

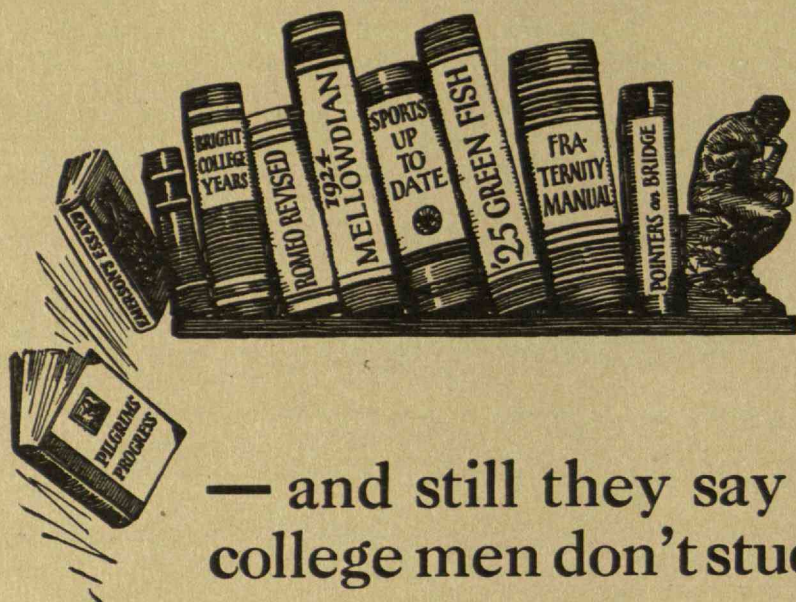
THE TECHNOLOGY REVIEW

RELATING TO THE MASSACHUSETTS
INSTITUTE OF TECHNOLOGY



MAY
1924

PUBLISHED BY THE ALUMNI ASSOCIATION



— and still they say college men don't study!

The critic who charges college men with lack of diligence never heard a freshman repeat his roll of fraternity chapters without a slip, or a senior dilate on the life history of every football captain from 1890 on.

Of course this takes study—sometimes too much study. The student must be cautioned against the mental strain resulting from concentration on too limited a field of thought.

It is a good thing to specialize, but not to the extent of becoming narrow. If it is right for the man who concentrates on engineering to be up on his campus activities, it would seem right for the man who is quoted on the history and philosophy of Comparative Baseball Scores to have some knowledge of the chemistry and thermodynamics from which he expects to make his living.

For it is still true that in industrial councils the talk sometimes swings from batting averages to coefficients of expansion and the hysteresis losses in iron.

This is all a matter of balance, and satisfactory mental balance is a means to an important end—satisfactory bank balance.

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Contents for May, 1924

Cover Design by Kenneth Reid, '18

The Past Month	369
Editorial Comment	371
Live Issues in Engineering Education <i>By W. E. Wickenden</i>	372
The Swope Proposal: A Symposium <i>By Eleven Alumni</i>	375
The Ships that Passed <i>By Robert E. Rogers</i>	381
The One Hundred and Fifth Meeting of the Council	386
DEPARTMENTS	
Athletics	388
News from the Alumni Clubs	389
News from the Classes	391
Classified Advertising	426



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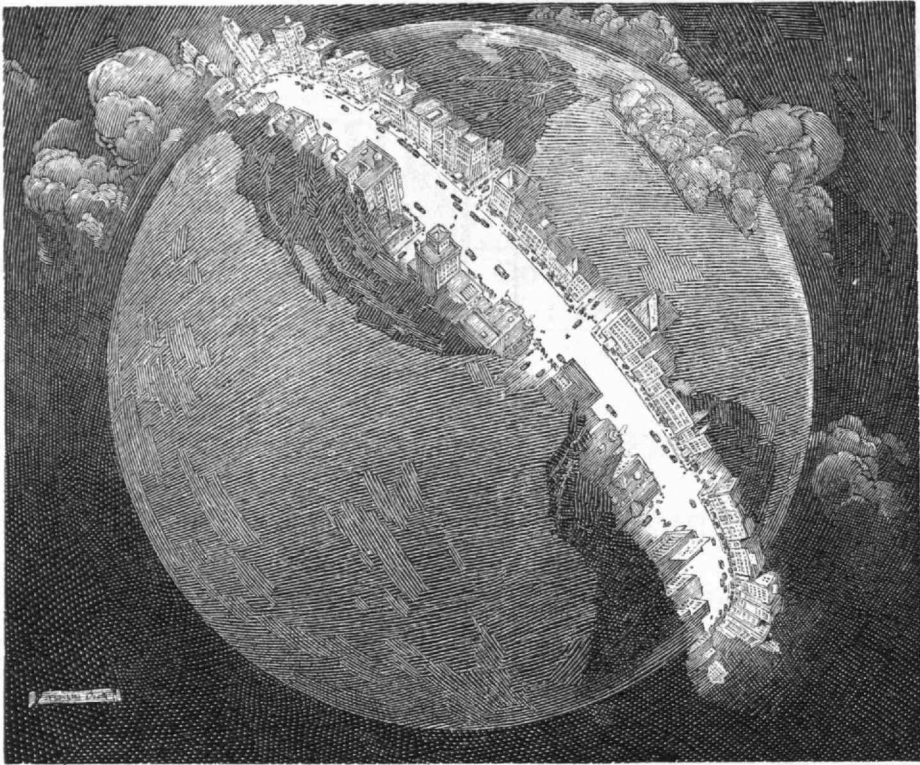
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GENERAL ELECTRIC

THE TECHNOLOGY REVIEW

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INSTITUTE OF TECHNOLOGY

Vol. XXVI

MAY, 1924

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The Past Month

THE meeting of The Technology Clubs Associated in Detroit on May 19, 20 and 21 continues to be programmed as specified in the April Review. The morning of Monday, May 19, will be devoted to registration at the Hotel Tuller which is to be convention headquarters; the afternoon will be devoted to a general trip around Detroit and in the evening men and women visitors will separate, the men going to a smoker and the women to a bridge party at the hotel.

On Tuesday, May 20, the day will be devoted to a trip to the Ford plant and any other institutions the visitors may wish. For the ladies there will be, that afternoon, a tea at the Detroit Yacht Club. The evening will be given over to class reunions and a business meeting. On Wednesday, May 21, the Committee in Charge has planned a boat trip up the Detroit River which will end just in time to permit visitors to prepare for the banquet (at which there will be tables for the ladies) which will end the three-day meeting.

The Committee in Charge has supplied the following supplementary notes:

The local chapter of the American Institute of Architects will entertain M. I. T. architects on Tuesday afternoon, May 20. The offices of the principal architects in Detroit will be open for inspection. — The new Power Plant of the Detroit Edison Company, now being built under the supervision of Col. A. S.

Douglass, '08, will be in operation and open. — The new Power House of the Canadian Ford Motor Company, situated across the river in Ford City, will also be open for inspection. This plant is operated by a new process, using pulverized coke made by a low temperature by-product process. —

An invitation has been received from the Stout Aeroplane Company to carry as guests, on short trips, Tech men who are especially interested in aeronautics. — Arrangements have been made for visiting golfers to play on any of the 25 golf courses in and around Detroit. — Souvenirs for the banquet are being given by the President of the Technology Clubs Associated. — The Lake boats from Buffalo and Cleveland to Detroit will be in commission and if members, coming from the East and South desire, they may change at Buffalo or Cleveland and make the rest of the trip by boat. Through tickets to Detroit on the New York Central, Grand Trunk and the Wabash Railroads are good for passage on these steamers.



ALEXANDER MACOMBER, '07

© Bachrach

Who, as Vice-President of the Alumni Association, sprang into Coolidgean prominence at the 105th Council Meeting, in the Southerly absence of Mr. Gilmore.

PARDONABLE pride takes possession of us this month when we glance at "News from the Classes."

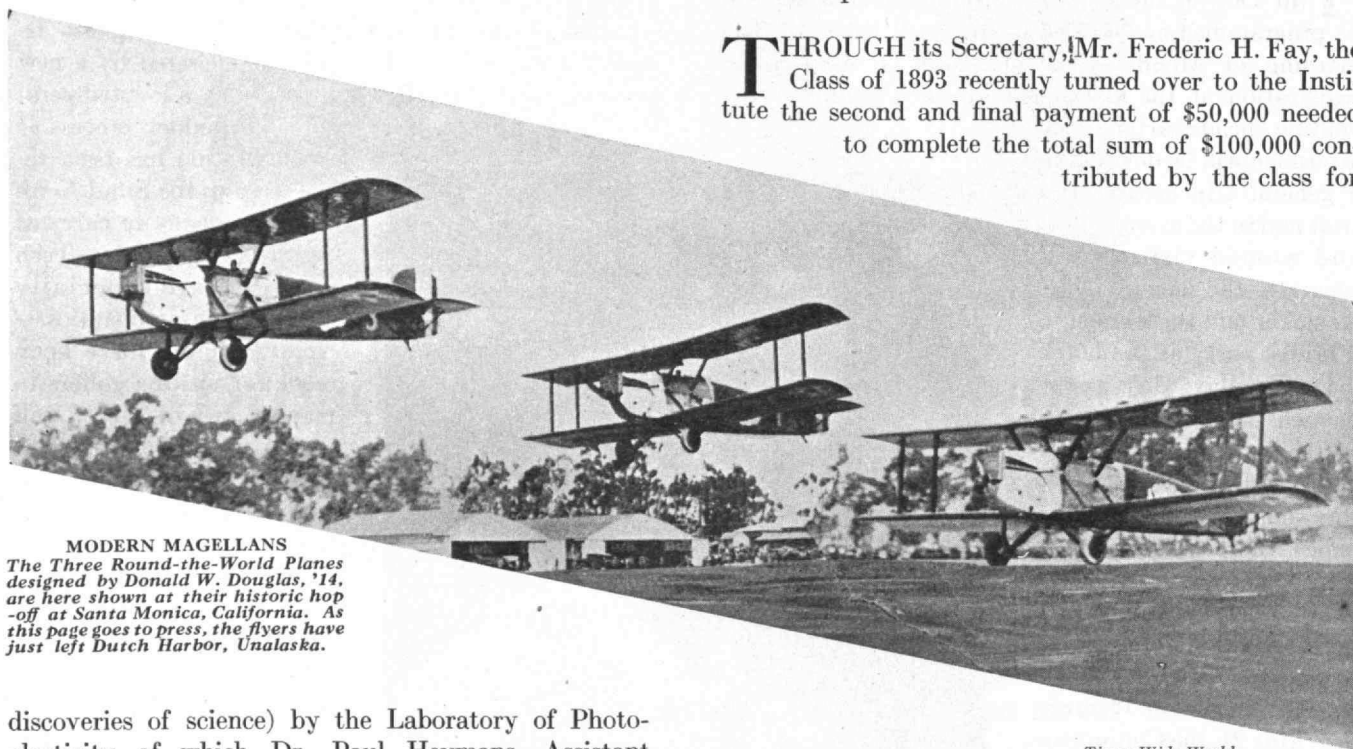
It is not pride in ourselves; it is pride in the efficient and hard-working corp of secretaries whose unrewarded activities make possible the publication of The Review in its present form. From the years 1882 to 1923 every secretary whose notes were scheduled to appear

in this issue has responded to the call. There is not one absence, not one perfunctory line of explanation that no notes had been received. As a result, the section contains, this month, approximately 35,000 words in the narrative account of the activities of John Doe, Technology graduate. This is something to be proud of. We salute our correspondents.

ANNOUNCEMENT from the Department of Physics states that Technology will be represented at the dedication, on April 28, of the new building erected in Washington for the National Academy of Sciences and the National Research Council. The dedication will take place at the annual meeting of the National Academy of Sciences and the Institute will be represented in the series of exhibits (planned to illustrate striking natural phenomenon and the recent

ANEW scholarship fund has been established at the Institute by Mrs. Caroline A. Verges of Boston in memory of her stepson, Luis Francisco Verges, who graduated from the Civil Engineering Department with the Class of '91. Mr. Verges died on December 10, 1910. The fund is to be known as the Luis Francisco Verges Fund and consists of \$10,000, the income of which is to be awarded annually to a meritorious student either a graduate doing research work in the field of the sugar industry or if there be no such candidate, one or more undergraduate students in the Department of Civil Engineering. The award is to be made by Mr. E. L. Verges and Leonard Metcalf, '92, with the approval of the Scholarship Committee of the Institute. In default of any recommendation by these gentlemen, the award will be made by the Scholarship Committee.

THROUGH its Secretary, Mr. Frederic H. Fay, the Class of 1893 recently turned over to the Institute the second and final payment of \$50,000 needed to complete the total sum of \$100,000 contributed by the class for



MODERN MAGELLANS
The Three Round-the-World Planes designed by Donald W. Douglas, '14, are here shown at their historic hop-off at Santa Monica, California. As this page goes to press, the flyers have just left Dutch Harbor, Unalaska.

discoveries of science) by the Laboratory of Photoelasticity of which Dr. Paul Heymans, Assistant Professor of Theoretical Physics, is in charge. The exhibits which will be established in the central rotunda under the great decorated dome and in the adjoining rooms will be exhibited among other things, the work of Dr. E. L. Nichols, former President of the Institute.

ON April 24, Professor P. Ehrenfest, of the University of Leyden, lectured at the Institute. Professor Ehrenfest is one of the foremost living physicists whose contributions in the field of constitution of matter have been considered of paramount importance.

The lecturer visited the laboratories of the Department of Physics in the morning. He was the guest of the President and the Department of Physics for luncheon, and was introduced at his lecture by President Stratton.

the construction of the new dormitory which is to bear its name. Officially at this same time the class recommended to the Executive Committee of the Corporation that the dormitory be known as the "Class of 1893." It is expected that this name will be cut in limestone over the two entrances.

Finishing touches are still necessary to entire completion of construction, but no more than a few of these. The buildings should be ready for occupancy within thirty days.

MAJOR Albert S. Smith, Superintendent of Buildings and Power once again proved himself in the forefront of smoke-eaters when the factory of the Hood Ice Cream Company, situated not more than a few hundred feet from the Institute's power house, caught fire about 10:00 o'clock on the night of April 4.

Times Wide World

The fire proved most spectacular and resulted in the sounding of a general Cambridge alarm. An emergency call brought Major Smith to the Institute's grounds about 10:45 and soon thereafter the Institute aided the Cambridge Fire Department by setting in operation its largest centrifugal pump, which picked up more tons of water from the Charles River Basin than it is convenient to count and showered them generously on the blazing ice-cream. By about 1:00 o'clock the danger was over and Major Smith was able to doff the rubber coat and steel helmet of the fire-fighter and retire again to his own hearthside. The Institute received the thanks of the City of Cambridge next day.

READERS of *The Review* are reminded that there is no June issue of the magazine. The eighth and last number of Volume XXVI will be dated July, 1924, and will be placed in the mails on June 23.

Editorial Comment

Educating the Engineer When an institution is sound of wind, and robust in appetite, when it works hard by day, and at night sleeps soundly, its thoughts do not incline to turn upon itself. It is just a trifle too stolid for introspection.

Because it is our belief that Technology inclines slightly to the unimaginativeness of health, and because it is also our belief that a certain capacity for self-criticism is an excellent thing, we particularly welcome to *The Review's* pages the article by William E. Wickenden, titled "Live Issues in Engineering Education," which elsewhere appears in this issue. There is in it no note of criticism for Technology, nor, indeed, for any institution, but there courses throughout it a certain challenging spirit which should be rousing to anyone engaged in the difficult task of teaching the engineering idea how to shoot. Mr. Wickenden appears in the happy guise of the "quizzical, physical prof."

A technical school, like a medical school, finds itself forced to share most of its teachers with the extra-academic world. Freshness of view, breadth of knowledge and fertility of concept do not come to the teacher of engineering who sits by the fire and spins. He must venture to design a turbine or two on his own account, discover a by-path in a process of industrial chemistry, or devise a new radio hook-up before he can tell his classes, with much authority, how these things should be done. For reasons not always unselfish, he has not been slow to accept this responsibility.

Disadvantages inevitably follow the advantages of this arrangement. Foremost among them is the natural tendency to distribute efforts in direct ratio to financial gains. The professor finds that his *alter ego*, the consultant, is the financial mainstay of the family, whereupon the professor becomes slightly more

perfunctory in his duties to the school. Not much; nothing immediately noticeable. . . . But the trouble is that the first things to be dismissed from the average professor's mind are those large, bulky questions which concern themselves with the very basis of technical education. No formula serves for them; a clever trick will not solve them; they yield themselves only (if at all) to that unhurried speculation for which he has, no longer, time. They take up too much room in a mind in which space is at a premium.

Therein, perhaps, lies the reason why Technology is, at the present time, insufficiently concerned with the issues of engineering education. Industrial contacts bring home more and more to the professor the needs of industry which should be filled by engineering graduates, and the demands which industry will make upon them; but these same contacts, by their very profusion, distract the professor from the problems of how his individual subject can most effectively be taught and how it can best be fitted into the educational scheme of things. Grasping the need is but half the professors' responsibility; the other half is the devising of a workmanlike method by which the student shall be shaped to fit the need. At Technology we forget the second specification too often. There is too little inspiration, too little ingenuity, even, in our teaching methods. We place our reliance too much upon laboratories which, however excellent, are only accessories to teaching.

And what about the whole bewildering problem of the future educational path that Technology is to take? It would be well to think of that now and then. Some of us do; others of us, we venture, realize not at all the turmoil in the present day educational world of ideas. Are we attempting the impossible in our effort to make a graduate engineer of a high school senior in four years' time? Should we cease the attempt and lengthen the curriculum to five years, or six? Should we close our doors to any but the holders of a bachelor's degree in a college of arts and sciences? Should we establish a graduate school separate in function and administration from the rest of the Institute? Should we acknowledge the dizzy mounting complexity of engineering activity by increasing the specialization of our Courses of Study, or should we incline to let the simpler problems of the material universe take care of themselves and increase our efforts to solidify the young engineer's ability to deal with the stubborn human soul of the world—an ability which with deplorable regularity we discover he does not possess?

There can be no immediate answer to these problems, so simple of statement, so complex of solution. Yet most certainly it is not farsighted to wait until events force us into a dilemma from which there is no satisfactory escape. Mr. Wickenden's article will prove of the greatest value if it will but cause a few of us to pull ourselves up and take thought, for a moment, of the future for the education in which we deal.

Live Issues in Engineering Education

A preliminary statement of some of the major problems of technical instruction

It would be difficult to discover any field of human effort in which enthusiasm and dissatisfaction are as strangely mingled as in educational life in America. With all our vast educational machinery, our rapidly mounting financial outlay and the unparalleled enrollment in schools of every grade, no one feels confident that educational results are keeping pace with the advance of knowledge and the moral stresses of an increasingly complex life. Progress is hard to measure and bids fair to remain so until we can evolve a more trustworthy scale and instrument by which to compare educational results with the potentialities of human beings.

Educational discontent among engineers gains force from their critical and quantitative habits of thinking. Whenever interest begins to lag in a gathering of engineers, a sure means of reviving it is to start a discussion of engineering education. This attitude of friendly criticism has helped to save engineering educators from complacency and has stimulated an unusual degree of initiative in the study of their distinctive problems. Over thirty years ago they formed the Society for the Promotion of Engineering Education, the pioneer organization concerned with a particular field of higher education. In later years when the great educational foundations undertook the critical scrutiny of other fields of professional education, the engineering societies got together voluntarily and undertook a similar study of engineering education.

Finding this task to be beyond their financial resources, this group of societies suggested to the Carnegie Foundation for the Advancement of Teaching that it take over the problem. After due examination of the project, the Foundation generously acceded to the request and finally selected Dr. Charles R. Mann to make an extended investigation and report.

Dr. Mann's report uncovered some positive defects and suggested many possibilities of improvement in engineering education. The general structure was found to be sound and free from radical faults which might call for sweeping demolition and rebuilding, such as had been shown to exist in medical education. The report made its appearance at a time of extreme unsettlement, due to the concentration of all national resources on war effort. Colleges were converted into special mobilization centers, entrance requirements were relaxed, educational aims went into the background and students lived under military discipline of a distracting type. Teaching forces were decimated by withdrawals and struggled under heavy overloads.

The return of peace brought a tidal wave of students, many of them poorly prepared, and the deadly reaction from overstrained morale. Costs went up amazingly and hampered the rehabilitation of the teaching forces. In these troubled times, old routines and traditions were broken up and a chance was gained to try out some of the plans urged by Dr. Mann, but in the main, practices settled back into the pre-war forms. Progress was made in details, but the broader problem remained as before, plus all the added complications arising from the war. A broad movement forward, however, had to wait for the arrival of "normalcy," which refused to be hurried.

Two years ago the Society for the Promotion of Engineering Education, finding a strong sentiment favorable to further investigation and a possible ad-

By WILLIAM E. WICKENDEN
*Director of Investigations, Society for
the Promotion of Engineering Education*

vance movement, again took the initiative toward such action. A careful study of the situation by this Society led to the conclusion that the most promising plan was one involving a cooperative investigation by the colleges themselves; to be closely coordinated with related inquiries fostered by the industries, the professional societies, educational organizations and public bureaus and boards of education. For the guidance of this program, the Society created a semi-permanent Board of Investigation and Coordination, which was directed to seek financial support from outside the Society and to appoint a Director and staff to give their entire effort to the project, as soon as resources were available.

There was no precedent for an educational survey on such broadly cooperative lines. In earlier projects the responsibility had been placed on selected individuals responsible to some one of the educational foundations. The request that funds be provided for a cooperative study of engineering education, to be carried out in large measure by the colleges themselves, was closely studied by the great foundations. The acceptance of the plan proposed by the Carnegie Corporation, which has generously provided financial support for an initial period of three years, is a marked tribute to the record of engineers and engineering educators in educational pioneering. An important part in these negotiations was taken by Professor D. C. Jackson, of Technology, who is a member of the above-named Board.

The plan of procedure contemplates the establishment of local committees of survey and investigation in a representative group of the engineering colleges, each of which will be guided by local interest and local resources in its inquiries, but which will contribute to the common pool, evidence which lies within the scope of a comprehensive outline. The Director under the guidance of the Board of Investigation and Coordination is to develop this outline, make suggestions to local committees, coordinate their findings and correlate them with the investigations of outside bodies, and carry on related studies in educational practice in other fields and in the more advanced nations abroad.

The question is often raised as to how far this movement may be expected to go in the direction of standardization. The answer depends entirely on the logic of the evidence to be collected. It is a safe principle of action to recognize that engineering colleges are wholly autonomous and that each must plan and carry out its own program of development. No one dreams of setting up a bureaucracy to evolve and promote a standardized program. In other fields of education the pressure toward standardization appears to come from the professional societies rather than the schools. It is recognized, however, that an organized and cooperative procedure may assemble and make available to the colleges a far more comprehensive body of evidence on their problems than any one institution could provide for itself. Coordinated effort with agencies outside the schools should yield a far more authoritative consensus of judgment from professional and industrial groups and a nearer approach to an adequate survey of occupational demands than has yet been undertaken. Present indications point to an increasing differentiation of function and method among engineering colleges rather than closer standardization to type.