMNI ASSOCIATION PERMANENT FUND, 1929-38. Deposited with M. I. T. for investment purposes only.
- 255 M. I. T. EMPLOYEES' FUND, 1938. Proceeds of employees' social activities held for benefit and relief purposes.
- 260 M. I. T. TEACHERS' INSURANCE FUND, 1926-38. Balance of two per cent salary deductions under M. I. T. Pension and Insurance Plan in excess of Group Insurance Premiums paid.
- 261 M. I. T. TEACHERS' INSURANCE FUND, SPECIAL, 1928-38. Refund of premiums paid on Group Insurance under M. I. T. Pension and Insurance Plan held at interest and accumulated. Appropriated for special pension purposes.
- 416 JOHN LAWRENCE MAURAN FUND, 1934, \$10,000. Bequest. Principal and income for benefit of Department of Architecture. Used, in part, toward house projects in Wellesley and Wakefield, 1937-40.
- 417 GEORGE HENRY MAY FUND, 1914, \$4,250. Gift. Income for benefit of Chemical Department.
- 543 GEORGE HENRY MAY FUND, 1914, \$5,000. Gift. Income to assist graduates of Newton High School recommended as eligible by superintendent and head masters of Newton High Schools. Beneficiary to issue a note payable without interest.



- 141 THOMAS McCAMMON FUND, 1930, \$15,000. Bequest in honor of father, James Elder McCammon. Income available for general purposes.
- 587 JAMES MEANS FUND, 1925, \$2,700. Gift of Dr. James H. Means as a memorial to father. Income for annual prize for essay on an aeronautical subject.
- METALLURGY, SPECIAL FUND, 1938, \$10,000. Subscription (anonymous) used for special equipment for Department of Metallurgy.
- HIRAM F. MILLS FUND, 1923, \$10,175. Bequest. Appropriated for educational plant, 1937.
- 635 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.
- 638 ROBERT W. MILNE, 1943, \$70,000. Bequest. Income for assistance of worthy and needy students.
- 419 SUSAN MINNS FUND, 1930. Gift of Miss Susan Minns — tract of land on Memorial Drive for use in any way deemed best for benefit of plan regarding construction and maintenance of an hydraulic laboratory.
- 545 JAMES H. MIRRLEES FUND, 1886, \$2,500. Gift of James Buchanan Mirrlees. Income to such student in third or fourth year Mechanical Engineering most deserving pecuniary assistance.
- 420 FERRIS JEWETT MOORE FUND, 1927-31, \$32,000. Gift of Mrs. F. Jewett Moore as a memorial to husband. Income or principal expended subject to approval of Executive Committee by a committee of three members of the Department of Chemistry — to make the study of Chemistry more interesting and surroundings of such study more attractive.
- 478 MOORE FUND, 1914-28-29, \$24,200. Gift of Mrs. F. Jewett Moore. Income to help some Institute graduate to continue studies in Europe, especially organic chemistry. Preference to student who has distinguished himself in this subject while an undergraduate.
- 546 FRED W. MORRILL FUND, 1941, \$2,000. Bequest. Income for financial assistance to students.
- 146 KATE M. MORSE FUND, 1925, \$25,000. Bequest. Income for general purposes of M. I. T.
- 147 EVERETT MORSS FUND, 1934, \$25,000. Bequest. Income for general purposes of M. I. T.
- EVERETT MORSS, 1916, 1921-25, \$35,000. Gifts. For Walker Memorial murals by E. H. Blishfield.
- 264 HENRY A. MORSS NAUTICAL FUND, 1937, \$3,500. Gift for maintenance of sailing activities and sailing pavilion.
- 190 JOHN WELLS MORSS FUND, 1940, \$50,000. Bequest. Principal and income for general purposes.
- ALBERT H. MUNSELL FUND, 1920, \$7,908.28. Bequest. Used for educational plant, 1928.
- MARGARET A. MUNSELL FUND, 1920, \$1,105.32. Bequest. Used for educational plant, 1928.
- NATHANIEL C. NASH FUND, 1881, \$10,000. Bequest. Appropriated for new dormitories, 1924.

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- 547 NICHOLS FUND, 1895, \$5,000. Bequest of Betsy F. W. Nichols. Income for scholarship to student in Chemistry.
- 548 CHARLES C. NICHOLS FUND, 1904, \$5,000. Bequest. Income for scholarship.  
 WILLIAM E. NICKERSON FUND, 1928, \$50,000. Gift. Principal and income used to finance chair in Humanics, 1928-40.  
 MOSES W. OLIVER FUND, 1921, \$12,870.49. Used for educational plant, 1938.
- 191 CHRISTEL ORVIS FUND, 1942, \$539.42. Bequest. For general purposes.
- 343 GEORGE A. OSBORNE FUND, 1928, \$10,000. Bequest. Income for benefit of mathematical library.
- 550 JOHN FELT OSGOOD FUND, 1909, \$5,000. Bequest of Elizabeth P. Osgood in memory of husband. Income for scholarship in Electricity.
- 551 GEORGE L. PARMELEE FUND, 1921, \$17,000. Bequest. Income for tuition of either special or regular worthy students.
- 195 EMERETTE O. PATCH FUND, 1935-38, \$8,240.84. Bequest. \$6,000 used for special expenditures, 1938-1940.  
 FRANK E. PEABODY FUND, 1920, \$51,467.35. Bequest. Used for educational plant, 1921 and 1926.  
 FRANCES M. PERKINS, 1912, \$122,569.67. Bequest. Used for educational plant.  
 H. B. PERKINS, 1940, \$250. Bequest. Used for new equipment, 1940.
- 149 RICHARD PERKINS FUND, 1887, \$50,000. Bequest. Income for general purposes.
- 552 RICHARD PERKINS FUND, 1887, \$50,000. Bequest. Income for scholarships.
- 480 WILLARD B. PERKINS FUND, 1898, \$6,000. Bequest. Income to be expended every fourth year for travelling scholarships in architecture.
- 422 EDWARD D. PETERS FUND, 1924, \$5,000. Bequest of Elizabeth W. Peters. Income for the Department of Mineralogy.  
 E. S. PHILBRICK FUND, 1922, \$36,213.92. Bequest. Used for educational plant, 1926.  
 PRESTON PLAYER FUND, 1933, \$20,000. Bequest. Used for educational plant, 1938.
- 423 PRATT NAVAL ARCHITECTURAL FUND, 1916, \$1,071,000. Bequest of Charles H. Pratt to endow the Department of Naval Architecture and Marine Engineering to be called forever Pratt School of Naval Architecture and Marine Engineering — to erect a building — remainder held in trust. Income to support said school.
- 274 PRESIDENT'S FUND, SPECIAL, 1941, \$10,000.00. Gift. Principal and/or income to be used by President as desired.  
 CHARLES O. PRESCOTT, 1935, \$30,640.78. Principal and income used for educational plant, 1938.

- 484 PROPRIETORS LOCKS AND CANALS FUND, 1927, \$4,000. Gift to finance post-graduate scholarship in Textile Research, mechanical or chemical, to American-born graduate of Lowell Textile School, nominated by the Trustees of that School and approved by Executive Committee of Locks and Canals.
- 150 J. W. & B. L. RANDALL FUND, 1897, \$83,000. Bequest of Belinda L. Randall as a permanent fund or in erecting a building with those names.
- 553 THOMAS ADELBERT READ FUND, 1934-35, \$21,117. Bequest of Julia A. Read to establish scholarship in memory of her brother and their father and mother. Income to be awarded to some worthy and needy student, preferably resident of Fall River, Mass.
- 640 CHARLES A. RICHARDS, 1939, \$31,719.32 Bequest. Income only to be used for assistance of poor Protestant students in the Institute.
- 449 ELLEN H. RICHARDS FUND, 1912, \$15,000. Income for promotion of research in Sanitary Chemistry, for fellowships to advanced students, for employment of research assistants and in such other ways as will best promote investigation in that field.
- 425 RICHARDS MEMORIAL FUND, 1929. Balance of subscriptions from friends for portrait of Professor Richards available for Mining Department.
- 451 CHARLOTTE B. RICHARDSON FUND, 1891, \$30,000. Bequest. Income to support of Industrial Chemical School.
- 554 JOHN ROACH SCHOLARSHIP FUND, 1937, \$3,000. Bequest under will of Emeline Roach, income to provide annual scholarship to needy and deserving student in Naval Architecture and Marine Engineering.
- RUSSELL ROBB FUND, 1928, \$28,750. Bequest. Appropriated for new dormitories, 1930.
- ROCKERFELLER FOUNDATION RESEARCH FUND, 1931-36, \$170,000. Contributed and expended for Research in Science Departments over period of five years.
- 313 HENRY B. ROGERS FUND, 1873, \$25,000. Gift. Income for salaries of one or more professors or instructors.
- 486 HENRY BROMFIELD ROGERS FUND, 1921, \$20,000. Bequest of Anna Perkins Rogers. Income to establish fellowship or scholarship for women graduates of M. I. T. or other colleges whose graduate work is carried on at M. I. T.
- ROBERT E. ROGERS FUND, 1886, \$7,600. Bequest in memory of his brother, William B. Rogers. Used for new equipment, 1940.
- 642 WILLIAM BARTON ROGERS FUND. Present, \$39,000. Established by subscriptions of members of Alumni Association through Prof. R. H. Richards for loans to students. By vote of Executive Committee in March 1935, approved by Alumni Council, the income, not now needed for loans, is made available for special scholarship aid in the discretion of the President and Treasurer.
- 151 WILLIAM BARTON ROGERS MEMORIAL FUND, 1883-84-85, \$250,000. Contributions from 91 persons. Income for support of Institute.
- 452 WILLIAM BARTON AND EMMA SAVAGE ROGERS FUND, 1937, \$102,064.18. Bequest of Dr. Francis H. Williams. Income to be added to principal for twenty years — after which eighty (80) per cent of income may be used for research in pure science — balance to be added to fund.

- 426 FRANCES E. ROPER FUND, 1936, \$2,000. Bequest. Income for use in Department of Mechanical Engineering.
- 345 ARTHUR ROTCH ARCHITECTURAL FUND, 1895, \$5,000. Bequest. Income for Library or collection of Department of Architecture.
- 427 ARTHUR ROTCH FUND, 1895, \$25,000. Bequest. Income for general purposes of Department of Architecture.
- 589 ARTHUR ROTCH FUND, 1895, \$5,000. Bequest. Income for annual prize to student in regular course in Architecture graduating highest in class.
- 591 ARTHUR ROTCH SPECIAL FUND, 1895, \$5,000. Bequest. Income for annual prize to student who shall be ranked highest at end of two years special course in Architecture.
- 488 RICHARD LEE RUSSEL FUND, 1904, \$2,000. Gift of Theodore E. Russel. Income to assist worthy student of high standing in Department of Civil Engineering either undergraduate or post-graduate.
- 555 WILLIAM PATRICK RYAN MEMORIAL FUND, 1935, \$3,637. Contributed by friends of Professor Ryan. Income for scholarship in Chemical Engineering.
- 277 WILLIAM PATRICK RYAN SPECIAL FUND, 1933, \$3,000. Appropriation. Educational fund for three children of late Prof. W. P. Ryan.
- 592 HENRY WEBB SALISBURY, 1941, \$1,100. Gift. Income for award to outstanding student in Aeronautics — initially in form of reference books in Aeronautics. (\$100 of gift to be considered as income.)
- 152 SALTONSTALL FUND, 1901, \$40,000. Bequest of Henry Saltonstall. One-fourth income each year added to principal and remaining three-fourths expended for benefit of Institute.
- 490 HENRY SALTONSTALL FUND, 1901, \$10,000. Bequest. Income to aid one or more needy students.
- 492 JAMES SAVAGE FUND, 1873, \$10,000. Bequest. Income for scholarships in institution "where my son-in-law, William B. Rogers, is President."
- 153 SAMUEL E. SAWYER FUND, 1895, \$4,700. Bequest. Income to be used in such manner as will best promote interests of M. I. T.
- 556 JOHN P. SCHENKL FUND, 1922, \$43,800. Bequest of Johanna Pauline Schenkl in memory of father. Income for scholarships in Department of Mechanical Engineering.
- THEODORE EDWARD SCHWARZ MEMORIAL FUND, 1937-38, \$4,391.86. Gift. For equipment of a suitable room for proposed map collection.
- 279 SEDGWICK MEMORIAL LECTURE FUND, 1930-38, \$9,500. Bequest of Mary Katrine Sedgwick in memory of husband. All copyrights and interest in copyrights and benefits from contracts with publishers or Department of Biology and Public Health.
- 429 W. T. SEDGWICK FUND, 1928, \$69,500. Received from Trustees of the Estate of W. T. Sedgwick under Agreement and Declaration of Trust following decease of Mary Katrine Sedgwick, for Department of Biology and Public Health.
- RICHARD B. SEWALL FUND, 1919, \$30,000. Bequest. Used for educational plant, 1924.

- 557 THOMAS SHERWIN FUND, 1871, \$5,000. Gift of Committee on Sherwin Memorial Fund for free scholarship to graduate of English High School.
- 493 SLOAN FUND, 1933-41, \$1,000. Annual gift of A. P. Sloan, Jr. for Fellowship in Automotive Engineering.
- 430 ALFRED P. SLOAN, JR., 1929-41, \$165,000. Gift. For automotive laboratory. Balance \$12,985.65 held for use of department.  
ELLEN VOSE SMITH FUND, 1930, \$25,000. Bequest. Used for new equipment.
- 558 HORACE T. SMITH FUND, 1930, \$32,988.76. Bequest. Income for scholarships. Preference to graduates of East Bridgewater (Mass.) and Bridgeport (Conn.) High Schools.
- 281 LILLIE C. SMITH FUND, 1937, \$4,800. Bequest to M. I. T. Women's Association for purposes of the Association.
- 283 WALTER B. SNOW, 1938. Reserve funds of Technology Christian Association. Deposited for investment purposes.
- 453 SOLAR ENERGY FUND, 1938, \$647,700. Gift of Dr. Godfrey L. Cabot. Principal to be held for fifty years — income to be used in development of the art of converting energy of the sun to use of man by mechanical, electrical or chemical means. After fifty years, fund becomes part of general unrestricted endowment of the Institute.
- 559 SONS AND DAUGHTERS OF NEW ENGLAND PURITAN COLONY SCHOLARSHIP FUND, 1931, \$600. Gift. Income for scholarship aid to a boy of New England ancestry.
- 644 ANNA SPOONER FUND, 1939-41, \$10,896.14. Bequest. Income to be used in assisting meritorious students.
- 155 ANDREW HASTINGS SPRING FUND, 1921, \$50,000. Bequest of Charlotte A. Spring in memory of nephew as a permanent fund. Income for general purposes.  
CHARLES A. STONE, 1912-24, \$15,000. Gift for land. 1928, \$25,023.59. Gift for dormitories.  
GALEN L. STONE, 1912, \$10,000. Gift for land. 1916, \$10,000. Gift for Mining Building.
- 156 GEORGE G. STONE, 1939, \$4,677.35. Bequest by will of Eliza A. Stone, as memorial to brother, a graduate in Mining Engineering in 1889. Income to be used in manner most useful to Institute as well as a most fitting memorial.
- 593 SAMUEL W. STRATTON PRIZE FUND, 1933, \$1,680. Contributed by friends of the late Dr. S. W. Stratton for competition prizes in the presentation of scientific papers.
- 646 SUMMER SURVEYING CAMP LOAN FUND, 1927, \$500. Gift of Lammot du Pont as a revolving loan fund to help students in Civil Engineering attend summer surveying camp.
- 454 HENRY N. SWEET, 1936, \$8,036.50. Bequest. For industrial research.
- 157 SETH K. SWEETSER FUND, 1915, \$25,000. Bequest as a permanent fund. Income for general purposes.
- 495 SUSAN H. SWETT FUND, 1888, \$10,000. Bequest. Income to support a graduate scholarship.

- 648 **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.
- 650 **TECHNOLOGY LOAN FUND**, 1930-41, \$1,450,735.18. Contributed by eighteen alumni to provide loans for students.
- 285 **TECHNOLOGY MATRONS TEAS FUND**, 1916-22-31, \$8,500. Gifts of Mrs. F. Jewett Moore. Income for social activities of Technology Matrons.
- 456 **TEXTILE RESEARCH FUND**, 1937, \$3,065. Gift. For research.  
**STURGIS H. THORNDIKE FUND**, 1928, \$15,000. Bequest. Appropriated for new dormitories, 1930.  
**NATHANIEL THAYER**, 1906, \$25,000. Gift. Used for educational plant.
- 315 **NATHANIEL THAYER FUND**, 1868, \$25,000. Gift. Income for professorship of Physics.
- 286 **W. B. S. THOMAS FUND**, 1935-37, \$2,000. Gift of parents of W. B. S. Thomas '29, the income only to be expended, one-half for the benefit of the M. I. T. Crew and one-half to other activities of the M. I. T. A. A.
- 317 **ELIHU THOMSON FUND**, 1933-37, \$18,000. Contributed toward fund for Professorship in Electrical Engineering.  
**ELIHU THOMSON**, 1912, \$25,000; 1924, \$5,000. Gift. Used for purchase of land.
- 497 **FRANK HALL THORP FUND**, 1932, \$10,000. Anonymous gift. Income for fellowship in Industrial Chemistry.
- 560 **SAMUEL E. TINKHAM FUND**, 1924, \$2,400. Gift of Boston Society of Civil Engineers. Income to assist worthy student in Civil Engineering.
- 349 **JOHN HUME TOD FUND**, 1913, \$2,500. Gift of Mrs. F. Jewett Moore. Income for purchase of books of a humanistic character for General Library.
- 562 **F. B. TOUGH FUND**, 1924, \$465. Gift to extend financial assistance to worthy students in mining or oil production.
- 196 **CHARLES A. TRIPP FUND**, 1943, \$100,000. Bequest. For dormitory construction — or such other use of all or part as may seem advisable.
- 431 **EDMUND K. TURNER FUND**, 1915-41, \$206,814. Bequest. Income, three-quarters for Department of Civil Engineering and one-quarter to be added annually to principal.  
**LUCIUS TUTTLE FUND**, 1916, \$50,000. Bequest. Used for educational plant, 1918.
- 652 **ALICE BROWN TYLER FUND**, 1937-41, \$1,559.64. Gift of Prof. and Mrs. H. W. Tyler. Income to be used for benefit of women students at the Institute.
- 290 **UNDERGRADUATE ACTIVITIES TRUST FUND**, 1935, \$1,097.26. Established by 1915 Technique Board from which recognized student activities may borrow if deemed necessary and desirable, at a low rate.
- 292 **UNDERGRADUATE PUBLICATIONS TRUST FUND**, 1935, \$16,018. Deposited by Alumni Advisory Council on Publications for investment purposes only.

- 294 UNDERGRADUATE DUES RESERVE FUND, ATHLETICS, 1924-40. Transferred from Undergraduate Dues (current operating account) to secure investment income.
- 296 UNDERGRADUATE DUES RESERVE FUND, CONTINGENT, 1924-40. Transferred from Undergraduate Dues (current operating account) to secure investment income.
- 433 WILLIAM LYMAN UNDERWOOD FUND, 1932, \$16,252. Bequest. For benefit of Biological Department or otherwise for general purposes.
- 563 SUSAN UPHAM FUND, 1892, \$1,000. Gift. Income to assist students deserving financial aid.
- 654 THOMAS UPHAM FUND, 1939, \$392,000. Bequest of Marcella B. Upham. Principal to be held as a permanent trust fund, the income to be used in assisting poor and deserving students or graduates of the Institute.
- 656 SAMSON R. URBINO FUND, 1927, \$1,000. Bequest. Income for students who need assistance, Germans preferred.
- 351 THEODORE N. VAIL FUND, 1925-42, \$68,800. Bequest. For benefit of Vail Library.
- 498 LUIS FRANCISCO VERGES FUND, 1924, \$10,000. Gift from Caroline A. Verges. Income for graduate students doing research work in sugar industry or if no such candidate, undergraduate student in Civil Engineering.
- 565 VERMONT SCHOLARSHIP FUND, 1924-37, \$25,000, Gift of Redfield Proctor, '02, in memory of Vermonters who, having received their education at the Institute, served as engineers in the armies of the Allies in the World War. Income to students preferably from Vermont. Mr. Proctor reserves right to designate recipients as long as he lives.
- 567 ANN WHITE VOSE FUND, 1896, \$60,000. Bequest. Income for free scholarships for young men of American origin.  
HORACE W. WADLEIGH FUND, 1916-20, \$22,143.14. Bequest. Appropriated for new buildings, 1924.
- 568 ARTHUR M. WAITT FUND, 1925, \$9,700. Bequest. Income for deserving students in second, third and fourth year classes in Mechanical Engineering.
- 159 WILLIAM J. WALKER FUND, 1915-17, \$23,000. Bequest. Income for general purposes.
- 434 WILLIAM R. WARE FUND, 1939, \$15,000. Gift of Mr. and Mrs. William Emerson, the income to be at the disposal of the Dean of the Architectural School for extra budgetary purposes.
- 298 CHARLES D. WATERBURY, 1941, \$13,407.28. Bequest. For erection of a building as a memorial to above named at such time as M. I. T. shall decide.
- 161 HORACE HERBERT WATSON FUND, 1930, \$34,000. Bequest of Elizabeth Watson Cutter as a permanent fund. Income for general purposes.
- 569 JAMES WATT SCHOLARSHIP FUND, 1942, \$13,259.72. For scholarships in Mechanical Engineering.

- EDWIN S. WEBSTER FUND, 1912-24, \$15,000. Gift. Used toward purchase of land.
- 197 FRANK G. WEBSTER FUND, 1931, \$25,000. Bequest. For general purposes.
- 570 HERMAN E. WEIHMILLER, 1942, \$1,000. Gift. For assistance to deserving students in aeronautical engineering with approval of Dr. E. P. Warner.
- 571 LOUIS WEISBEIN FUND, 1915, \$4,000. Bequest. Income for scholarship for student in Architectural Department, preference to be given to a Jewish boy.
- 163 ALBION B. K. WELCH FUND, 1871, \$5,000. Bequest as a permanent fund. Income for general purposes.
- CHARLES G. WELD FUND, 1907, \$15,000. Gift. Used for educational plant, 1924.
- 165 EVERETT WESTCOTT FUND, 1935-38, \$171,394. Bequest as a permanent fund. Income for general purposes.
- 167 MARION WESTCOTT FUND, 1938, \$238,200. Bequest for endowment. Income for general purposes.
- 573 FRANCES ERVING WESTON FUND, 1912-31, \$5,000. Bequest. Income to aid a native-born American Protestant girl of Massachusetts.
- 574 SAMUEL MARTIN WESTON FUND, 1912-31, \$5,000. Bequest of Frances E. Weston in memory of husband. Income to aid a native-born American Protestant boy; preference to be given one from Roxbury.
- ALEXANDER S. WHEELER FUND, 1907-16, \$30,000. Contributed by friends. Used for new dormitories, 1924.
- GEORGE R. WHITE FUND, 1912, \$10,000. Gift. Used toward purchase of new site.
- 576 AMASA J. WHITING FUND, 1927, \$4,500. Bequest of Mary W. C. Whiting. Income as scholarship to deserving students; preference to students from the Town of Hingham, Massachusetts.
- EDWARD WHITNEY FUND, 1910, \$37,171. Bequest as a memorial to him and his wife, Caroline. Principal and interest used (1930-38) for conduct of research in geophysics.
- 577 GRANGER WHITNEY FUND, 1942. For scholarship.
- 658 JONATHAN WHITNEY FUND, 1912, \$525,000. Bequest of Mrs. Francis B. Green. Income to assist poor and deserving young men and women in obtaining an education at M. I. T.
- 168 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.
- 578 ELIZABETH BABCOCK WILLMANN FUND, 1935, \$5,065. Bequest. Income to be used toward tuition of young women students taking Chemistry courses.



KENNETH F. WOOD FUND, 1926, \$25,000. Bequest. Appropriated for new dormitory, 1930.

WRIGHT MEMORIAL WIND TUNNEL, 1937-41, \$95,795. Contributed by friends toward construction of new wind tunnel.

- 169 EDWIN A. WYETH FUND, 1913-35, \$269,665. Balance of Trust Fund held by M. I. T. since 1913 for itself and five other beneficiary institutions subject to annuity. Distributed January 1935. Fund separately invested until June 30, 1943. Net income available for general purposes of the Institute.
- 660 MORRILL WYMAN FUND, 1915-16, \$66,000. Bequest. Income to aid deserving and promising students upon understanding that if in after life the person receiving aid shall find it possible, he shall reimburse said fund — not a legal obligation.

LIST OF  
PERIODICAL PUBLICATIONS, BOOKS AND REVIEWS  
BY MEMBERS OF THE STAFF

*(Persons desiring reprints of articles should apply to the Department concerned.)*

DEPARTMENT OF AERONAUTICAL ENGINEERING

DOREMUS, JOHN A. F-M Police Installations in Massachusetts. *F-M Radio-Electronics* 3, pp. 7-11, April, 1943.

DEPARTMENT OF ARCHITECTURE

ADAMS, FREDERICK J. City Planning and Zoning. (In Summer Conference on Fire Protection Engineering, M. I. T., June 22-24, 1942. *Fire Protection Engineering; a Symposium*, pp. 98-108. Boston: Nat. Fire Protection Assoc., 1943.)

ADAMS, FREDERICK J. Shall We Ration Crowding? *Technology Review* 45, pp. 368-370+, May, 1943.

CLARK, FREDERICK P., and CHARLES McK. NORTON. Proposal for the Organization and Operation of Regional Councils in Metropolitan Areas. *Am. City* 58, pp. 83+, June, 1943.

MACCORNACK, WALTER R. Political Obstacles to Legislation. (In Summer Conference on Fire Protection Engineering, M. I. T., June 22-24, 1942. *Fire Protection Engineering; a Symposium*, pp. 109-115. Boston: Nat. Fire Protection Assoc., 1943.)

DEPARTMENT OF BIOLOGY AND BIOLOGICAL ENGINEERING

BEAR, RICHARD S. Cinderella Starch. *Technology Review* 45, pp. 363-365+, May, 1943.

BEAR, RICHARD S., and E. G. SAMSA. Gelatinization Mechanism of Starch Granules. *Ind. Eng. Chem.* 35, pp. 721-726, June, 1943.

BLAKE, CHARLES H. For Intelligent Censorship. *Technology Review* 45, pp. 8, 54, November, 1942.

BLAKE, CHARLES H. Coöperative Pruners. *Technology Review* 45, pp. 304-305, April, 1943.

GOULD, BERNARD S., A. A. TYTELL, and HERBERT JAFFE. Biochemistry of *Fusaria*. The Influence of Diphosphopyridine Nucleotide on Alcoholic Fermentation (*in vivo*). *J. Biol. Chem.* 146, pp. 219-224, November, 1942.

HARRIS, ROBERT S., and EDWARD S. JOSEPHSON. A Modified Micro-Fermentation Method for the Estimation of Thiamine. *Ind. Eng. Chem. Anal. Ed.* 14, pp. 755-756, September 15, 1942.

HARRIS, ROBERT S., ELIZABETH WEEKS, and M. R. KINDE. Effect of a Supplementary Food on the Nutritional Status of School Children. *Am. Dietetic Assoc. J.* 19, pp. 182-189, March, 1943.

HARRIS, ROBERT S., and KENNETH V. THIMANN, *Editors*. *Vitamins and Hormones: Advances in Research and Applications*. Volume I. New York: Academic Press, Inc., 1943.

- LION, KURT S. An Instrument for Measuring Electrical Field Strength in Strong High Frequency Fields. *Rev. Sci. Instr.* 13, pp. 338-341, August, 1942.
- LION, KURT S. Magnetic Susceptibility of Beef Tendon. *Soc. Exper. Biol. & Med. Proc.* 52, pp. 194-195, March, 1943.
- LOCKHART, ERNEST E., H. SHERMAN, and R. S. HARRIS. Dihydroxy-Stearic Acid and Vitamin K Deficiency. *Science* 96, pp. 542-543, December 11, 1942.
- LOOFBOUROW, JOHN R. Intercellular Hormones. IV. Further Observations Regarding the Mechanism of the Production and Release of Proliferation-Promoting Factors by Injured Cells. *Biochem. J.* 36, pp. 631-638, September, 1942. V. Evidence that the Proliferation-Promoting Effect of Damaged-Cell Products is Attributable to Adenine Nucleotides and Known Growth Factors. *Biochem. J.* 36, pp. 737-745, December, 1942.
- LOOFBOUROW, JOHN R. Role of Adenine Nucleotides and Growth Factors in Increased Proliferation Following Damage to Cells. *Nature* 150, pp. 349-350, September 19, 1942.
- LOOFBOUROW, JOHN R., MIRIAM M. STIMSON, and MARY J. HART. The Ultraviolet Absorption Spectra of Nitrogenous Heterocycles. V. The Blocking Effect of Methyl Groups on the Ultraviolet Absorption Spectra of Some Hydroxy Purines and Pyrimidines. *Am. Chem. Soc. J.* 65, pp. 148-151, February, 1943.
- LOOFBOUROW, JOHN R. Physical Methods for the Identification and Assay of Vitamins and Hormones. (Section in *Vitamins and Hormones: Advances in Research and Applications*; edited by R. S. Harris and K. V. Thimann. Volume I. New York: Academic Press, Inc., 1943.)
- NAGEL, ALBERT H., and ROBERT S. HARRIS. Effect of Restaurant Cooking and Service on Vitamin Content of Foods. *Am. Dietetic Assoc. J.* 19, pp. 23-25, January, 1943.
- PRESCOTT, SAMUEL C. Dried Apples — 1943 Model. *Technology Review* 45, pp. 127-129+, January, 1943.
- SCHMITT, FRANCIS O., CECIL E. HALL, and MARIE A. JAKUS. Electron Microscope Investigations of the Structure of Collagen. *J. Cell. & Comp. Physiol.* 20, pp. 11-33, August 20, 1942.
- SCHMITT, FRANCIS O., MARIE A. JAKUS, and CECIL E. HALL. Electron Microscope Studies of the Structure of Paramecium Trichocysts. (Abstract of paper presented at meeting of Am. Soc. of Zoölogists, December 29, 30, 31, 1942.) *Anatom. Record* 84, pp. 474-475, December, 1942.
- SIZER, IRWIN W. The Action of Certain Oxidants and Reductants upon the Activity of Bovine Phosphatase. *J. Biol. Chem.* 145, pp. 405-414, October, 1942.
- SIZER, IRWIN W. The Digestion of Collagen by Enzymes. (Abstract of paper presented at meeting of Am. Soc. of Zoölogists, December 29, 30, 31, 1942.) *Anatom. Record* 84, p. 526, December, 1942.
- SIZER, IRWIN W. Effects of Temperature on Enzyme Kinetics. In *Advances in Enzymology*, III, Section 2, pp. 35-62. New York: Interscience Publishers, Inc., 1943.

*DEPARTMENT OF BUILDING ENGINEERING  
AND CONSTRUCTION*

- DIETZ, ALBERT G. H. Stress-Strain Relations in Timber Beams (Douglas Fir). *A.S.T.M. Bull.* 118, pp. 19-27, October, 1942.
- DIETZ, ALBERT G. H., and HENRY GRINSFELDER. Behavior of Plywood Under Repeated Stresses. *A.S.M.E. Trans.* 65, pp. 187-191, April, 1943.
- STALEY, HOWARD R. Construction Details for Fire Protection. (In Summer Conference on Fire Protection Engineering, M. I. T., June 22-24, 1942. *Fire Protection Engineering; a Symposium*, pp. 83-97. Boston: Nat. Fire Protection Assoc., 1943.)
- VOSS, WALTER C. Homes and Business Buildings. (In Summer Conference on Fire Protection Engineering, M. I. T., June 22-24, 1942. *Fire Protection Engineering; a Symposium*, pp. 73-82. Boston: Nat. Fire Protection Assoc., 1943.)
- VOSS, WALTER C. The American Building Industry and the War. *South African Builder* 21, p. 11, March, 1943; p. 21, April, 1943.
- VOSS, WALTER C. Construction Education. *Civil Eng. Bull. of the Civil Eng. Division, S.P.E.E.*, 8, pp. 1-5, March, 1943.
- VOSS, WALTER C. A Plan for Post-War American Industry. *South African Builder* 21, May, 1943.
- VOSS, WALTER C. Effects of Bombings on Structures and Other Installations. *N. E. Water Works Assoc. J.* 57, pp. 127-136, June, 1943.
- VOSS, WALTER C. Damage to Underground Services. *Sanitalk* (Mass. Dept. of Public Health, Division of Sanitary Engineering) 3, p. 1, June, 1943.

*DEPARTMENT OF BUSINESS  
AND ENGINEERING ADMINISTRATION*

- CUNNINGHAM, ROSS M. Locating and Appraising Product Ideas. *J. Marketing* 7, pp. 41-48, July, 1942.
- FISKE, WYMAN P. Personnel and Equipment. *The Office* 17, p. 17, January, 1943.
- SHELL, ERWIN H. Six Rules of Tongue for the Executive. *Trained Men* 22, p. 11, September-October, 1942.
- SHELL, ERWIN H. Fire Losses in Business. (In Summer Conference on Fire Protection Engineering, M. I. T., June 22-24, 1942. *Fire Protection Engineering; a Symposium*, pp. 29-36. Boston: Nat. Fire Protection Assoc., 1943.)
- SHELL, ERWIN H. Long-Term Company Planning. *Dun's Review* 51, p. 17, January, 1943.
- SHELL, ERWIN H. Tools for Management Diagnosis. *Advanced Management* 8, pp. 27-30, January-March, 1943.
- SHELL, ERWIN H. Management Attitudes. *A.S.M.E. Trans.* 65, pp. 258-260, April, 1943.

## DEPARTMENT OF CHEMICAL ENGINEERING

- HAUSER, ERNST A., and D. S. LE BEAU. Studies in Compounding Guayule Rubber. *India Rubber World* 106, pp. 447-449, August, 1942; 107, pp. 568-570, March, 1943; 108, pp. 37-39, April, 1943.
- HAUSER, ERNST A., D. S. LE BEAU, and JOHN Y. L. KAO. Chemical Reactions During Vulcanization, IV. Liquid Rubber Latex. *J. Phys. Chem.* 46, pp. 1099-1111, December, 1942.
- HAUSER, ERNST A. Colloid Chemistry in Chemical Engineering Courses. *J. Eng. Educ.* 33, pp. 402-406, January, 1943.
- HAUSER, ERNST A. Our Rubber Problem. *J. Chem. Educ.* 20, pp. 203-205, April, 1943.
- HOTTEL, HOYT C. Artificial Converters of Solar Energy. In Smithsonian Institution. *Annual Report for the year ended June 30, 1941*, pp. 151-162, October, 1942.
- ROBINSON, CLARK S. The Thermodynamics of Firearms. McGraw-Hill, 1943.
- STOKES, CHARLES A. Physical Properties and Industrial Uses of Modern Plastics. *School Science & Math.* 43, pp. 359-364, April, 1943.
- WHITNEY, ROY P., and JAMES D. McNITT. Flow of Sulphite Pulp Slurries Over Weirs. *Paper Trade J.* 115, pp. 33-35, July 30, 1942. (TAPPI *Technical assoc. papers* 25, p. 355, 1942.)

## DEPARTMENT OF CHEMISTRY

- AMDUR, ISADORE. Average H-H<sub>2</sub> Repulsive Potential from Collision Cross Section Measurements. *J. Chem. Phys.* 11, pp. 157-159, April, 1943.
- ASHDOWN, AVERY A. Annual Report of the Chairman of the Northeastern Section of the American Chemical Society. *The Nucleus* 20, p. 13, October, 1942.
- ASHDOWN, AVERY A. Harrison E. Howe, 1881-1942. *The Nucleus* 20, p. 83, January, 1943.
- DAVIS, ARTHUR R. Fire and the Control of Fire. (In Summer Conference on Fire Protection Engineering, M. I. T., June 22-24, 1942. *Fire Protection Engineering; a Symposium*, pp. 52-55. Boston: Nat. Fire Protection Assoc., 1943.)
- GIBB, THOMAS R. P., JR. Optical Methods of Chemical Analysis. Reprinted twice with revisions. McGraw-Hill, 1943.
- GLADDING, EDWARD K., and C. B. PURVES. Estimation of Carbonyl Groups in Chromic Anhydride Oxystarch and Oxycellulose by Means of Hydroxylamine. *Paper Trade J.* 116, p. 26. April 8, 1943.
- HAMILTON, LEICESTER F. Gas Warfare: the Chemical Weapon, Its Use and Protection Against It. (Review of book with that title, by Alden H. Waitt.) *Technology Review* 45, pp. 70-71, December, 1942.
- HEIDT, LAWRENCE J. Photolysis of the d-Glycosides:  $\alpha$ -Benzylfructofuranoside,  $\beta$ -Benzylfructopyranoside, and  $\alpha$  and  $\beta$  Phenyl, Benzyl and  $\beta$  Phenylethyl Glucosides; and the Bearing of the Data Upon the Transfer of Energy Within Molecules. *Franklin Inst. J.* 234, pp. 473-485, November, 1942.

- HEIDT, LAWRENCE J. Review of *The Chemical Aspects of Light*, by Edmund J. Bowen. *Am. Chem. Soc. J.* 65, p. 998, May, 1943.
- HOCKETT, ROBERT C., and MASON L. DOWNING. The Rates of Reaction of Diacetone Glucose, Diacetone Galactose and Diacetone Sorbose with p-Toluenesulfonyl Chloride in Pyridine Solution. *Am. Chem. Soc. J.* 64, pp. 2463-2464, October, 1942.
- HOCKETT, ROBERT C., ALVIN GUTTAG, and MAYNARD E. SMITH. The Production of Furfural from D-Lyxose and D-Ribose. *Am. Chem. Soc. J.* 65, pp. 1-3, January, 1943.
- HOCKETT, ROBERT C., and DWIGHT F. MOWERY, JR. Lead Tetraacetate Oxidations in the Sugar Group. III. Triphenylmethyl Ethers of  $\beta$ -Methyl-D-arabinopyranoside and of d-Methyl-L-fucopyranoside. The Determination of Their Structures. *Am. Chem. Soc. J.* 65, pp. 403-409, March, 1943.
- HUNTRESS, ERNEST H., and J. V. K. GLADDING. The Synthesis of Aminobenzoyleneureas and of Dihydroxyquinoxalines Isomeric with "Luminol." *Am. Chem. Soc. J.* 64, pp. 2644-2649, November, 1942.
- HUNTRESS, ERNEST H., KARL PFISTER, III, and K. H. T. PFISTER. Fluorenones and Diphenic Acids, IX. Establishment of Authentic 1-Bromo- and 4-Bromofluorenones. *Am. Chem. Soc. J.* 64, pp. 2845-2849, December, 1942.
- HUNTRESS, ERNEST H., and R. L. SHRINER. 4-Nitrophthalimide. In *Organic Syntheses, Collective Volume II*, p. 459. Wiley, 1943.
- HUNTRESS, ERNEST H. America and the Chemical Literature. *The Nucleus* 20, pp. 161-163+, April, 1943.
- MORTON, AVERY A., J. R. MYLES, and W. S. EMERSON. Tribiphenylcarbinol. *Organic Syntheses* 23, p. 95, 1942.
- MORTON, AVERY A., BRADFORD DARLING, and JOHN DAVIDSON. Flask Design and High-Speed Stirring. *Ind. Eng. Chem. Anal. Ed.* 14, pp. 734-736, September, 1942.
- MORTON, AVERY A. Condensations by Sodium. XXI. n-Octyl- and n-Decylsodium, by A. A. Morton, J. B. Davidson, and R. J. Best. *Am. Chem. Soc. J.* 64, pp. 2239-2240, October, 1942. XXII. The General Theory of the Wurtz Reaction. The Initial Step, by A. A. Morton, J. B. Davidson, and H. A. Newey. *Am. Chem. Soc. J.* 64, pp. 2240-2242, October, 1942. XXIII. The General Theory of the Wurtz Reaction. Part II. The Second Phase, A. A. Morton, J. B. Davidson, and B. L. Hakan. *Am. Chem. Soc. J.* 64, pp. 2242-2247, October, 1942. XXIV. The Pyrolysis of Amylsodium, by A. A. Morton and H. A. Newey. *Am. Chem. Soc. J.* 64, pp. 2247-2250, October, 1942. XXV. Reactions of Amylsodium with Naphthalene, Acenaphthene and Decalin, by A. A. Morton, J. B. Davidson, T. R. P. Gibb, Jr., and Collaborators. *Am. Chem. Soc. J.* 64, pp. 2250-2253, October, 1942.
- PURVES, CLIFFORD B., and THOMAS S. GARDNER. The Distribution of Acetyl Groups in a Technical Acetone-Soluble Cellulose Acetate. *Am. Chem. Soc. J.* 64, pp. 1539-1542, July, 1942.
- PURVES, CLIFFORD B., and THOMAS S. GARDNER. The Formation of Anhydro Structures by the Alkaline De-Acylation of a Partly Substituted Cellulose Acetate p-Toluene-Sulfonate. *Am. Chem. Soc. J.* 65, pp. 444-449, March, 1943.

- PURVES, CLIFFORD B., D. H. GRANGAARD, and E. K. GLADDING. Estimation of the Dialdehyde Type of Oxidation in Oxystarches and Oxycelluloses. *Paper Trade J.* 115, p. 41, August 13, 1942.
- PURVES, CLIFFORD B., F. B. CRAMER, and T. S. GARDNER. Estimation of Volatile Acyl Groups in Cellulose Esters. *Ind. Eng. Chem. Anal. Ed.* 15, pp. 319-320, May, 1943.
- RABINOWITCH, EUGENE. Electron Transfer Spectra and Their Photochemical Effects. *Rev. Modern Phys.* 14, pp. 112-131, April-July, 1942.
- SCATCHARD, GEORGE. Review of *Elementary Physical Chemistry*, by H. S. and H. A. Taylor. *Chem. & Eng. News* 21, pp. 196, 198, February 10, 1943.
- SCATCHARD, GEORGE. The following sections in *Proteins, Amino Acids and Peptides*, by E. J. Cohn and J. T. Edsall. New York: Reinhold, 1943: Chapter 3. Thermodynamics and simple electrostatic theory. Chapter 8, with T. J. Edsall. Solubility of amino acids, peptides and related substances in water and organic solvents. Chapter 24, Section 10. Interactions in protein solutions calculated from electromotive force and osmotic measurements.
- SCATCHARD, GEORGE. Constants of the Debye-Hückel Theory. (Communication to the Editor.) *Am. Chem. Soc. J.* 65, pp. 1249-1250, June 1943.
- SCHUMB, WALTER C. Halides and Oxyhalides of Silicon. *Chem. Rev.* 31, pp. 587-595, December 1942.
- SCHUMB, WALTER C., and JAMES H. SCHULMAN. Polymorphism of Arsenious Oxide. *Am. Chem. Soc. J.* 65, pp. 878-883, May, 1943.
- SCHUMB, WALTER C., and EDMUND S. RITNER. Polymorphism of Bismuth Trioxide. *Am. Chem. Soc. J.* 65, pp. 1055-1060, June, 1943.
- SHERRILL, MILES S., CHARLES B. KING, and ROY C. SPOONER. The Oxidation Potential of Cerous-Ceric Perchlorates. *Am. Chem. Soc. J.* 65, pp. 170-179, February, 1943.
- THOMPSON, ALBERTO F., JR., and DOUGLAS M. SURGENOR. The Addition of Triphenylmethyl to 2-Methyl-buten-1-yne-3. *Am. Chem. Soc. J.* 65, pp. 486, March, 1943.
- THOMPSON, ALBERTO F., JR. Some Aspects of the Chemistry of Explosives. *J. Chem. Educ.* 20, pp. 151-154, March, 1943.
- THOMPSON, ALBERTO F., JR. Review of *Semimicro and Macro Organic Chemistry*, by Nicholas D. Cheronis. *Am. Chem. Soc. J.* 65, pp. 743-744, April, 1943.
- YOUNG, RALPH C., and THOMAS J. HASTINGS, JR. Anhydrous Tantalum Tribromide. *Am. Chem. Soc. J.* 64, p. 1740, July, 1942.

#### DEPARTMENT OF CIVIL AND SANITARY ENGINEERING

- CAMP, THOMAS R., and Collaborators. Minimum Velocities for Sewers. Final Report of Committee to Study Limiting Velocities of Flow in Sewers. *Boston Soc. Civil Engrs. J.* 29, pp. 286-363, October, 1942.
- CAMP, THOMAS R. The Effect of Turbulence in Retarding Settling. (In Hydraulics Conference, 2d, Iowa City, 1942. *Proceedings*, pp. 307-317. Univ. of Iowa. Studies in Engineering. Bull. 27, 1943.)

- CAMP, THOMAS R., and Others. A Critical Review of the Literature of 1942 on Sewage and Waste Treatment and Stream Pollution. *Sewage Works J.* 15, pp. 197-241, March, 1943.
- CAMP, THOMAS R. Discussion. Determination of Kutter's  $n$  for Sewers Partly Filled, by C. Frank Johnson. *Am. Soc. Civil Engrs. Proc.* 69, pp. 609-613, April, 1943.
- CAMP, THOMAS R. Discussion. Distribution Graphs of Suspended Matter Concentration, by Joe W. Johnson. *Am. Soc. Civil Engrs. Proc.* 69, pp. 572-573, April, 1943.
- CAMP, THOMAS R. Discussion. Effect of Turbulence on Sedimentation, by William E. Dobbins. *Am. Soc. Civil Engrs. Proc.* 69, pp. 978-984, June, 1943.
- CAMP, THOMAS R. Water supplies. (In Summer Conference on Fire Protection Engineering, M. I. T., June 22-24, 1942. *Fire Protection Engineering; a Symposium*, pp. 131-141. Boston: Nat. Fire Protection Assoc., 1943.)
- TAYLOR, DONALD W. Research on Consolidation of Clays. *M. I. T. Dept. of Civil & Sanitary Eng. Publication* No. 82, August, 1942.
- WILBUR, JOHN B. The Smith-Putnam Wind Turbine Project. *Boston Soc. Civil Engrs. J.* 29, pp. 211-228, July, 1942.
- WILBUR, JOHN B. Discussion. Numerical Procedure for Computing Deflections, Moments and Buckling Loads. *Am. Soc. Civil Engrs. Proc.* 68, pp. 1247-1251, September, 1942.
- WILBUR, JOHN B. Beams of Variable Moment of Inertia. *Boston Soc. Civil Engrs. J.* 29, pp. 264-285, October, 1942.

DEPARTMENT OF ECONOMICS AND SOCIAL SCIENCE

- BISHOP, ROBERT L. Consumer's Surplus and Cardinal Utility. *Quarterly J. Econ.* 57, p. 421, May, 1943.
- FREEMAN, HAROLD A. Recent Publications on Statistical Methods. *Mech. Eng.* 65, p. 277, April, 1943.
- FREEMAN, RALPH E. Democracy and Collectivism. (Review of *The Coming Showdown*, by Carl Dreher.) *Mech. Eng.* 64, pp. 676-677, September 1942.
- FREEMAN, RALPH E. The Economics of Innovation. *Technology Review* 45, pp. 313-314+, April, 1943.
- FREEMAN, RALPH E. Technical Force: Economic Stress. *Technology Review* 45, pp. 423-424+, June, 1943.
- FREEMAN, RALPH E. Postwar Plans for an International Monetary Authority. (Review of *Postwar Economic Problems*, by Seymour E. Harris.) *Mech. Eng.* 65, pp. 438-439, June, 1943.
- KLEIN, LAWRENCE R., and G. M. KUZNETS. A Statistical Analysis of the Demand for Lemons, 1921-1941. Berkeley, Calif.: Giannini Foundation of Agricultural Economics, Report 84, June, 1943.
- KNICKERBOCKER, IRVING, and DOUGLAS M. MCGREGOR. Union-Management Coöperation: A Psychological Analysis. *Personnel* 19, pp. 520-539, November, 1942.



- KNICKERBOCKER, IRVING. Industrial Psychology: Industrial Relations. (Review of *Industrial Psychology*, by Joseph Tiffin.) *Mech. Eng.* 65, pp. 137-138, February, 1943.
- MACLAURIN, W. RUPERT. Labor's Attitude on Technological Change. (Review of *Management, Labor, and Technological Change*, by John W. Riegel.) *Mech. Eng.* 64, pp. 805-806, November, 1942.
- MACLAURIN, W. RUPERT, and CHARLES A. MYERS. Wages and the Movement of Factory Labor. *Quarterly J. Econ.* 57, pp. 241-264, February, 1943.
- MAGOUN, F. ALEXANDER. Industrial Relations and Social Security: Human Relations in Industry. *Public Affairs* 6, p. 25, Autumn, 1942.
- MYERS, CHARLES A. Wartime Concentration of Production. *J. Political Econ.* 51, pp. 222-234, June 1943.
- MYERS, CHARLES A. Progress in Collective Bargaining. (Review of *How Collective Bargaining Works*, edited by H. A. Millis.) *Mech. Eng.* 65, pp. 208-209, March, 1943.
- PIGORS, PAUL, and A. D. SHEFFIELD. The Old-Line Foreman in the New-Line Set-Up. *Case Studies in Labor Relations, VI*. Cambridge, Mass.: Industrial Relations Associates, Inc., 1942.
- PIGORS, PAUL. Organization as a Project in Human Engineering. (Review of *Dynamic Administration: the Collected Papers of Mary Parker Follett*, edited by Henry C. Metcalf and L. Urwick.) *Mech. Eng.* 65, pp. 40-41, January, 1943.
- PIGORS, PAUL, and FAITH PIGORS. Working around the Clock: a New Social Problem. *Atlantic Monthly* 171, pp. 99-104, June, 1943.
- SAMUELSON, PAUL A. Fiscal Policy and Income Determination. *Quarterly J. Econ.* 56, p. 575, August, 1942.
- SAMUELSON, PAUL A. A Method of Determining Explicitly the Coefficients of the Characteristic Equation. *Annals Math. Statistics* 13, p. 424, December, 1942.
- SAMUELSON, PAUL A. Full Employment after the War. (Chapter II in *Postwar Economic Problems*; edited by Seymour E. Harris. McGraw-Hill, 1943.)
- SAMUELSON, PAUL A. Dynamics, Statics, and the Stationary State. *Rev. Econ. Statistics* 25, p. 58, February, 1943.
- SAMUELSON, PAUL A. When the War Ends. (Review of *The Road We Are Traveling, 1914-1942*, and *Goals for America: A Budget of Our Needs and Resources*, both by Stuart Chase.) *Mech. Eng.* 65, pp. 360-361, May, 1943.
- SAMUELSON, PAUL A. Fitting General Gram-Charlier Series. *Annals Math. Statistics* 14, p. 179, June, 1943.
- TUCKER, DONALD S. Capital Money and Revenue Funds. *Am. Econ. Rev.* 32, p. 468, September, 1942.
- TUCKER, DONALD S. Reinvestment of Corporate Earnings. (Reviews eight recent books on the subject.) *Mech. Eng.* 64, p. 899, December, 1942.
- TUCKER, DONALD S. The Interest Rate and Saving. *Am. Statistical Assoc. J.* 38, p. 101, March, 1943.

- TUCKER, DONALD S., and BEATRICE A. ROGERS. Davis Rich Dewey, 1858-1942. *Am. Statistical Assoc. J.* 38, p. 107, March, 1943.
- TUCKER, DONALD S., and BEATRICE A. ROGERS. Davis Rich Dewey, 1858-1942. *Am. Econ. Rev.* 33, p. 236, March, 1943.

*DEPARTMENT OF ELECTRICAL ENGINEERING*

- BALSBAUGH, JAYSON C., and ANNIS G. ASSAF. Electrical Stability of Electrical Insulating Oils under Limited Oxidation. *A.I.E.E. Trans. Supplement* 62, pp. 311-322, June, 1943.
- DWIGHT, HERBERT B. Inverse Functions of Complex Quantities. *A.I.E.E. Trans.* 61, pp. 850-853, December, 1942.
- FRAZIER, RICHARD H. Report of Conference on Comprehensive Examinations, S.P.E.E. Committee, R. H. Frazier, Chairman. *J. Eng. Educ.* 33, pp. 358-359, December, 1942.
- FRAZIER, RICHARD H. Examinations. *J. Eng. Educ.* 33, pp. 639-642, April, 1943.
- GARDNER, MURRAY F. Transients in Linear Systems. Wiley, 1942.
- JACKSON, DUGALD C. Engineering in our Early History (The American Philosophical Society & Engineering from 1768 to 1876). *Am. Phil. Soc. Proc.* 86, pp. 45-51, September, 1942.
- LYON, WALDO V. Transform and Classical Methods. *Elec. Eng.* 62, pp. 198-203, May, 1943.
- MEMBERS OF STAFF OF THE ELECTRICAL ENGINEERING DEPARTMENT, M. I. T. Applied Electronics. Wiley, 1943.
- MEMBERS OF STAFF OF THE ELECTRICAL ENGINEERING DEPARTMENT, M. I. T. Magnetic Circuits and Transformers. Wiley, 1943.
- MOON, PARRY. Reply to Faber Birren. *Opt. Soc. Am. J.* 32, p. 401, July, 1942.
- MOON, PARRY, and DOMINA E. SPENCER. Illumination from a Non-Uniform Sky. *Illum. Eng.* 37, pp. 707-725, December, 1942.
- MOON, PARRY, and DOMINA E. SPENCER. Analytical Representation of Standard Response Curves. *Opt. Soc. Am. J.* 33, pp. 89-103, February, 1943.
- MOON, PARRY. New Methods of Calculating Illumination. *Opt. Soc. Am. J.* 33, pp. 115-122, February, 1943.
- MOON, PARRY, and DOMINA E. SPENCER. A Metric for Colorspace. *Opt. Soc. Am. J.* 33, pp. 260-269, May, 1943.
- MOON, PARRY, and DOMINA E. SPENCER. A Metric Based on the Composite Color Stimulus. *Opt. Soc. Am. J.* 33, pp. 270-277, May, 1943.
- TIMBIE, WILLIAM H. Elihu Thomson: Memorial Biography. *A.S.M.E. Trans.* 64, pp. RI-74-75, October, 1942.
- TIMBIE, WILLIAM H. Basic Electricity for Communications. Wiley, 1943.
- TRUMP, JOHN G., and ROBERT W. CLOUD. The Production and Characteristics of 3000 Kilovolts Roentgen Rays. *Am. J. Roentgenology & Radium Therapy* 49, pp. 531-535, April, 1943.
- WOODRUFF, LOUIS F., J. G. BRAINERD, GLENN KOEHLER, and H. J. REICH. Ultra-High-Frequency Techniques. Van Nostrand, 1942.

## DEPARTMENT OF ENGLISH AND HISTORY

- BATES, RALPH S. Ambrose Swasey, Telescope Engineer. *Sky & Telescope* 2, pp. 3-4, February, 1943.
- DE SANTILLANA, GEORGE. Today Belongs to Hitler. *Atlantic Monthly* 170, pp. 11-15, August, 1942.
- DE SANTILLANA, GEORGE. Italy Listening. *Atlantic Monthly* 171, pp. 66-72, March, 1943.
- DE SANTILLANA, GEORGE. French Policy. *Commonweal* 38, pp. 89-90, May 14, 1943.
- DE SANTILLANA, GEORGE. European Policy. *Commonweal* 38, pp. 242-243, June 25, 1943.
- DEUTSCH, KARL W. Questionnaire on Social Attitudes — What Are Our Social Attitudes? What Are We Going to do About Them? (In *Unitarian All-Conference Workbook, 1942*. Boston: Young Peoples Religious Union.)
- DEUTSCH, KARL W. Review of *An Economic Program for a Living Democracy*, by Irving H. Flamm. *Christian Register* 122, p. 177, May, 1943.
- FASSETT, FREDERICK G., JR., R. G. DAVIS, W. C. GREENE, F. C. PACKARD, JR., and M. SCHORER. Direct Communication. Heath, 1943.
- FASSETT, FREDERICK G., JR., and HARRY M. DAVIS. What You Should Know About the Signal Corps. Norton, 1943.
- RAE, JOHN B. The Great Suffrage Parade. *Rhode Island History* 1, pp. 90-94, July, 1942.
- SCOVILLE, WARREN C. Large-Scale Production in the French Plate Glass Industry, 1665-1789. *J. Political Econ.* 50, pp. 669-698, October, 1942.
- SCOVILLE, WARREN C. Review of *American Glass*, by George S. and Helen McKearin. *J. Econ. History* 3, pp. 99-101, May, 1943.

## DEPARTMENT OF GEOLOGY

- BUERGER, MARTIN J. A New Fourier Series Technique for Crystal Structure Determination. *Nat. Acad. Sci. Proc.* 28, pp. 281-285, July, 1942.
- BUERGER, MARTIN J., L. B. SMITH, A. DE BRETTEVILLE, JR., and F. V. RYER. The Lower Hydrates of Soap. *Nat. Acad. Sci. Proc.* 28, pp. 526-529, December, 1942.
- BUERGER, MARTIN J. The Characteristics of Soap Hemihydrate Crystals. *Nat. Acad. Sci. Proc.* 28, pp. 529-535, December 1942.
- BUERGER, MARTIN J., NEWTON W. BUERGER, and FRANK G. CHESLEY. Apparatus for Making X-Ray Powder Photographs at Controlled Elevated Temperatures. *Am. Mineralogist* 28, pp. 285-302, May, 1943.
- FAIRBAIRN, HAROLD W. Structural Petrology Applied to Ore Deposits. (Chapter VI in *Ore Deposits as Related to Structural Features*, edited by W. H. Newhouse.) Princeton University Press, 1942.
- FAIRBAIRN, HAROLD W. X-Ray Petrology of Some Fine-Grained Foliated Rocks. *Am. Mineralogist* 28, p. 246, April, 1943.
- FAIRBAIRN, HAROLD W. Gelatin-Coated Slides for Refractive Index Immersion Mounts. *Am. Mineralogist* 28, p. 396, June, 1943.
- FAIRBAIRN, HAROLD W. Notes on the Felker Di-Met Rock Saw. *Am. Mineralogist* 28, p. 398, June, 1943.

- NEWHOUSE, WALTER H., *Editor*. Ore Deposits as Related to Structural Features. Princeton University Press, 1942.
- SHIMER, HERVEY W. Origin and Significance of Plant Names. South Shore Nature Club, 1943.

## DEPARTMENT OF MATHEMATICS

- CAMERON, ROBERT H. Quadratic Convolution Equations. *J. Math. & Phys.* 21, pp. 57-62, August, 1942.
- DOUGLASS, RAYMOND D., and J. M. DUNFORD. Selecting Helical and Worm Gears. *Machine Design* 14, pp. 119-122, December, 1942.
- DOUGLASS, RAYMOND D., and J. M. DUNFORD. Determining Efficiency of Screw Threads. *Machine Design* 15, pp. 83-84, January, 1943.
- DOUGLASS, RAYMOND D., and D. P. ADAMS. Design of Reflectors for Fluorescent Lamps. *Illum. Eng.* 38, pp. 141-147, March, 1943.
- DOUGLASS, RAYMOND D., and J. M. DUNFORD. Calculating Natural Frequencies of Torsional Vibrations. *Machine Design* 15, pp. 119-120, May, 1943.
- HILDEBRAND, FRANCIS B., and ERIC REISSNER. Distribution of Stress in Built-in Beams of Narrow Rectangular Cross Section. *J. Appl. Mech.* 9, pp. A-108-A-116, September, 1942.
- LEVINSON, NORMAN, M. L. BOAS, and R. P. BOAS, JR. The Growth of Solutions of a Differential Equation. *Duke Math. J.* 9, p. 847, December, 1942.
- LEVINSON, NORMAN, K. O. FRIEDRICHS, P. LE CORBEILLER, and J. J. STOKER. Non-Linear Mechanics. Brown University, 1943.
- LEVINSON, NORMAN. On the Existence of Periodic Solutions for Second Order Differential Equations with a Forcing Term. *J. Math. & Phys.* 22, pp. 41-48, June, 1943.
- REISSNER, ERIC. Note on the Expressions for the Strains in a Bent, Thin Shell. *Am. J. Math.* 64, pp. 768-772, October, 1942.
- REISSNER, ERIC. Note on Some Secondary Stresses in Thin-Walled Box Beams. *J. Aero. Sci.* 9, pp. 538-542, December, 1942.
- REISSNER, ERIC. On the Calculation of Three-Dimensional Corrections for the Two-Dimensional Theory of Plane Stress. (In Eastern Photoelasticity Conference, 15th Semi-annual, Boston, Mass., June 20, 1942. *Proceedings*. pp. 23-31. 1943.)
- SALEM, RAPHAEL. On Sets of Multiplicity for Trigonometrical Series. *Am. J. Math.* 64, pp. 531-538, July, 1942.
- SALEM, RAPHAEL. On Singular Monotonic Functions of the Cantor Type. *J. Math. & Phys.* 21, pp. 69-82, August, 1942.
- SALEM, RAPHAEL, and D. C. SPENCER. The Influence of Gaps on Density of Integers. *Duke Math. J.* 9, pp. 855-872, December, 1942.
- SALEM, RAPHAEL, and D. C. SPENCER. On Sets of Integers Which Contain no Three Terms in Arithmetical Progression. *Nat. Acad. Sci. Proc.* 28, pp. 561-563, December, 1942.
- SALEM, RAPHAEL. On a Theorem of Zygmund. *Duke Math. J.* 10, pp. 23-31, March, 1943.
- SALEM, RAPHAEL. On Some Singular Monotonic Functions Which Are Strictly Increasing. *Am. Math. Soc. Trans.* 53, pp. 427-439, May, 1943.

## DEPARTMENT OF MECHANICAL ENGINEERING

- BARTHOLOMEW, EDWARD L., JR. Stress-Strain Measurements in the Drawing of Cylindrical Cups. *Am. Soc. Metals Preprint* 9, October, 1942.
- DE FOREST, ALFRED V., GREER ELLIS, and F. B. STERN, JR. Brittle Coatings for Quantitative Strain Measurements. *J. Appl. Mech.* 9, pp. A-184-188, December, 1942.
- DE FOREST, ALFRED V. New Pathways in Engineering. *Metal Progress* 43, pp. 719-723 +, May, 1943.
- FOX, KENNETH R., and E. R. SCHWARZ. Determination of Resilience of Textiles by Compression Testing. *Textile Res.* 12, pp. 2-7, August, 1942.
- GROSSER, CHRISTIAN E. Hydraulic Leakage Can Be Controlled. *Machine Design* 14, p. 70, August, 1942.
- GROSSER, CHRISTIAN E. Controlling Pulsations in Hydraulic Equipment. *Machine Design* 14, p. 108, December, 1942.
- HINDMAN, HAROLD, and KENNETH R. FOX. Effect of Relative Humidity on Load-Elongation Properties of Certain Fibers. *Rayon Text. Mo.* 24, pp. 43-44, May, 1943; pp. 43-45, June, 1943.
- HOLT, JAMES. Thrifty Warmth. *Technology Review* 45, pp. 77-78 +, December, 1942.
- HRONES, JOHN A. The Analysis of a Continuous Process by a Discontinuous Step Method. *A.S.M.E. Trans.* 64, p. 753, November, 1942.
- HUNSAKER, JEROME C. Aeronautical Research. *Franklin Inst. J.* 234, pp. 133-136, August, 1942.
- KEENAN, JOSEPH H., and JOSEPH KAYE. A Table of Thermodynamic Properties of Air. Presented at National Meeting of Applied Mechanics Division of A.S.M.E., June 26, 1943. (In preprint form only at present.)
- KYLE, PETER E., and F. R. EVANS. Correlated Abstract of Literature on Flowability and Deformation of Sands. *Am. Foundryman* 5, p. 4, January, 1943.
- KYLE, PETER E. Better Sand for Better Castings. *Tech. Eng. News* 24, p. 135, May, 1943.
- LESSELLS, JOHN M. Discussions of Several Papers in *A.S.T.M. Proc.* 42, June, 1942.
- MACGREGOR, CHARLES W., and L. E. WELCH. True Stress-Strain Relations at High Temperatures by the Two-Load Method. *Metals Tech.* 9, pp. 1-13, September, 1942.
- MACGREGOR, CHARLES W., and L. F. COFFIN, JR. The Distribution of Strains in the Rolling Process. *J. Appl. Mech.* 10, pp. A13-A20, March, 1943.
- MURRAY, WILLIAM M., *Editor*. Eastern Photelasticity Conference, 15th Semi-annual, June 20, 1942, *Proceedings*. Cambridge: Lew A. Cummings Co., 1943.
- SCHWARZ, EDWARD R. The following sections in *American Cotton Handbook*. New York: American Cotton Handbook Co., 1942: Chapter XX. Physical and Chemical Testing of Fibers, Yarns and Fabrics. Appendix A. Introduction to the Use of the Statistical Method in Textile Testing, in collaboration with K. R. Fox.

- SCHWARZ, EDWARD R. John Doe, Saboteur. *Technology Review* 44, p. 447, July, 1942.
- SCHWARZ, EDWARD R., and K. R. Fox. Application of Rank Correlation to the Development of Testing Methods. *A.S.T.M. Bull.* 119, pp. 21-24, December, 1942.
- SCHWARZ, EDWARD R. Modern Textile Technology, I. *Textile Res.* 13, pp. 20-24, December, 1942; II. Merging Molecules. pp. 4-11, February, 1943.
- SCHWARZ, EDWARD R. Occupancy Fire Hazards. (In Summer Conference on Fire Protection Engineering, M. I. T., June 22-24, 1942. *Fire Protection Engineering; a Symposium.* pp. 44-51. Boston: Nat. Fire Protection Assoc., 1943.)
- SCHWARZ, EDWARD R. Slaughter on the Home Front. *Technology Review* 45, pp. 230-232, March, 1943.
- SCHWARZ, EDWARD R. Role of Research in the New Textile Technology. *Textile Res.* 13, pp. 11-15, June, 1943.
- SCHWARZ, EDWARD R. Molecular Mechanics: the New Textile Technology. *Rayon Text. Mo.* 24, pp. 46-48, June, 1943.
- SHAPIRO, ASCHER H., and M. G. J. BOISSEVAIN. Comparison of Power-Plant Heater Arrangements. *Mech. Eng.* 64, pp. 784-786, November, 1942.
- SHAPIRO, ASCHER H., and M. G. J. BOISSEVAIN. How Evaporator Hookup Affects Power-Plant Heat Rate. *Power* 87, p. 70, February, 1943.
- WILKES, GORDON B., and LUCIEN R. VIANEY. The Effect of Convection in Ceiling Insulation. *Heating, Piping & Air Conditioning* 15, p. 102, February, 1943.

#### DEPARTMENT OF METALLURGY

- CHIPMAN, JOHN, and SHADBURN MARSHALL. The Carbon-Oxygen Equilibrium in Liquid Iron. *Am. Soc. Metals Trans.* 30, pp. 695-746, September, 1942.
- CHIPMAN, JOHN. Chemistry at 1600. (Seventeenth Annual Edward DeMille Campbell Memorial Lecture.) *Am. Soc. Metals Trans.* 30, pp. 817-854, December, 1942.
- CHIPMAN, JOHN, and N. J. GRANT. The Induction Furnace as a High Temperature Calorimeter and the Heat of Solution of Silicon in Liquid Iron. *Am. Soc. Metals Trans.* 31, pp. 365-379, June, 1943.
- COHEN, MORRIS, and OTTO ZMESKAL. Simultaneous Measurement of Magnetic and Dilatometric Changes. *Rev. Sci. Instr.* 13, p. 346, August, 1942.
- COHEN, MORRIS, F. S. GARDNER, and DARA P. ANTIA. Quantitative Determination of Retained Austenite by X-Rays. *Am. Inst. Mining & Met. Engrs. Tech. Pub.* 1560, February, 1943.
- COHEN, MORRIS, and EDWARD C. BISHOP. Hardness Testing of High Speed Steel at High Temperatures. *Metal Progress* 43, pp. 413-416+, March, 1943.
- COHEN, MORRIS, and OTTO ZMESKAL. The Tempering of Two High-Carbon High-Chromium Steels. *Am. Soc. Metals Trans.* 31, p. 380, June, 1943.

- GAUDIN, ANTOINE M., REINHARDT SCHUHMAN, JR., and A. W. SCHLECHTEN. Flotation Kinetics II. The Effect of Size on the Behavior of Galena Particles. *J. Phys. Chem.* 46, pp. 902-910, November, 1942.
- GAUDIN, ANTOINE M., and H. RUSH SPEDDEN. Magnetic Separation of Sulphide Minerals. *Mining Tech.* 7, January, 1943. (*Am. Inst. Mining & Met. Engrs. Tech. Pub.* 1549.)
- GORDON, PAUL, and MORRIS COHEN. The Transformation of Retained Austenite in High Speed Steel at Subatmospheric Temperatures. *Am. Soc. Metals Trans.* 30, p. 569, September, 1942.
- GORDON, PAUL, MORRIS COHEN, and ROBERT S. ROSE. The Kinetics of Austenite Decomposition in High Speed Steel. *Am. Soc. Metals Trans.* 31, p. 161, March, 1943.
- HAYWARD, CARLE R. Nonferrous Metallurgy. (Chapter 24 in *Rogers' Industrial Chemistry*; edited by C. C. Furnas. New York: Van Nostrand, 1942.)
- HAYWARD, CARLE R. Metallurgy of Copper. *Mineral Industry during 1941*, 50, p. 179, November, 1942.
- HAYWARD, CARLE R. Metallurgy of Lead. *Mineral Industry during 1941*, 50, p. 342, November, 1942.
- HAYWARD, CARLE R. Extraction of Metals from Ores. *J. Chem. Educ.* 20, p. 29, January, 1943.
- HAYWARD, CARLE R. Recovery of Tin by Gaseous Reduction. *Eng. & Min. J.* 144, p. 63, March, 1943.
- JOHNSON, ANDREW L., and F. H. NORTON. Fundamental Study of Clay; Casting as a Base-Exchange Phenomenon. *Am. Ceramic Soc. J.* 25, pp. 336-344, August, 1942.
- JOHNSON, ANDREW L., and W. G. LAWRENCE. Fundamental Study of Clay; Surface Area and Its Effect on Exchange Capacity of Kaolinite. *Am. Ceramic Soc. J.* 25, pp. 344-346, August, 1942.
- JOHNSON, ANDREW L. Colloid Chemistry in Ceramics. *Am. Ceramic Soc. J.* 26, pp. 88-92, March, 1943.
- KAUFMANN, ALBERT R., and C. STARR. Magnetic Properties of Copper-Nickel Alloys. *Phys. Rev.* 63, p. 445, June, 1943.
- LOCKE, CHARLES E. Progress in Ore Dressing and Coal Preparation in 1941. *Mineral Industry during 1941*, 50, pp. 625-669, 1942.
- LOCKE, CHARLES E. A Forty-five Year History of the Class of 1896, Massachusetts Institute of Technology. Concord, N. H.: Rumford Press, 1942.
- NORTON, FREDERICK H. Refractories. Second Edition. McGraw-Hill, 1942.
- NORTON, FREDERICK H. Uncommon Clay. *Technology Review* 45, pp. 182-184 +, February, 1943.
- NORTON, JOHN T., and DANIEL ROSENTHAL. Behavior of Residual Stresses Under External Load and Their Effect on Safety. *Welding J.* 22, pp. 63S-78S, February, 1943.
- NORTON, JOHN T. Principles of Radiographic Process. (Section 1 in *A.S.T.M. Symposium on Radiography*. Philadelphia: A.S.T.M., 1943.)
- ROSENTHAL, DANIEL, and W. SPRARAGEN. Fatigue Strength of Welded Joints. *Welding J.* 22, p. 297-S, July, 1942.

- ROSENTHAL, DANIEL. Physics of Welding, prepared by a Committee. (Chapter I in *Welding Handbook*, 1942. New York: American Welding Society, 1942.)
- SCHUHMAN, REINHARDT, JR. Laboratory Sizing. (Chapter 17 in *Powder Metallurgy*, edited by John Wulff. Cleveland: Am. Soc. Metals, 1942.)
- SCHUHMAN, REINHARDT, JR. Cleanliness Achieved in New Crushing Laboratory. *Eng. & Min. J.* 143, pp. 59-61, September, 1942.
- SCHUHMAN, REINHARDT, JR. Flotation Kinetics. I. Methods for Steady-State Study of Flotation Problems. *J. Phys. Chem.* 46, pp. 891-902, November, 1942.
- SCHUHMAN, REINHARDT, JR. Mineral Dressing (Review for 1942). *Eng. & Min. J.* 144, pp. 98-100, February, 1943.
- THOMPSON, MAURICE DEK. The Total and Free Energies of Formation of the Oxides of Thirty-Two Metals. New York: Electrochemical Society, 1942.
- WULFF, JOHN, *Editor*. Powder Metallurgy. Cleveland: Am. Soc. Metals, 1942.

#### DEPARTMENT OF METEOROLOGY

- AUSTIN, JAMES M., and HURD C. WILLETT. A Report on the Climatology and Typical Synoptic Situations of the North Atlantic, by members of the Staff of the Department of Meteorology, M. I. T., 1942. (Contains the following papers: Climatology of the North Atlantic, by J. M. Austin. Discussion of Synoptic Weather Maps Over the North Atlantic for Selected Periods, by H. C. Willett.)
- AUSTIN, JAMES M. Cloudiness and Precipitation in Relation to Convergence. (Abstract of paper presented at the 11th annual meeting of the Inst. of Aero. Sciences, January 25-29, 1943.) *Am. Meteor. Soc. Bull.* 24, p. 102, March, 1943.
- HAURWITZ, BERNHARD. The Applications of Mathematics in Meteorology. *Am. Math. Mo.* 50, pp. 77-84, February, 1943.
- HAURWITZ, BERNHARD. The Effect of a Gradual Wind Change on the Stability of Waves. *N. Y. Acad. Sci. Annals* 44, pp. 69-79, May, 1943.

#### DEPARTMENT OF MODERN LANGUAGES

- CURRIER, FRANCIS M. Article in Providence (R. I.) *Journal*, June 13, 1943, headed: Holds Language Study Vital in War or Peace.
- ZNAMENSKY, GEORGE A. Elementary Scientific Russian Reader. M. I. T., 1943.

#### DEPARTMENT OF NAVAL ARCHITECTURE

- MANNING, GEORGE C., and VICTOR R. POWERS. Care of Pumps at Sea. *Nautical Gazette* 132, p. 18, October, 1942.
- MANNING, GEORGE C. Manual of Ship Construction. Van Nostrand, 1942.
- MANNING, GEORGE C. 50th Annual Meeting of Society of Naval Architects and Marine Engineers. *Nautical Gazette* 132, p. 16, December, 1942.
- MANNING, GEORGE C. Sub-Assembling. *Nautical Gazette* 133, p. 22, February, 1943.



- MANNING, GEORGE C. Trained in Two Weeks. *Nautical Gazette* 133, p. 44, March, 1943.
- MANNING, GEORGE C. Concrete Ships of 1943. *Nautical Gazette* 133, p. 20, April, 1943.
- MANNING, GEORGE C. Welcome to Brunswick. *Nautical Gazette* 133, p. 24, May, 1943.

## DEPARTMENT OF PHYSICS

- BOYCE, JOSEPH C. Research in the Spectroscopy of the Vacuum Ultraviolet. In Carnegie Inst. Washington. *Year Book* 41, pp. 107-111, December, 1942.
- BROWN, SANBORN C. A Theory of the Initial Avalanche in the Breakdown of a Discharge Counter in Helium. *Phys. Rev.* 62, pp. 244-254, September, 1942.
- BROWN, SANBORN C. A Short Open-Tube Manometer for Vacuum Systems. *Rev. Sci. Instr.* 13, pp. 503-504, November, 1942.
- DEUTSCH, MARTIN, J. R. DOWNING, L. G. ELLIOTT, J. W. IRVINE, JR., and A. ROBERTS. Disintegration Schemes of Radioactive Substances, IV. Fe<sup>60</sup>. *Phys. Rev.* 62, pp. 3-7, July, 1942.
- DUNTLEY, SEIBERT Q. The Mathematics of Turbid Media. *Opt. Soc. Am. J.* 33, pp. 252-257, May, 1943.
- ELLIOTT, LLOYD G., MARTIN DEUTSCH, and A. ROBERTS. Disintegration Scheme of Na<sup>24</sup>. *Phys. Rev.* 63, pp. 386-387, May, 1943.
- EVANS, ROBLEY D., and C. R. WILLIAM. Storage of Radium Dial Instruments. *J. Ind. Hygiene & Toxicology* 24, pp. 236-237, October, 1942.
- EVANS, ROBLEY D. The Structure of Atomic Nuclei. *J. Chem. Educ.* 19, pp. 549-550, November, 1942.
- FESHBACH, HERMAN, R. H. BOLT, and A. M. CLOGSTON. Perturbation of Sound Waves in Irregular Rooms. *Acoustical Soc. Am. J.* 14, pp. 65-73, July, 1942.
- GOODMAN, CLARK, and PATRICK M. HURLEY. Helium Age Measurement. I. Preliminary Magnetite Index. *Geol. Soc. Am. Bull.* 54, pp. 305-324, March, 1943.
- HARDY, ARTHUR C. Flux Calculations in Optical Systems. *Op. Soc. Am. J.* 33, pp. 71-74, February, 1943.
- HARRISON, GEORGE R. The Summer Conference on Spectroscopy and Its Applications. *Sci. Monthly* 55, pp. 386-387, October, 1942.
- HARRISON, GEORGE R. Scientist Extraordinary: Newton's Achievements. . . . Place a New Accent on Youth. *Technology Review* 45, pp. 73-74+, December, 1942.
- HARVEY, GEORGE G. The Electron Microscope as a Metallurgical Tool. (Chapter XX in *Powder Metallurgy*, edited by John Wulff. Cleveland: Am. Soc. Metals, 1942.)
- IRVINE, JOHN W., JR. Cyclotron Targets: Preparation and Radiochemical Separations. I. Arsenic and Germanium. *J. Phys. Chem.* 46, pp. 910-914, November, 1942.

- IRVINE, JOHN W., JR. Radioactive Tracer Studies on Arsenic Injected as Potassium Arsenite. I. Excretion and Localization in Tissues, by F. T. Hunter, A. F. Kip, and J. W. Irvine, Jr. *J. Pharmacology & Exper. Therapeutics* 76, pp. 207-220, November, 1942. II. Chemical Distribution in Tissues, by O. H. Lowry, F. T. Hunter, A. F. Kip, and J. W. Irvine, Jr. *J. Pharmacology & Exper. Therapeutics* 76, pp. 221-225, November, 1942.
- MUELLER, HANS. The Theory of Electrophoretic Migrations. (Chapter 25 in *Proteins, Amino Acids and Peptides*, by E. J. Cohn and J. T. Edsall. Reinhold, 1943.)
- NOTTINGHAM, WAYNE B. An Electronic Circuit to Control Intensity and Timing of Power for Spot Welding. *Rev. Sci. Instr.* 14, pp. 161-170, June, 1943.
- SEARS, FRANCIS W., JOHN A. CLARK, and F. R. GORTON. *Fundamentals of Machines*. Houghton, Mifflin, 1943.
- SLATER, JOHN C. *Microwave Transmission*. McGraw-Hill, 1942.
- WARREN, BERTRAM E. Basic Principles Involved in the Glassy State. *J. Appl. Phys.* 13, pp. 602-610, October, 1942.

#### DEPARTMENT OF PUBLIC HEALTH

- GATELY, GEORGE L. Organizing a Large Community for Health Education. *Am. J. Pub. Health* 33, pp. 691-696, June, 1943.
- TURNER, CLAIR E. Community Organization for Health Education. *Am. Biol. Teacher* 5, pp. 38-41, November, 1942.
- TURNER, CLAIR E. Significant Findings of the Massachusetts High School Study and Their Implications for Health Education Programs. *J. School Health* 13, pp. 9-17, January, 1943.
- TURNER, CLAIR E. Mobilizing Local Leadership for Public Health. *Illinois Health Messenger* pp. 20-23, March 1 and 15, 1943.
- WILINSKY, CHARLES F. Hospital Preparedness. *N. E. J. Med.* 227, pp. 15-17, July 2, 1942.

#### SECTION OF GRAPHICS

- ADAMS, DOUGLAS P. The Quintic "Hypernom" for the Equation  $x^5 + Ax^3 + Bx^2 + Cx + D = 0$ . *J. Math & Phys.* 22, pp. 78-92, June, 1943.

#### THE INSTITUTE LIBRARY

- LANE, RUTH MCG., *Compiler*. Classified List of Theses in Electrical Engineering 1902-1940. M. I. T., 1942.
- LANE, RUTH MCG. A Guide to the Literature of Ultra-High-Frequency Techniques. (Chapter 16 in *Ultra-High-Frequency Techniques*, by J. G. Brainerd and Others. Wiley, 1942.)

#### ADMINISTRATION

- CALDWELL, ROBERT G. The Anglo-Portuguese Alliance Today. *Foreign Affairs* 21, pp. 149-157, October, 1942.
- CALDWELL, ROBERT G. The Center of the Problem. *Technology Review* 45, pp. 19-21 +, November, 1942.

- CALDWELL, ROBERT G. Exile as an Institution. *Political Sci. Quarterly* 58, pp. 239-262, June, 1943.
- COMPTON, KARL T. Gerard Swope — 1942 Hoover Medalist. (In *Gerard Swope, Sixth Hoover Medalist*. pp. 5-15. New York: Hoover Medal Board of Award, 1942.)
- COMPTON, KARL T. Importance of Fire Protection and the War. (In Summer Conference on Fire Protection Engineering, M. I. T., June 22-24, 1942. *Fire Protection Engineering: a Symposium*, pp. 9-11. Boston: Nat. Fire Protection Assoc., 1943.)
- COMPTON, KARL T. Toward the Mountain. *Technology Review* 45, pp. 235-236+, March, 1943.
- COMPTON, KARL T. Isaiah Bowman. *Science* 97, pp. 305-306, April 2, 1943.
- COMPTON, KARL T. Organization of American Scientists for the War. *Nature* 151, pp. 601-606, May 29, 1943.
- HUNTER, DARD. Papermaking: the History and Technique of an Ancient Craft. Knopf, 1943.
- KANE, HENRY B. The Tale of the Crow. Knopf, 1943.
- SEVERANCE, DONALD P. Design of Plane-Mirror Reflectors for Fluorescent Lamps. *Illum. Eng.* 38, pp. 45-57, January, 1943.

## OTHER PUBLICATIONS

- STETSON, HARLAN T., and D. S. MACKIERNAN, JR. On the Observation and Measurement of the Apparent Shift in Direction of the Radio Beam of an Air-Beacon and Certain Relations to Meteorological Conditions. *Am. Geophys. Union Trans.* 23, pp. 274-279, 1942.
- STETSON, HARLAN T. Atmospheric-Electric Observations at the Needham Laboratory for Cosmic Terrestrial Research. *Am. Geophys. Union Trans.* 23, pp. 296-301, 1942.
- STETSON, HARLAN T. Report of the Special Committee on Cosmic-Terrestrial Relationships. *Am. Geophys. Union Trans.* 23, Appendix H, pp. 724-726, 1942.
- STETSON, HARLAN T. Review of *Enjoyment of Science*, by Jonathan Leonard. *Sky & Telescope* 1, p. 18, July, 1942.
- STETSON, HARLAN T. Needham Laboratory for Cosmic Terrestrial Research. *Am. Astronom. Soc. Publications* 10, p. 269, November, 1942.
- STETSON, HARLAN T., and RICHARD M. FIELD. Map Reading and Avigation. Van Nostrand, 1942.
- STETSON, HARLAN T. Note on a Supposed Annual Period in Sunspots. *Popular Astronomy* 50, pp. 492-494, November, 1942.
- STETSON, HARLAN T. Radio-Wave Propagation. *Electronic Industries* 1, December, 1942.
- STETSON, HARLAN T. It's Done With Spheres: the Other Side of McMillen's Global Navigation. *Yachting*, p. 43, April, 1943.
- STETSON, HARLAN T. The Mobilization of Science. *Science* 97, pp. 508-510, June 4, 1943.

## THESES PRESENTED FOR DOCTORS' DEGREE

(Not available in printed form)

---

### *DEPARTMENT OF BIOLOGY AND BIOLOGICAL ENGINEERING*

#### DOCTOR OF PHILOSOPHY

- JAFFE, HERBERT. Kinetics of the Alkaline Phosphomonoesterase Systems. May, 1943.
- KIBRICK, SIDNEY. Studies on the Biology of the Gonococcus. May, 1943.

### *DEPARTMENT OF CHEMICAL ENGINEERING*

#### DOCTOR OF SCIENCE

- BROUGHTON, DONALD BEDDOES. Generation of Chlorine from Hydrochloric Acid. May, 1943.
- BRUMBAUGH, JOHN WILLIAM. Synthesis of Organic Acids. December, 1942.
- CATTERALL, WILLIAM EDWARD. A special war thesis. December, 1942.
- DAVENPORT, CHARLES HENRY. Recovery of Manganese from a Low-grade Ore. December, 1942.
- DICKERSON, LOREN LESTER, Jr. Streaming Double Refraction Applied to the Photographic Analysis of Fluid Motion. December, 1942.
- LAVENDER, HARRISON MORTON, JR. Production of Pinacol from Acetone. December, 1942.
- LONGWELL, JOHN PLOEGER. Fuel Oil Atomization. May, 1943.
- MOESEL, FREDERICK CHARLES. A special war thesis. May, 1943.
- REDDING, EDWARD MACARTHUR. A special war thesis. December, 1942.
- SCHRADER, ROBERT J. Effect of Pressure on the Enthalpy of Hydrocarbons. May, 1943.
- SMITH, JOE MAUK. A special war thesis. May, 1943.
- WILLIAMS, GLENN CARBER. Heat Transfer, Mass Transfer and Friction for Spheres. December, 1942.

### *DEPARTMENT OF CHEMISTRY*

#### DOCTOR OF PHILOSOPHY

- BARKEY, KENNETH THOMAS. Study of 6-Chlorocellulose Acetate and Ethyl Cellulose p-Toluenesulfonate. May, 1943.
- BRECKENRIDGE, ROBERT GEORGE. Isotonic Solutions: The Chemical Potential of Water in Aqueous Solutions of Sodium and Potassium Ortho Phosphates and Ortho Arsenates. December, 1942.
- CONLEY, MARYALICE. Investigation of the Configurations of Several Anhydrohexitols. May, 1943.
- DONOVAN, JOSEPH JEROME. Studies in Polymerization. December, 1942.

- FLETCHER, HEWITT GRENVILLE, JR. I. Investigation of Certain Sorbitol and Mannitol Derivatives. II. Studies in an Attempt to Determine the Configuration of *meso*-Inositol. December, 1942.
- GLADDING, EDWARD KARCHER. Analytical Study of Oxystarch and Oxycellulose. December, 1942.
- OLSEN, ROBERT THORWALD. Studies in the Synthesis of Benzo [b] furan-2, 3-dicarboxylic Acids and of Thianaphthene-2, 3-dicarboxylic Acid. December, 1942.
- OPPENHEIM-ERRERA, STEPHANE. Synthesis of 1-(1'5'-Dimethylhexyl)-4-methoxyhexahydroindanol-1. December, 1942.
- PATTERSON, GEORGE HAROLD. Studies in the Reaction of Organo-Sodium Compounds with Butadiene. December, 1942.
- PFISTER, KARL, 3d. Chemiluminescence VI. December, 1942.
- RAPOPORT, HENRY. Studies in the Indole Synthesis. May, 1943.
- SHAW, ELLIOTT NATHAN. Studies of Nitrogenous Heterocycles. May, 1943.
- STOCKFLETH, ALFRED. Study of Rapid Response Thermocouples. December, 1942.
- WALD, WILBUR JOSEPH. Studies of the Lignin Complex of the Northern Pine. December, 1942.
- WHITMAN, NELSON. Studies in Nitration: I. Nitration of Trixylenylcarbinol and a Crystalline Derivative. II. A New Nitrating Agent. December, 1942.

*DEPARTMENT OF ELECTRICAL ENGINEERING*

DOCTOR OF SCIENCE

- HALL, ALBERT CARRUTHERS. Analysis and Synthesis of Linear Servomechanisms. May, 1943.

*DEPARTMENT OF GEOLOGY*

DOCTOR OF PHILOSOPHY

- BEERS, ROLAND FRANK. Distribution of Radioactivity in Ancient Sediments. May, 1943.
- CAMPBELL, NEIL. Geology of the Con-Rycon Mines. May, 1943.

*DEPARTMENT OF MATHEMATICS*

DOCTOR OF PHILOSOPHY

- SCANLAN, ROBERT HARRIS. On the Existence of Certain Entire Functions of Zero Type. May, 1943.
- YAGI, FUMIO. On Stieltjes Integrals: A Convergence Theorem and an Integral Equation. May, 1943.

*DEPARTMENT OF METALLURGY*

DOCTOR OF SCIENCE

- ANTIA, DARA PIROJSHAW. Tempering of Nickel and Nickel-Molybdenum Steels. May, 1943.
- CLARK, JOHN ROBERT. Magnetic Phenomena in Iron Cerium Alloys. December, 1942.

FLETCHER, STEWART GAILEY. Tempering of Plain Carbon Steel. May, 1943.  
SPENDELOW, HOWARD RANDALL, JR. Damping Capacity Measurements in Low Carbon Steels. December, 1942.

VINCENT, KENNETH CHAPMAN. Application of Radioactive Tracers in the Study of Adsorption and Self-Diffusion in Certain Minerals. May, 1943.

DOCTOR OF SCIENCE IN CERAMICS

ANICETTI, ROBERT JOHN. Spinel as Ceramic Colors. May, 1943.

JOHNSON, ANDREW LEIGH. Mechanism of Casting Clay Ware. May, 1943.

DEPARTMENT OF PHYSICS

DOCTOR OF PHILOSOPHY

AUSTIN, PAULINE MORROW. Propagation of Electromagnetic Pulses in the Ionosphere. December, 1942.

BUCK, JAMES GRAY. Phenomena in Polycrystalline Films. December, 1942.

ELLIOTT, LLOYD GEORGE. Studies of Disintegration Schemes of Radioactive Substances. May, 1943.

GOLDSTEIN, HERBERT. A special war thesis. May, 1943.

HULL, ROBERT WALLACE. Electronic Phenomena in Polycrystalline Layers. May, 1943.

HUTZENLAUB, JOHN FREDERICK. Electrocaloric and Dielectric Behavior of Potassium Di-Hydrogen Phosphate. May, 1943.

McFEE, RAYMOND HERBERT. A special war thesis. May, 1943.

RADO, GEORGE TIBOR. Scattering of Light in Colloids. May, 1943.

WILCHINSKY, ZIGMOND WALTER. Measurement of Short-Range Order and Long-Range Order in the Alloy Cu<sub>2</sub>Au. December, 1942.

DOCTOR OF SCIENCE

BROWN, BARREMORE BEVERLY. Investigation of Certain Electrical Properties of Oxide-Coated Cathodes. December, 1942.

JACOB, CARLYLE WILLIAM. Radioactively Ionized Smoke and Dust Mask Canister. May, 1943.

PAN, SHIAO THUR. Magnetic Properties of Iron and Iron-Cobalt Alloys at Various Temperatures. May, 1943.

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