ON OTHER QUADRANGLES

AN M. I. T. FIELD DAY

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A CERTAIN day each fall is set aside in order that the freshmen at Massachusetts Institute of Technology may have an opportunity to settle their differences with the sophomores. Up to this time, each freshman has been obliged to wear on every occasion the official freshman tie (a neat little number in large cardinal and gray stripes), and his only hope of being able to discard it before the end of the semester is for his class to win a majority of points on field day.

Although no points are won or lost during this ceremony, nevertheless, upon his arrival at the field the poor freshman is introduced to the seriousness of his opponents' antagonism by a barrage of slightly aged eggs which the sophomores, although a trifle erratic at first, begin to throw with increasingly deadly aim. At this point, the freshman beats a hasty retreat!

Now usually, the sophomores manage to get a monopoly on all such eggs in the City of Boston, so the freshmen have to choose between buying fresh eggs (a rather expensive procedure) or obtaining other suitable ammunition. As a freshman, I, along with my cohorts, was faced with this problem, and our solution was to make a hurried trip to Faneuil Hall (the same Faneuil Hall of history—now a large wholesale and retail meat and produce market) and acquire some ten or twelve bushels of over-ripe vegetables. After seeing this safely in the hands of our brothers-in-battle, we investigated the wharves and fish pier and returned well laden with fish bait and other likely-looking missiles. As a matter of fact, although my memory of the rest of that fight is somewhat hazy, I seem to remember wielding a two-foot codfish with remarkable vigor and malicious intent!

When the tumult dies down somewhat, each freshman puts on a white glove, and each sophomore a red one. A battle royal ensues—nothing barred—the winners being that side having the most gloves in its possession when the gun fires. By this time, most contestants are in a rather sad state of "dishabille!"

The rest of the program is taken up with the more proasic touch football and track events, and is conducted with somewhat more decorum than the foregoing contest. The totalling up of the points each class has won ends what has been to every one concerned—a perfect day!

ILLINOIS

The University of Illinois Department of Mechanical Engineering will offer two new courses this year to Seniors in mechanical engineering and others who are qualified. They are classified as Petroleum Production Engineering.

These courses will begin with a brief survey of petroleum geology. Primarily, the course will deal with the engineering problems encountered in the petroleum and natural gas producing industries. This field has been employing a considerable number of engineers, and will probably need many more.

CORNELL

Financial assistance to fifteen high school students from various parts of the country, who desire to obtain an engineering education at Cornell University, has been made possible through the inauguration of John McMullen Regional Scholarships. The scholarship plan divides the country outside the limits of New York into fifteen regions. From each of these regions applications are received and finally one student is selected for the award of $200 each year for four years. But in order to be eligible throughout the four years, the student has to maintain the anticipated level of scholarship.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

The Research Laboratory of Inorganic Chemistry of the Massachusetts Institute of Technology is conducting several investigations. Professor R. C. Young is studying the chemistry of thorium with a view toward the preparation of lower valence compounds. Professor Blanchard is continuing his investigation of the carbonyls and nitrosocarbonyls of metals. The preparation of halogen substitution products of the boron hydrides is being worked out by Dr. E. Lee Gamble. He has constructed an elaborate apparatus for carrying out the fractionation of volatile compounds.

The basement of the Steam and Hydraulic Laboratory contains a new piece of experimental apparatus now in operation. Its purpose is the measurement of the discharge coefficients of metering nozzles which are so generally used in measuring fluid quantities in the industrial processes. The Mechanical Engineering Department is supervising the project under the direction of Professor Keenan.

The Department of Electrical Engineering, for the past three years, has been investigating the possibility of utilizing vacuum to insulate high-voltage power-generating and converting machines. This work is believed to be one of the most promising fields in electrical engineering. The generation and transmission of high-voltage direct-current power and the production of high-energy radiation may be results of this investigation.

HONORS GROUP IN ELECTRICAL ENGINEERING

The Electrical Engineering department has inaugurated a new intensive plan of study known as the Honors Group Work, for those students who have proved themselves scholastically. The faculty of the department picks the eligible students, and sends them a letter advising them that they have been selected as possible material.

Under this system there are three courses of study offered to the seniors: Electrical Machinery, conducted by Professor E. E. Dreese; Electric Utilities Engineering, conducted by Professor H. W. Bibber; and Electrical Engineering Transmission, conducted by Professor W. L. Everitt. The chosen students are exempted from regular class attendance. In place of this, they attend three seminars a week, one in each subject. In these seminars, the subject matter given in the regular classes is taken up in a more rapid and intense manner, with the student taking a more active part. The standard of this work is of such a high quality that many of the department instructors and graduate assistants attend the seminars.

These courses run throughout the entire school year. There are no mid-terms or final examinations given each quarter. At the end of the year, a comprehensive examination in two parts will be given. The written part will consist of a group of problems to be worked out and handed in. One week's time will be allotted for solving them. The student may refer to any text or reference book; the only restriction is that he shall not confer with others about the examination. The oral part will be conducted in much the same manner as the examinations now given in the graduate school.

The laboratory work in connection with these courses is left entirely to the student. As the work progresses, certain experiments suggest themselves. Then the student goes into the laboratory and performs these experiments and solves his problems by actual practice. This reverts to the original purpose of laboratory work—almost lost in modern education—to solve in actual practice the problems which present themselves in theoretical study.

This honors group system has many advantages, for it is an accepted fact that mass education is not of greatest benefit to the fast nor to the slow man. It is designed for the average student. The honors group enables the outstanding student to go faster and more deeply into the study. He is not held back by the class average, but progresses to the extent of his own abilities. On the other hand, the instructor in classes has more time for the slower student, and can give him more personal attention since the class is smaller. He may step the work down to a lower level. Thus it will be seen that this is an advance in the segregation of individuals into classes according to their natural abilities. The honor student has the additional advantage in that he gets training in the presentation of material. He develops a responsibility for his own performance. He must be self-disciplined in that he is not guided by a restraining hand, but must act at his own discretion.

The entire set up of this honor group closely resembles the system which has been in operation at Massachusetts Institute of Technology. Professor H. L. Hazen from M.I.T., who was here last year in exchange for Professor Byrne, assisted in the organization during the Spring Quarter of 1935. It was offered then for only the last quarter of the senior year. This year it was extended to the entire senior year, and plans are being made to include both junior and senior years next year. Out of a class of forty-five senior students, five are now in this honors group.

SPINNING CABLES

THE paramount undertaking in the field of engineering today is without question the San Francisco-Oakland Bay Bridge.

This bridge is of the suspension type using mammoth cables to support its decks. Contrary to popular fancy, the cables are not spun as in ordinary wire rope, but are laid. And, too, the two cables are not constructed at the same elevation. One of them is nine inches higher than the other to accommodate the extra load caused by interurbans running upon one side of the bridge. And finally, the cables are not laid in the position that they will eventually occupy when the bridge is finished. In some places they are 20 feet above and in others as much as 15 feet below their final positions.

To construct these cables, two catwalks for the men to work on are strung over the entire length of the bridge on either side. The spinning wheel frames or "gallows" are constructed every 230 feet along the one mile and one-eighth length of the catwalks. Between these gallows frames runs the haulage rope, which is an endless rope to haul the wheel back and forth along the entire length of the cable. The wheel is five feet in diameter and is grooved for two wires which are looped over it, making it possible to lay four wires at one time as the wheel travels outward.

The completed cable is composed of 17,464 wires of 0.195 inch diameter, grouped into 37 strands of 472 wires each. Each individual strand is so arranged that it may be tightened or loosened as the need may arise. Each group of 472 wires is banded together to form a strand by means of little metal bands placed every ten or twelve feet. The strands are squeezed together by a gigantic set of jaws that travel their entire length reducing the void space in the cable to eighteen per cent and leaves the diameter of the cable at twenty-eight and three-fourths inches. The cable is then coated with red lead pasted to prevent corrosion and wrapped with spiral wrapping to protect it from the atmospheric elements.

The individual wires that make up each cable have a total length of 17,704 miles, and have a total weight of 4,675 tons.