

THE TECH

VOL. XXXIII. NO. 108.

BOSTON, MASS., TUESDAY, DECEMBER 30, 1913.

PRICE TWO CENTS

AERODYNAMICS COURSE FOR THE INSTITUTE

Lieut. Hunsaker Gives Outlines For Proposed Course In New Science.

Before the Alumni Council, at its last meeting, Lieutenant Jerome C. Hunsaker, U. S. N., outlined some of the needs of education in aerodynamics with suggestions as to the courses that are to be offered in the study at the Institute. President MacLaurin's report of ten days ago to the Corporation announced the establishment of the courses, making Technology the first institution in the country to begin the work of making adequate provision for developing the science of aeronautics. Lieutenant Hunsaker, who received his M. S. from Tech in 1912, has been detailed by the Secretary of the Navy for duty at the Institute, and having spent the summer abroad presents now an outline of the plans. Incidental to this exposition were a brief history of the development of aerodynamics and a sketch of what is being done in Europe, educationally and experimentally in aeronautics.

Lieutenant Hunsaker dwelt on the fact that the real advances in the knowledge that must underlie flight have come from skilled engineers. The guiding of the machine is in a way like the work of a chauffeur—it requires skill, ability, and qualities of co-ordination; but the making of the machines must depend on the man technically trained. It lies with the technical schools, therefore, to be ready to prepare men for the specialty of aerodynamic work. It is only a question of time when aerial navigation will present its problems to the engineer, and the engineers must be ready.

The speaker was careful to indicate that at the present time the principal demand for engineers of the special kind is from governments. He sees no great demand for such men in work not fostered by such authorities, and sees no immediate future either for commercial use or for sport. But it is the fact that the governments of Great Britain, France, Germany, Russia, Austria, Italy, and Greece are all actively at work with the flying machine; he believes it to be the results of the solution of tactical problems and that all these powers are not

(Continued on page 4)

INTERCOLLEGIATE ORATORY

At a meeting held a few days ago in the offices of the Massachusetts Peace Society, representatives of M. I. T., Boston University, Tufts College and Clark College were present. The meeting was held with the object of determining the interest taken in the subject of Oratorical Contests in the Massachusetts colleges, and it was announced that, provided sufficient interest is shown, Dr. James L. Tryon proposes to offer prizes of \$100, \$75, and \$50 for a final contest between the colleges.

Twenty-five states are holding contests this year, as compared with sixteen states in 1912-13, and the Intercollegiate Peace Association is anxious to establish the contest in Massachusetts as a permanent thing.

SOPHOMORE BANQUET TO HAVE INNOVATIONS

Committee Plans Several New Features—Ticket Sale Limited.

The Sophomore banquet, which is to take place next Friday evening at 6.15, will, according to the committee, mark a new era in M. I. T. class dinners. Several important innovations are to be made, some of which have been made public. Others are still a secret. The presence of the Class Baby, Malcolm Kemp, the son of E. L. Kemp, 1916, is promised as one of the special features. Whether Malcolm will make a speech or not has not been announced.

The speakers are to be Mr. David Carb, Instructor in English, who is well known to Tech men for his entertaining and humorous talks and Assistant Professor W. E. Wickenden, of the Electrical Engineering Department. Other speakers will probably be chosen later.

Steward Colton promises a dinner which, though costing only fifty cents, will be quite different from the previous Union dinners. A new type of menu has been devised which will afford a variation from the usual Union fare.

Tickets may be obtained of the members of the Dinner Committee, the Class officers or in the Union. The sale closes on Thursday at 5 p. m. and positively no tickets may be obtained after that time.

TECH FIELD MAY BE SOLD

Brookline To Consider Purchase Tonight.

Tech Field, which has been the property of the Institute since 1902, will in all probability be taken over by the town of Brookline in the near future. Action is to be taken upon the matter at a special town meeting to be held tonight. For some time the Park Commissioners of Brookline have been endeavoring to secure an athletic field and playground for the town, and according to Mr. Desmond Fitzgerald, chairman of the Board, the Field is by far the most desirable of the available locations.

The Field contains 8.62 acres, and would be sufficiently large for a general playground and tennis courts, as well as the enclosed athletic field for admission games between schools. Its purchase would cost \$85,000.

With the removal of Tech athletic activities to the New Site in 1915, and the abandonment of Tech Field for Institute purposes, will close one of the important chapters in the athletic history of M. I. T. Its quarter-mile track has the reputation of being one of the fastest in New England, and here have been held the annual Intercollegiate Track and Field Meets of the New England Intercollegiate Athletic Association, as well as many dual and inter-class meets, and the annual Field Day.

Dr. G. A. May, physical director at the University of Michigan, has made the announcement that flat-footedness among college students is largely due to rubber shoes and the tango.

PROGRESS AT NEW TECHNOLOGY SITE

Five Concrete Towers In Place—Power Transforming Station Installed.

Four hundred men now employed at the New Technology Site are divided into small gangs, each of which is at work on one unit of the general construction. Progress in the fundamentals is rapid; the pile driving in the three hundred-foot Mechanical Engineering Building to the west of the grand court is half done, and six hundred piles are now in place.

The trenches for the east and west walls and central partition of this building are dug, and excavations for the basements have been carried towards the river, making the outline of the Architectural wing. This building is to surround one of the minor courts. At the eastern court a great steam shovel is loading carts as fast as they can be driven up. There is at this point, some interesting figuring for the ten teams that make the circuit from the shovel to the cars dump as regularly as if they were parts of a connected mechanism. The trenches for the foundations of the General Studies and Biology buildings are already outlined and work on them will immediately follow.

The first order of lumber, a million and a half feet, is in Boston and ready for delivery. This quantity is in itself enough to stock a good-sized lumber yard. Eight hundred thousand feet have already been used in the construction work.

Five of the seven concrete towers that will distribute mixed concrete to the points of construction are completed and together with their hoisting engines, pits, cars, and concrete mixers represent a very effective equipment. Two of these outfits have been tested and are ready for the actual work of delivering concrete. Their use will follow immediately on completion of the pile-driving upon which three engines are at work.

(Continued on page 3)

BASKETBALL GAME

Freshmen Play Sophomores At Gymnasium Tonight

At eight o'clock tonight the Sophs meet the Freshmen in basketball in the Tech Gymnasium. A hard game is expected by the Sophomores, a game worth seeing, and a special appeal is made to upper classmen to attend. The lineup is as follows:—

Tech 1916	Tech 1917
Merritt, lf	lf, Cowhins
Meyeroff and Ziner, rf	rf, Rausch
Devonson and DeMerritt, c	c, Gokcy
Wylde, lb	lb, O'Brien
Miller, rb	rb, Richardson

Joe Sheehan, former captain of the Harvard Varsity team, has been engaged to coach the entire series of Freshman and Sophomore games. The second Freshman team plays the East Boston Gymnasium team. The Tech lineup is the following, the East Boston lineup having not yet been announced. Pierce lf, Lewiton rf, Schoonmaker c, Rogers lb, Ferguson rb.

DARTMOUTH TEAM DEFEATS TECHNOLOGY

Final Score Same As In Harvard Game—Wannamaker Stars For Dartmouth.

Tech was slaughtered by the Dartmouth Hockey team last night at the Arena. When the last whistle blew Dartmouth had Tech 11 to 1. The victors had everything their own way, and Tech gave no evidence of fight except for a few minutes at the beginning of each half. The Hanover seven gave a fine exhibition of hockey with Wannamaker and Tuck as the individual stars.

The first half started off tame, and for the first five minutes there was no score. On a rush down and a pass by Tuck Murchie scored the first goal for Dartmouth. On team work Dartmouth ran the score up to four with Frost counting three times. Tech seemed unable to penetrate her opponent's defense, and her only chance to score was killed by Donahue. Dartmouth's team work and Wannamaker's playing were the features of this half.

Tech started the second half well by scoring its only goal. Winton pushed the puck in on a pass from MacLeod. But this was only a flash in the pan for the game was a runaway from that time. Dartmouth scored seven times, Tuck getting four of the goals. Both of Tech's goal tenders were off form and gave almost no opposition. The team itself played as well as might be expected. It has not the benefit of professional coaching as have its opponents. About five minutes before the end of the game MacLeod and Pendleton had a head-on collision and both were obliged to retire. On account of having no one to replace Pendleton, Dartmouth finished the game with six men.

The lineup was as follows:—

Dartmouth	Tech
Murchie, rw	rw, Fletcher
Frost, lw	lw, Sawyer
Tuck, c	c, Winton
Wannamaker, r	r, MacLeod (Capt.)
Johnson, cp	cp, Gould
Dellinger (Capt.), p	p, Cochran
Donahue, g	g, Chandler

First half: Goals—Murchie, Frost 3. Second half: Goals—Wannamaker (2).

Winton, Tuck 4, Bowler.

Substitutions: Storke for Sawyer, Lowengard for Chandler, Howland for Fletcher, Bowler for Frost, Pendleton for Murchie, Livermore for Johnson, Toye for Howland, Gray for Storke, Fletcher for MacLeod.

WEATHER

For Boston and vicinity: Today probably snow or rain; warmer; moderate variable winds.

CALENDAR

Tuesday, December 30, 1913.

4.00—Tech Show Preliminary Music Competition—Union.
8.00—Basketball, 1916 vs. 1917—Gym.

The University Echo from Chattanooga claims that trouble will result from the "promiscuous exhortation" about the halls of the college.

THE TECH

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TUESDAY, DECEMBER 30, 1913.

In Charge of This Issue

Editor—P. W. MacNeill '15.
Assistants—R. B. Stringfield '15;
J. G. Fairfield '16.

Basketball

Unusual interest will be felt this year in the basketball series between the Freshmen and Sophomores. Since basketball has ceased to be a Varsity sport, the class teams have been the only representatives of the Institute on the floor. Both teams have done creditable work so far this season, and should furnish an interesting contest. The businesslike manner in which both classes have financed and supported their teams has attracted much favorable comment.

We understand that there is some desire on the part of the basketball managements to restore the sport to the position it held two years ago. It has always been the custom at Tech to drop a sport as soon as the support given it falls so far that the school is paying money for the personal convenience of the few men who are especially interested in it. This was done with fencing when the team was in excellent form and doing credit to Tech; it was also done last year with basketball when both the team and its support were poor.

The attempt to restore Varsity basketball will succeed if the men behind it show that we can have a real resurrection, and that the new team will not struggle along for a few years to a second demise. The nature of athletics at Tech is such as to render participation in a large variety of sports desirable, and any effort to do this will meet with the approval of the student body.

ENGINEERING AND SCIENTIFIC NOTES

The price of platinum is a topic of considerable interest to many of us and until recently the world's supply, 95 per cent of which comes from Russia, bids fair soon to be exhausted. A short time ago some chemists who were making analyses of metallurgical borings in Wenden, Westphalia, Germany, accidentally discovered that platinum was present in an amount varying from 0.9 to 1.9 troy ounces per cubic yard, an exceptionally rich deposit, which promises to be quite extensive. A new procedure of analysis especially designed to detect platinum has been worked out and will soon be used for testing the ores from various parts of the earth where platinum is known to be present in small quantities, for deposits far poorer than those at Wenden would prove lucrative for developing, owing to the ever increasing demand for this metal. The annual supply now is about 13,000 pounds, valued at \$488 per pound. One third of this is used in dentistry and one third in electrotechnical work.

If you wish to help reduce the cost of living you should insist on being served to "electrified chicken" at your favorite restaurant. The following account shows a new and promising application of electricity to the farm.

"Chickens weighing a few ounces only and about twelve weeks old fetched a remunerative price in the market. Such chickens could be grown under electric stimulus at about double the rate, thus doubling the output of a chicken farm, and halving the food bill per chicken.

"On Mr. Randolph Meech's poultry farm at Poole an intensive chicken-house, consisting of six flats, each large enough to accommodate seventy-five chickens, was electrified. The current was applied for ten minutes every hour during the day. Six chickens only out of a total of 400 died, showing a mortality of only 1.5 per cent—in the ordinary way the mortality was often as much as 50 per cent in the summer months—and the chickens were ready for market despatch in five weeks, as against three months.

"The vitality of the treated chickens was remarkable. Instead of running away when one put a finger in the netting, they would rush up and peck vigorously. During the treatment they were so highly charged with electricity that quite a distinct shock was felt in the fingers on touching them, although the birds themselves were supremely unconscious of anything. The sparks which flew from their beaks on their pecking one's finger did not appear to be felt in the least by them."

CHEMICAL CLUB TALK

A regular meeting of the Chemical Society will be held in the Union Friday evening, January 2, at 7.30. Dr. Moore, Professor of Organic Chemistry, will give an illustrated talk on "A Summer Cruise to Iceland and Spitzbergen." Dr. Moore is well known for his interesting lectures and the Chemicals believe that his talk will be well worth hearing and have invited all interested.

A recent issue of the Brown Herald gives the term expenses of one Brown student in 1835 as \$46.53. The three cents were paid the faculty for an unexcused absence.

Purdue has revised her course in military training in order to stimulate interest on the subject.

TECH SHOW

Competition Closes Today—Call For Publicity Men.

The preliminary music competition for the Tech Show will be held in the Union at four o'clock this afternoon. The music is called in now to see what the men have been doing, and to help them to work along the right lines. The final competition will be closed next week, so that all men should be at this meeting to have their work criticized. Frank Surls is to be in charge of the orchestra. On account of the large number of men who are writing music this year, very good music is expected for this year's Show.

Thursday afternoon at 1.30 and 4.00 there will be a call for Freshman assistants in the Publicity or Advertising Department of Tech Show. This department consists of three members, viz., Publicity Manager, a Junior; First Assistant, a Sophomore; and Second Assistant, a Freshman. From among the men who come out Thursday one will be chosen as Freshman Assistant in about two weeks.

The only competition in the department is in selecting the Second Assistant. After this choice has been made the man chosen becomes First Assistant and then Manager of the department in his Junior year. Together with the Treasurer, Business Manager and Stage Manager of the Show he is eligible for the position of Manager at the end of this last year, the best man of the four being chosen.



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PRELIMINARY RELAY TRIALS SATURDAY

Tech Men Entered In Junior Championships At New York.

The preliminary trials for the relay teams will be held on this Saturday and on Wednesday of next week Saturday all men will take the 390 yard trials on the Oval if weather conditions permit, otherwise in the Gyn. The 780 trials will be run off on the following Wednesday.

Conditions look fairly good for the relay teams, the management says. There are 88 men out for track, but a large percentage are Freshmen who do not stand much show in the trials. However, most of last year's teams are back in school, although some of the members have not been out much this year. Coach Kanaly thinks that these men if they came out would stand a very good chance of making the team and would probably raise the standard quite appreciably.

In the Junior Championships that are to be held in New York this week Saturday there are three Tech men entered. Captain Guething is entered in the 600 yard event, and as he has been showing up fairly well of late should get a place. Wilson and Bolton are the other men entered, both being in the 60 yard and 220 yard events. Wilson was able to get into the finals in the 100 yard dash in the I. C. A. A. A. A. two years ago. He is a fast man, and should show up well.

The rifle championship in the eastern league has been awarded to the Massachusetts Aggies. The Harvard team was disqualified.

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NEW TECHNOLOGY

(Continued from page 1)

With the new locality which has been found for gravel for concrete, the materials are now all at hand. The five spur track systems that have been built for distribution will soon be connected with the B. & A. system.

During the last two weeks the fire-protection service has been extended. The main line has been brought the length of the lot and sixteen fire-plugs, each with hundred feet of hose, are now ready for use. In addition to this equipment, each trestle is fitted with water barrels for emergency use.

The first five thousand tons of reinforcing steel is on hand, and considerable work has been done with the bending machine. A small engine has been installed, the sole work of which will be to draw the steel from its bin a length at a time to the bender.

Those who have occasion to pass the Site will notice in different places cubical piles of iron. These mark the testings of different kinds of concrete piles. The general nature of the soil on the river bank and throughout the Back Bay is such that the larger structures have settled more or less. At Technology it is the intention to avoid this as much as possible. Accordingly the experiments of Professor Crosby were undertaken eighteen months ago, which determined the nature of the underlying strata and now to give a measure of the sustaining strength of various patterns of concrete piles, sample piles have been placed and are being tested by means of loads up to 40 or 50 tons per pile.

Buildings are multiplying in different parts of the grounds so that there is quite a village. Each unit has its headquarters, hoist-house storage and other houses, while others are for the uses of the whole. The little house at the corner of Massachusetts avenue and Vassar street has excited much curiosity. It is a transforming station where the current of the Cambridge Electric Light Co. at 2300 volts is stepped down so as to be serviceable for lighting and power. There are a good many uses made of the current, for half a dozen pumps are at work draining the trenches, and other motors are used in the various shops.

FACULTY NOTICE

The Political Economy Lectures will not be given between December 29 and January 3, inclusive.

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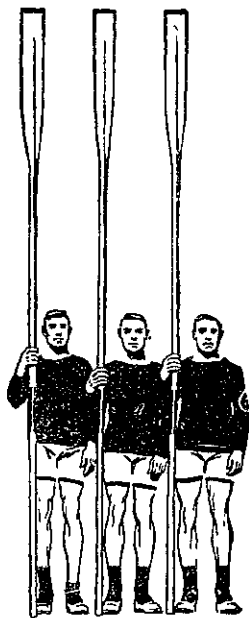
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AERODYNAMICS

(Continued from page 1)
united in making a mistake. For that reason therefore the United States must adopt similar methods. It is not impossible that the demand for skilled specialists may be sudden, and it is exceedingly desirable that a body of men be already educated in the special lines that will be needed in the development of air-craft. Mr. Hunsaker believes it would be unfair to students to make of them nothing but engineers of aerodynamics, for it may be some time before such specialists are in demand, but at the same time he realizes that with the engineering training already established at Technology it is practicable and not difficult to institute courses which will replace certain present options by other ones which bear directly on this specialty.

"Such a course," he said, "would presume good preparation and could be given in one year's time. There should be instruction in advanced mathematics, rigid dynamics, fluid dynamics, experimental aerodynamics, explosion motors, meteorology, propeller, aeroplane and dirigible design, patent law, physics of gases, chemistry of hydrogen and general mathematics of flight." Much of the study would be of the work of European investigators and the application of such information to design. In the present condition of knowledge the available information is incomplete and often contradictory. It will, therefore, be necessary to undertake certain research experimental work. A wind tunnel of the type used in England will therefore be necessary, and is to be installed without waiting for Technology to get to its new home.

An aerodynamic laboratory will be desirable and necessary both for research and industrial testing. The designs made by a student can be tested by himself in the wind tunnel and proved good or bad. Further than this, if a systematic series of models should be designed and tested, some contribution to knowledge must inevitably follow. Motor testing should also be provided for the engines of air-craft in a way especially fitted for their peculiarities. Aeronautics is a field in which there is much to learn and it is practically impossible for Technology with her high records in engineering efficiency, to keep out of it.

For the present it is proposed to give courses in general aeronautics and aeroplane design to the officers of the U. S. Navy who are under instruction in the department of Naval Architecture, and to the senior class in Mechanical Engineering as an option. By next year it is hoped there will be sufficient interest to warrant a complete course in aeronautical engineering. A small special laboratory will be equipped in the near future. Much of the interest in Lieutenant Hunsaker's report lay in the review of the situation in Europe. He notes that the enormous public interest that till recently filled all the aerodomes whenever there was a flight has in a measure passed, and the people are beginning to say, "Of what use is it?" "Commercially," said the speaker, "on account of unreliability, small carrying capacity and expense, the aeroplane has found no real field. From the point of view of the sportsman, the airship is too costly and the aeroplane too dangerous to have a large following. The flying-boat may have a chance at popularity." The naval and military interest in air-craft contrasts strongly with the skepticism of the great mass of the people. It is true that the development in the building of them has been almost wholly due to the moral and financial encouragement of the great military

powers. Although America gave the world the first practical aeroplane, it is most probable that the lack of development on this side of the water is due to the fact that the possible enemies of the country lie beyond the probable radius of aircraft. Nevertheless, with vulnerable outposts at Panama and the Philippines and the nearer at hand problems in Mexico, there is an awakening interest in military and naval circles.

The aeroplane, according to European opinions, is suited for scouting operations in which the flight and return may be made during daylight, which means within a radius of 150 miles. It is necessary for the machine to return to report under present conditions of wireless telegraphy. The air-ship fills in the gaps of night scouting and long distance work. It can report by wireless its actions maybe up to four hundred miles, and at the Panama Canal, for example, it could cover the approaches 85 days out of one hundred.

Supplying aircraft is a recognized industry in France and Germany, and the former is to have one thousand aeroplanes in service as soon as possible and fifteen hundred aviators. The Farman factory has an output of one aeroplane a day. In England the Royal manufactory employs 750 men, while Germany is very active. These facts explain the forwardness of the industry abroad.

One result has been the improvement of methods and gradual growth of knowledge. Flying is safer than it was a year ago, and infinitely safer than four years ago. Structural failures, formerly the rule, are now the exceptions, and in other ways the results of the research laboratory are patent.

In England research is carried on most actively at the National Physical Laboratory on models and at the Royal Air-Craft Factory on full-sized machines. Practically unlimited funds are available. At Northampton Institute in London, evening courses are given in aeronautical engineering, and the school has a wind tunnel. In France the foremost civil engineer, M. Gustav Eiffel, has retired from his profession and is devoting the remainder of his life to aeronautical research. His private laboratory has the most powerful wind tunnel in the world, with a six-foot side and a wind current of eighty miles an hour. The army maintains an experimental laboratory at Chalons-Meudon, and the University of Paris has an extensive laboratory at St. Cyr, where there is a tunnel and whirling table for models and a dynamometer car for full-sized aeroplanes. The Ecole Supérieure Aeronautique has been founded to educate engineers in the work, and here courses are given by the most eminent specialists in France. Forty men were graduated last year.

In Germany the University of Göttingen has an aeronautical laboratory to which only candidates for the doctor's degree are admitted as research assistants. The Technical High School at Berlin and also that at Aachen have courses in aeronautics, and have laboratories. Further, the German Society of Engineers maintains a very complete laboratory at Aldershof, near Berlin.

From all this it is evident that in the United States it is only a question of a little time when aerial navigation will present problems to the engineer. It is the function of our foremost engineering school to supply the technically trained men when they are required. The well-established mechanical and naval engineers may be called upon in the near future to handle aeronautical problems. It is in preparation for just such a call that the Massachusetts Institute of Technology has announced its courses in aerodynamics.

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