

# THE TECH

VOL. XXXIV. NO. 5.

BOSTON, MASS., MONDAY, APRIL 6, 1914.

PRICE TWO CENTS

## FRESHMAN TEAM WINS CROSS COUNTRY RACE

F. L. Cook Finishes First in Good Time With H. S. Benson Second.

Last Saturday the Cross Country men held a double race over the Tech course in West Roxbury. This was the date scheduled for the Freshman-Sophomore Race, and the Spring Run, postponed from the previous Saturday, was decided at the same time. Men from all classes were allowed to participate but two separate systems of scoring were kept.

The Captains of the Spring Run were chosen by lot on the outbound train and the choices fell on J. J. Donnelly '16 for the "Reds" and D. H. Parker '17 for the "Grays." These men chose the teams that at the start looked well balanced, but the many surprises of the day resulted in an overwhelming victory for the "Grays." The Freshman and Sophomore teams seemed also to be about on a par, and the surprises in this case balanced up so that the results were very close with the Freshmen in the lead.

The course was very muddy and there were several places where the men went out of their way to escape the exceptionally bad spots. At the start F. L. Cook '15 took the lead and he was never headed, crossing the line in the fast time of 24:26:3-5. Close behind him came H. S. Benson '16, who was the first man to score in the Freshman-Sophomore race. Although he stuck close to Cook for a great part of the race he was about 150 yards behind at the finish. In third place came the greatest surprise of the day in A. C. Litchfield '17. Starting in the centre of the bunch of twenty-six runners Litchfield slowly worked himself up, passing into the third position at about

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## ELECTRICAL DINNER

Professor Jackson will give his annual dinner to the Electrical Engineering Society the latter part of this month and at this dinner the results of this year's elections will be announced. Nominations for the president, vice-president, secretary, and treasurer must be in not later than Saturday, April 11th, and each must be signed by five paid up members. Elections will take place during the week of April 20. Nominations may be left with Miss Payson in 15 Lowell.

## SENIOR PORTFOLIO

The sign-up books for the Senior Portfolio are to be handed in today. This is the last chance for sign-ups. Any proofs which have not been returned should be handed in today.

## CLASSES CALLED OFF FOR MASS MEETING THURSDAY

President Maclaurin Consents to Meeting at 4.30—Suspending Exercises at That Time

The success of the monstrous mass meeting planned for Thursday afternoon has been assured. The President, realizing the importance of re-awakening the spirit of the undergraduates as well as that of the alumni, and appreciating the effect that a successful mass meeting of this sort will have, has consented to call off classes at four-thirty on Thursday, thus insuring the attendance of the entire undergraduate body. The fact that President Maclaurin takes this action should in itself be sufficient evidence to convince the doubting ones of the paramount importance of the event, for any Tech man, be he even the greenest of freshmen has discovered for himself that vacations, long or short, are not one of Tech's specialties.

The plans for the meeting have been carefully worked out; every effort has been made to make it short, snappy,

and enthusiastic. To this and a cornet, violin, drum, and piano accompaniment for the singing has been secured, the best song leader at the Institute will be on hand to lead the singing, and the heads of four of the most important activities have promised to speak. The Glee Club will be there to a man; at their last meeting they voted to have a roll call and to fine those members absent, for they believe the affair to be of vital interest to the welfare of the undergraduates.

The details of the meeting include the drill and singing of the Tech songs, in order that the singing between the acts at the Tech Show may be a credit to the school, rather than the farce of previous years. The spirit and snap with which the seniors took hold of the songs at their smok-

(Continued on Page Two)

## CREW GOES ON RIVER FIRST TIME TODAY

New Shells Ready and All Men Can Be Accommodated—Large Freshman Squad.

Crew practice will start this afternoon, when the squad will go on the river from the B. A. A. boat house. Men who do not know the way to the boat house will be met in front of Walker at 4.15 and shown the way by a member of the boat club.

The two new four oars were delivered Saturday and are ready to be put into the water today. The eight oar is also ready for use and several B. A. A. shells are at the club's disposal, so that all men coming out will have a chance to go on the water today. Lockers have been secured so that the men can leave their rowing clothes at the B. A. A. house.

Because of the success of the meeting on Wednesday a large squad is expected. Special impetus to the sport is predicted from the new material in the Freshman class, many of the recruits from this class having had experience on school and college eights. The boat club officers are promising the Freshmen a race with a school crew if they show the proper speed.

## TECHNIQUE BAND

The Technique Band will rehearse this afternoon in the Technique office at 5 o'clock.

## FRESHMAN WRESTLERS WIN EVERY MATCH

Sophomore Lose by Score of 20 to 0—Six Men Get Class Numerals.

As a result of the Freshman-Sophomore wrestling meet last Saturday night, the Class of 1917 has proved its superiority at mat work, and six of its men have won their class numerals. The matches on the whole were very much closer than the result would indicate, and if the Sophomores had not had a hit of hard luck, they would have had a larger score than zero. The Freshman team has nothing but praise for the manner in which the Sophomores, out of training as they were, came forward and did their best to win.

The most spectacular bout was between Blakney '16, and Dowell '17. Dowell was outweighed nearly ten pounds, but threw himself into the

(Continued on Page Four)

## JUNIOR PROM

Subscriptions Due Today—Programs Ready Wednesday.

The Junior Prom Committee wishes to urge all men to pay the remainder due on subscriptions promptly. Members of the Committee will be in the Union today and tomorrow from one until two. All subscriptions will be overdue after tomorrow. Invitations will be given out when the final deposit is paid.

Arrangements have been made with the Taxi Service Company whereby men coming to the Prom may obtain a discount of ten percent. The men will pay the regular meter rate and receive a check which will be redeemed by the Company for the amount of the discount.

Programs will be ready Wednesday and may be obtained at the Union at four o'clock either Wednesday or Thursday. The envelope containing the programs will also contain the direction slips and tickets. The tickets are to be signed and are not transferable.

## CALENDAR

Monday, April 6, 1914.

- 1.00—Show Rehearsal. Union.
- 4.15—First Crew Practice. B. A. A. boathouse. Leave Walker.
- 4.15—1917 Baseball Practice. Field.
- 5.00—Glee Club Rehearsal. Jefferson Hall, Trinity Court Chambers.
- 5.00—Technique Band Rehearsal. Technique Office.

Tuesday, April 7, 1914.

- 1-2—Last chance for Junior Prom Pay-ups. Union.
- 4.00—Show Rehearsal. Union.
- 4.00—1915 vs. 1916 Baseball. Field.

# THE TECH

Entered as second-class matter, Sept. 15, 1911, at the postoffice at Boston, Mass., under the act of Congress of March 3, 1879.

Published daily, except Sunday, during the college year by students of the Massachusetts Institute of Technology.

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Subscriptions, \$2.00 per year, in advance. Single copies, 2 cents.  
Subscriptions within the Boston Postal District, and outside of the United States, must be accompanied by postage at the rate of one cent a copy.

MONDAY, APRIL 6, 1914.

## IN CHARGE OF THIS ISSUE.

Editor: J. M. DeBell, '16.  
Associate: M. B. Lewis, '14.

We are in receipt of a letter on the subject of the Sophomore Physics lectures which even the author's dire condemnation of us as "narrow" cannot induce us to publish, first, because it is unsigned, and second, because some of the ideas expressed are disrespectful to men whose opinions on the subject are worth far more than those of the communicant. We will, however, present and discuss some of his arguments here.

He claims that the mirth evinced in the lectures shows a natural and desirable state of mind on the part of the young men present. This is of course true in the abstract; on the other hand there is a place for everything, and no matter how happy a man may feel, he should keep his sensations to himself if their expression will disturb the serious occupations of others.

His next claim is that all the "complicated questions" referred to by last Friday's communicant, are "simple if analyzed." If our friend is able to follow these analyses to the accompaniment of various and sundry disturbing noises, we congratulate him, but can at the same time assure him that most of his fellows are less fortunate.

The professor concerned would probably be willing to discuss privately with the communicant his ideas as to the proper methods and details of lecturing, but the subject certainly has no place in the public press.



A. C. Litchfield, '17, showed up exceptionally well in the race on Saturday. He should prove a valuable addition to the varsity team.

The Spring Run was a distinct success and will doubtless continue as a permanent feature of the Cross Country season. It is much more interesting to have every man score for then no one feels that his work does not count and that therefore he need not exert himself.

Cook's time was not a record but considering the condition of the ground he must be in good condition to travel at that speed. Benson is evidently over his foot trouble. He kept "Doc" hustling right from the start.

Congratulations to Litchfield, Harrington, Parker, DeMars and Allen. They all deserved their numerals.

H. P. Drew's record of 9 3-5 seconds for the 100 yards has been allowed by the Pacific Association of the A. A. U. This equals the world's record.

Best had troubles of his own even if he did not run. The combined work of starting the race and timing with an ordinary Ingersoll and a stop watch were bad enough, but the necessity of sitting on suitcases to hold them down when the wagon was jumping a foot or more in the air every few seconds, with nothing to hang on to except the aforementioned watches, was too much. Next time he runs! It's safer.

The University of California has decided to send her team to compete in the I. C. A. A. A. Champs at the Stadium.

Cornell has a promising half-miler in Irish, who was clocked for the distance in 1:59:35 on a cork track 16 laps to the mile.

In England they have a Cross Country run that would hardly appeal to our men. Instead of the somewhat scant clothing the British army runs a regular Cross Country race in which eight teams of 88 men are entered. They run in full service uniform, with rifles, kits, etc. The course is over all kinds of country and includes several fences, of the barbed wire variety, ten-foot walls, brooks and other friends of the Hill and Dale chaser.

Only eleven more days to the Spring Meet!

The final rating of the big "Nine" in the Western Conference Basketball league shows Wisconsin first, Chicago second, and Ohio State third. Indiana at the foot has not won a championship game in three years.

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## CROSS COUNTRY

(Continued from Page One)

the mile and a half mark. Not very far behind him was C. T. Guething '16, whose finish showed that he was not in good shape. A. R. Nye '15 was a few yards behind, with J. J. Donnelly about twice as far back. Four seconds later came W. Harrington '17, who has been running well throughout the present season. A hundred yards behind R. G. Brown '16 and M. G. Graff '16 came running close together. Brown won out by about twenty yards. About the same distance was left between these two men and the next group of three freshmen, D. R. Parker, P. A. DeMars and L. J. Allen. They all finished within a few seconds of each other. This completed the scoring for the Freshmen but H. P. Gray and E. J. Goldstein both had to score for the Sophomores, the former getting thirteenth in the run and the latter eighteenth.

There were many interesting skirmishes at the finish, among them one that ended in a dead heat between M. C. Brock and G. B. Pyle. Brock was on the point of giving up the race when he came onto the field but, urged on by the shouts of the cluster of spectators, he started after Pyle at a 440 clip which carried him past the other. Pyle, however, using his last reserve, pushed himself up to the line even with Brock. The last three to finish got lost on the way and this hurt their times considerably.

In making up the scoring the complete total of the thirteen men on each team must be taken into account for the Spring Run, but only the first six of each of the lower classes count in the Freshman-Sophomore Race. The score for the Run was 193 for the Grays and 155 for the Reds. The Freshmen won by a score of 42 to 38.

The order of finish and team scores follows:

(1) F. L. Cook '15, 24:26:3-5; (2) H. S. Benson '16, 24:48; (3) A. C. Litchfield '17, 25:45; (4) C. T. Guething '16, 25:27; (5) A. F. Nye '15, (6) J. J. Donnelly '17, (7) W. Harrington '17, (8) R. G. Brown '16, (9) M. G. Graff '16, (10) D. H. Parker '17, P. A. deMars '17, L. J. Allen '17, H. P. Gray '16, B. Dodge '17, C. S. Lee '14, A. S.

Miliken '14, T. Z. Haviland '17, E. J. Goldstein '16, K. Dean '16, J. Burford '16, J. H. Murdough '16, M. C. Brock '17, and O. B. Pyle '17, L. E. Armstrong '15, B. Stimets '16, R. D. Waterman '15.

1917—2.4.5.8.9.10—38.

1916—1.3.6.7.11.14—42.

"Reds" — 1.5.6.9.13.15.16.18.21.22½. 22½.24.25—198.

"Grays" — 2.3.4.7.8.10.11.12.14.17.19. 20.26—153.

## MASS MEETING THURSDAY

(Continued from Page One)

er has proved that it is only lack of practice that forces Tech men to hang their heads when they try to sing in public, and this mass meeting is expected to go a long way toward overcoming this defect.

Between the various songs the speakers will present their talks. "Buck" Dorrance, President of the Senior Class and Chairman of the Institute Committee, will report for that committee to the Undergraduate Association. "Erute" Crowell, Editor in Chief of Technique 1915, will explain a few of the features of this year's rush, "Spig" Guething, Captain of one of the most promising track teams of recent years, will give a brief account of this important activity, and Keith, General Manager of the Show, will have a chance to tell what the Show hopes to do. All of the speakers are limited to five minutes, and according to one or two of them, will take considerably less than that, so no one need feel that he is to be bored by long and uninteresting details.

According to present indications, the S. R. O. sign will be hung out about 4.35 Thursday in Huntington Hall, so if you are weak-kneed and must sit down, come early and bring all your neighbors. Remember, the labs, the drawing rooms and lecture halls are to be empty at 4.30.

## SIGMA CHI SMOKER

The Freshmen of Alpha Theta Chapter of Sigma Chi held a smoker Saturday evening for about fifty of their classmates. Souvenirs of churchwarden clay pipes tied with Sigma Chi colors were given and during the course of the evening the guests were entertained by a capable magician.

**EDISON STATION  
VISITED SATURDAY**

**Electrical Party Inspects All  
and Boiler Rooms.  
Parts of Modern Engine**

Nineteen members of the Electrical Engineering Society took in the trip to L Street station of the Edison Company Saturday afternoon and were conducted through the entire plant, the bus bar chambers being the only thing that the men couldn't get into. The turbine room, with the large Curtis machines was the center of interest. The cooling system and the massive pressure equalizer are other points of interest in this room.

The boiler room, which is cleaner than most engine rooms, also interested the party. The latest mechanical labor and material saving devices are used, with mechanical stokers, hopper feed and moving chain coal and ash handling systems.

The switchboards which control the oil switches and the means of communication between the engine room and the switchboards were explained. The old station, which is now used as an emergency plant, and the arc light machines took up the rest of the time. Outside of the station the means of handling coal and unloading boats was one of the most interesting parts of the inspection.

**FRESHMAN BASEBALL**

**Game With Hyde Park Cancelled  
—Team To Play Somerville.**

The Freshman baseball game scheduled with Hyde Park for last Saturday was cancelled by the Hyde Park management on account of the poor condition of the field. Practice will be held today and tomorrow at the field in preparation for the game Thursday with Somerville. There is still a scarcity of catchers and it is hoped that more will come out.

The following men have been excused from Gym since a week ago, March 30th. These men must report for practice at least three times a week or the cuts will be recorded as Gym cuts and must be made up in the regular manner. As practice was only held twice last week, there is one cut to be made up for them. The men are: W. L. Medding, R. S. Smith, L. Cady, G. W. Henderson, C. F. Simpson, P. N. Rowe, G. R. Stevens, H. B. Gardner, D. Kendall, J. Story, H. S. McQuaid, W. B. Newell, H. S. Thompson, A. P. Farnsworth, E. I. Valentie.

**FACULTY NOTICE**

The exercises of the Institute will be suspended on Thursday, Friday, Saturday and Monday, April 16, 17, 18 and 20.

By vote of the Faculty, instructors are requested to send to the Dean the names of all students who are absent from exercises on Wednesday, April 15, and on Tuesday, April 21.

A. L. MERRILL,  
Secretary.

Secretary of the Interior Lane has announced himself definitely against a national university.

**INVESTIGATION OF SKIN  
EFFECT IN CURRENTS**

**Interesting Research Work Being  
Carried Out by Electrical  
Department**

Throughout the present school year there have been inquiries from time to time as to the purpose of the short transmission line in the passageway between the Lowell and Pierce buildings. Through the courtesy of Professor Harold Pender, Director of the Research Division of the Electrical Engineering Department, we are able to give below a brief description of the research work which is being conducted upon this experimental line.

When a direct-current of electricity flows along a conducting wire, the current is distributed uniformly over the section of the wire, but in the similar case with an alternating-current there is a crowding of the current into the surface layers of the wire with the consequent diminishing of the current in the center filaments of the wire. This effect is not appreciable in ordinary copper transmission line conductors operated at frequencies of 25 or 60 cycles, but if the wire is of large diameter, or the frequency is high, the current will tend to confine itself to the outside skin of the wire. This phenomenon is designated in electrical parlance by the term "skin effect." For a given area of conductor the effect is substantially the same for either stranded or solid copper wires, but is very much larger in the case of iron wires.

Although this skin effect is now recognized as an important element in several branches of the electrical field, it has not thus far been studied experimentally to any considerable extent. The thesis of F. H. Achard and H. E. Randall, Jr., Course VI graduates in 1913, was an experimental investigation of this very interesting subject. In connection with this work an experimental line was erected in the areaway between the Lowell Laboratories and the Pierce building. The line was arranged for connection to measuring instruments in the Electrical Research Laboratory. Arrangements were also made for the substitution of different wires on the supporting insulators.

The measurements made by Messrs. Achard and Randall over a limited range of frequencies with No. 0000 B. & S. solid and stranded wires, checked very closely with the theoretical values of skin effect for the given conditions. On the formation of the Research Division of the Electrical Engineering Department in the summer of 1913, it was decided to continue this study of skin effect as one of the investigations to be conducted under the appropriation of the American Telephone & Telegraph Company. Mr. C. P. Eldred, Technology 1912, now Research Assistant in Electrical Engineering, was assigned to conduct this study.

The first work upon this research was the development of technique in making high frequency measurements. A suitable bridge for the measurements of resistance and inductance was designed and constructed. This

(Continued on Page Four)

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**WRESTLING MEET**  
(Continued from Page One)

bout with such amazing vigor that he won the sympathy of all the spectators. For nearly eight minutes, however, he was outwrestled in spite of his energy. At last, with but thirty seconds left, he turned Blakney over by a superhuman effort, and got a fall.

Captain Hoffman of the Freshmen also starred for his team by defeating Berger of the Sophomores. Berger is one of the few 1916 men who has kept up wrestling all the year, and he is a hard man to beat. Hoffman managed to get on top of him at the beginning of the match and remained there throughout. Upon several occasions the outcome was doubtful, but Hoffman won the decision by a good margin.

In the first bout Stebbins '17 had little trouble in handling Doherty '16, and threw him in about five minutes. Crosby '17 also threw Burnap '16 after a struggle. Both men were strong, but Burnap was out of practice, as he did not train until a few days before the meet.

Peterson '17 and Bousquet '16 had things nip and tuck for a time, the latter having a slight advantage. Peterson got aroused by the middle of the bout, however, and turned the tables upon his man. By hard work, he threw the Sophomore, thus adding his share to the Freshman score.

Bond '17 was matched against McSweeney '16, who outweighed him nearly twenty-five pounds. This did not dismay Bond, however, for by taking advantage of a lucky opportunity he threw his man in thirty seconds, the shortest time of the evening.

The last bout, between Bone '17 and Levi '16 was full of interest. Levi, although out of training, showed plenty of grit and strength, which enabled him to pull out of many tight places. He was finally caught in a hold from which he could not escape, and Bone got a fall.

In order to decide the novice championship of the 135-lb. class, and also the receiver of class numerals in that class, Hoffman and Crosby were matched. They started off at a rapid clip, and things were just becoming interesting when Hoffman obtained a hiplock and threw his man heavily to the mat. The shock of the fall shook Crosby up so that he was unable to finish the bout and Hoffman was declared winner. Crosby was only temporarily stunned, and recovered in a few minutes.

Six men, all Freshmen, won their numerals. They were: 115-lb. class, Bone; 125-lb. class, Stebbins; 135-lb. class, Hoffman; 145-lb. class, Peterson; 158-lb. class, Dowell; heavy-weight class, Bond. Captain Kelly and Manager Smythe-Martin of this year's Varsity team alternated as timekeeper and referee.

The summary:

115-lb. class.—Bone '17 threw Levi with head and body hold in 4 min., 30 sec.

125-lb. class.—Stebbins '17 threw Doherty with head and body held in 5 min., 30 sec.

135-lb. class.—Hoffman '17 won decision from Berger in 9 min. Crosby '17

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threw Burnap in 7 min., 30 sec.

145-lb. class.—Peterson '17 threw Bousquet in 6 min., 30 sec.

158-lb. class.—Dowell '17 threw Blakney in 6 min., 30 sec.

Heavyweight class.—Bond '17 threw McSweeney in 30 sec.

**RESEARCH WORK**  
(Continued from Page Three)

bridge is capable of making measurements with an accuracy of less than 1 percent over a very wide range of frequencies. As some of the resistances to be measured are less than 0.01 ohm, it is apparent that exceedingly delicate manipulation is necessary for readings of this accuracy.

There have already been made two series of observations upon the change in resistance and inductance of a No. 0000 and a No. 0 B. & S. solid copper wire at frequencies ranging from 5000 down to 25.

It is the plan of the Research Division to carry through a similar series of observations upon several other experimental lines, including different sizes of stranded copper wires, different sizes of copper-clad steel wires, and also upon conductors of rectangular cross section. The skin effect in stranded, copper-clad and rectangular conductors is not susceptible to mathematical determination, nor are there any reliable experimental data upon the resistance and inductance of these conductors when carrying currents of high frequencies. The problem of skin effect in steel rails of different chemical compositions is being studied by Mr. R. W. Weeks, a graduate student in Course VI.

There are at least four prominent cases in electrical industries in which skin effect may be an important factor, as follows:

(1) In third rail transmission for electric railways,

(2) In power or telephone transmission by means of copper-clad steel conductors,

(3) In the heavy copper conductors used for carrying alternating currents to electric furnaces, and

(4) In the heavy leads used between the common battery and the switchboard in a telephone exchange.

It is thus apparent that the Research Division has undertaken a study of considerable magnitude, the results of which will undoubtedly prove of value to engineering practice.

March 3, 1914.

The electricals at Ohio State will hold a big show on April 16, 17 and 18. Forty new electrical features are planned.

**M. I. T. RIFLE CLUB**

The M. I. T. Rifle Club held a practice shoot Saturday afternoon at Walnut Hill. The following members of the team and several others were present: E. J. Casselman, C. T. Dunn, Parsons, M. F. Brandt, and H. J. McDonald. Rapid fire shooting at the target of a man lying prone on the ground was the feature of the shooting. The averages were comparatively high, being about twenty-three out of a possible twenty-five.

**FINANCE COMMITTEE**

The regular monthly meeting of the Finance Committee will be held on Thursday, April 9th, at 7.30, in Room A of the Union. Dinner is to be served in the Dining Room at 6.30. A good attendance is desired.

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