

# THE TECH

VOL. XXXII. NO. 64

BOSTON, MASS., SATURDAY, DECEMBER 21, 1912

PRICE TWO CENTS

## ELECTRIC SEPARATION OF SUSPENDED MATTER

### Mr. Bradley Addressed Meeting of Chemists Last Night on Interesting Process.

Last night the Chemical Society of the Institute held a joint meeting with the Northeastern Section of the American Chemical Society. At 6.30 o'clock sixty-five men sat down to a dinner that proved the Union capable of turning out a meal that can please the most fastidious. After some excellent tomato soup and baked smelts the chemists were asked to devour half a chicken. Then to make sure that they were satisfied, there was a salad and the usual ice cream, cake and coffee. Then after the members of the Institute Society had given a cheer for the American Chemical Society, everybody went over to 6 Lowell, where many of the members of the two societies who had been unable to come to the dinner had already assembled.

President R. S. Weston of the Northeastern Section took the chair for the Treasurer's report. Then he announced the names of the nominees for the coming year. The society voted that the secretary cast one ballot for these names. The President is R. S. Weston, the Vice-President G. S. Forbes, the Treasurer H. C. Lythgoe, and the Secretary is Professor W. K. Lewis of the Institute. Three of the men on the Executive Committee are members of the Institute Faculty. The members of this committee are: J. W. Phelan, Professor R. S. Williams, Professor W. T. Hall, H. J. Skinner and E. Weintraub. The Councillors are Professor H. P. Talbot, W. L. Jennings, J. F. Norris and F. G. Stantial.

Then Mr. Linn Bradley, the speaker of the evening, was introduced by President R. S. Weston. Mr. Bradley is a member of the Research Corporation. (Continued on Page 2.)

## SANITARY ENGINEERS.

### Tech Men Aid Small Towns to Secure Improvement.

At the last meeting of the Boston Scientific Society, the president of that society, John Richie, Jr., while discussing various health problems, called attention to the remarkable development of the department of Professor Sedgwick looking towards cooperative health administration.

The prime difficulty with the smaller towns and communities is the cost of up-to-date sanitary work. This is greatly increased by the fact that the regulations of adjoining towns and States are often at great variance. It has been suggested that groups of adjoining towns may combine and with their joint purses secure an efficient health officer and uniform health regulations.

Looking towards such an outcome, Mr. Snyder, Jr., '10, of Lawrence, has replaced Mr. Blanchard, '09, as health officer of Wellestey, Mass. Mr. Snyder gives a regular part of his time to the town work and brings to bear upon this administration all the knowledge that the department at the Institute has assembled. Mr. Blanchard has gone to New Jersey, in which State there are at least a dozen Tech graduates connected with the public health offices.

## MEN WANTED TO ENTER SHOW COMPETITIONS

### Poster and Music Competitions Open Until After the "Mid-Year" Examinations.

A most interesting competition is now being held by the Tech Show management for music for their Show, "Money in Sight." All interested in this competition may get lyrics, which are to be set to music, on application at the Show office. The management wishes to have more men help put the simple but snappy lyrics to music. The competition does not close till after the vacation at mid-year's, thus giving everyone a good chance to help the Show, one of the greatest Institute activities.

There is also a poster competition going on which promises to be very keen, as more men are entering it each day. Manager Whitwell of the Publicity Department may be seen every afternoon in the Show office to give any information concerning this contest.

The work of the entire Show is progressing more smoothly and rapidly than ever before, and the support of the student body, especially in the competitions, has been very loyal; so much so that with the aid of a few more entrants in the competitions the prospect of making "Money in Sight" a record breaker is very good.

## CLASS BASKETBALL.

### Schedule for Freshmen and Sophomores Arranged.

Manager Scully, of the Sophomore basketball team, has arranged the following schedule:

January 4, 1913, Bridgewater Normal School; January 11, 1913, St. John's Prep.; February 15, 1913, Rock Rindge School; March 8, 1913, Milton High, and possibly a game with Tufts' Freshmen and Haverhill High School.

The Freshman team meets Oliver Ames Prep. tonight, and on February 12, 1913, St. John's Prep. If the games can be arranged the team will play Rock Rindge February 15, 1913, and also Tufts' and Brown Freshmen. From these preliminary games the relative strength of the two teams can be determined. The games between the Freshmen and Sophomores will take place in February, the first being on the 19th.

## CORRECTION.

In yesterday's TECH, in the article on the "Was Ist Los" entertainment, the work of Mr. J. Murray Hastings on the guitar was, by a peculiar error, ascribed to Mr. Leslie Waterman on the mandolin. This error was particularly regrettable, inasmuch as the humorous "coon song" of Mr. Hastings was one of the special features of the evening.

The name of Mr. H. G. Mann, '16, who rendered three selections in character so successfully, was also omitted. Both these men deserve especial credit for coming forward at the last minute, practically without preparation, to fill the gaps in the program caused by illness.

## HAYWARD TALKS ON TESTING LABORATORY

### Mechanical Engineers Hear of Advantages of Institute Equipment.

Last evening a large audience, composed of many prominent engineers and manufacturers, as well as a good representation of Course II men from the Institute, heard Professor Harrison W. Hayward speak on "The Testing Laboratory and the Constructing Engineer." Professor Hayward, who is Professor of Theoretical and Applied Mechanics at the Institute, spoke under the auspices of the American Society of Mechanical Engineers at their meeting held in the Edison Building on Boylston street.

Professor Hayward first spoke of the purpose of the testing laboratory. He said that the purchaser of materials was very rigid in his specifications,—at times too rigid, and that he demanded the lowest possible price. Consequently, the dealer could not always meet these demands. The trouble, according to the speaker, was due to the fact that many purchasers nowadays are infatuated with the quality of material and with the process of its manufacture. All these qualities are determined by the testing laboratory, and this is its main function in the metal business of today. The combination of practice and theory, brought about by the testing laboratory, is the keynote of success.

Testing laboratories may be divided into several classes. Professor Hayward first spoke of various works where only one testing machine is operated. Here, the work is of a special character and the tests are made on one special product.

Then, there are "Works Laboratories." In these are found the greatest (Continued on Page 3.)

## INSTITUTE COMMITTEE.

### Reports of Three Committees Given at Yesterday's Meeting.

The Institute Committee meeting yesterday was called to order at 4.20, and the minutes of the last meeting approved as read. Those absent were: H. D. Peck, Y. L. Chase, A. T. Gibson, R. S. Rankin, C. W. Brett, P. D. Horgan, C. H. Albee, T. Hsi and J. P. Constable.

C. W. Fry reported for the Bulletin Board Committee, stating that all buildings are to be inspected daily, and all posters violating the regulations, with respect to size or otherwise, to be torn down.

The matter of the theft of posters, which is now so prevalent, was next brought up. Mr. T. F. Spear was appointed to look into the matter and prevent it if possible.

E. B. Germain next reported for the committee on "Concerning the Massachusetts Institute of Technology," announcing that all bills had been paid fifteen hundred copies distributed, and that twenty-five hundred more copies were to be had.

The Finance Committee gave its report for December first. A discussion followed concerning the Union, F. C. Weiss giving a short talk on the method of running it. F. D. Murdock, E. W. Brewster and W. N. Holmes were appointed a committee to look into the subject.

The meeting closed at 5.10 P. M.

## MANY NOMINATED FOR SENIOR PORTFOLIO

### Course X Has Largest Number.

The following thirteen nominations for members of the Senior Portfolio Committee have been received. It is noteworthy that Course X has five men on the list, and Course I three.

P. S. Barnes, X.  
G. Richter, X.  
H. S. Carrier, II.  
P. T. Redfern, IV.  
W. F. Herbert, IV.  
N. Clark, X.  
H. E. Randall, Jr., VI  
W. N. Holmes, X.  
W. E. Caldwell, X.  
G. W. Forrester, X.  
H. M. Rand, I.  
R. B. Nichols, I.  
R. B. Haynes, I.

From this list a committee of five is to be elected. The ballots will be mailed so as to be available on the day school reopens. They will be due at the Cage at 5 o'clock on Friday, January, 3, 1913.

## DR. MACLAURIN HONORED.

### Appointed by President Taft to Aviation Commission.

President Taft has recently appointed a commission composed of the "men higher up" in scientific lines throughout the country, headed by Dr. R. S. Woodward, president of the Carnegie Institute of Washington. This commission is to study and report on a projected national aerodynamical laboratory, in which air currents will be studied as an aid to aviation. President MacLaurin has been appointed a member of this commission.

## BOSTON OPERA.

### "Louise," "Lucia," "Traviata" and Others to Be Sung.

The Boston Opera Company is offering a very attractive opera, Charpentier's "Louise." It was given for the first time this season last Wednesday evening at the Boston Opera House. The part "Louise" is taken by Mme. Louise Edvina, already a favorite among Boston theatre-goers.

"Louise" is a very simple but intensely dramatic piece. The scenes are laid in and about Paris, and the story is of two lovers who are kept apart by their angry parents.

Because of the size of this production the curtain will rise at 7.45 on the evenings that "Louise" is sung.

Mme. Luisa Tetravzini will be heard in the title role in "Lucia" this afternoon. This is Mme Tetravzini's first appearance of the season.

On Monday evening Miss Garden will make her last appearance of the season in Thais.

The "Tales of Hoffman" will be sung for the fourth time. This concludes the subscription performances.

The Saturday evening opera will be "Traviata." Tickets for this piece will be half price.

## WEATHER.

Forecast for Boston and vicinity: Generally fair; Saturday; not much change in temperature; moderate westerly winds.

# THE TECH

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SATURDAY, DECEMBER 21, 1912

## RETROSPECTION.

For most of us, today marks the end of a definite period of the half-year's work. It is a time which calls for deep and honest thinking, for keen and accurate analysis, and next week we have a lull in our activities, in which we may ruminate and digest.

This first term has gone by in a rush and bustle,—in a mad race to keep stride in studies, in activities, and in social affairs. Opportunities for work and for play have been put before us, and we have made our choice, or mixture, wise or otherwise. With our work coming to us unceasingly, day after day, with the constant pressure which characterizes the Institute, we have a perspective of the day's work only. Unconsciously, we have become a bit narrowed to that viewpoint which is a symptom of staleness. But there must be a time for everything, and next week is for retrospection. Then we may stand off and survey the work of the term, study and adjust our endeavors and mental attitude. It is time for a big viewpoint, a perspective which is "birds-eye" in scope.

We hope that Technology students will take next week for thought and mental refreshment, and not for work, for counsel, and not for remorse over something undone. If the point of view is refreshed, if the mentality is stimulated, there will be plenty of time left for work after vacation.

So let us then discard our books for a week, and give our minds a joy ride. Let us go home, if we may and can, to our Christmas dinner and our good times. If this holiday season is one for getting next to ourselves, let us remember that it is also a time when we may make friends of ourselves and so be on easy open terms. Away dull care and let us to our friends!

And oh, let the joy bells ring,  
And the heart of us be light,  
For good fellowship is king,  
And in friendship there is might.

## CHEMICAL SOCIETY.

(Continued from Page 1, Col. 1.)  
tion of New York, a company organized to deal with the problems raised in the commercial applications of the Cottrell Electric Precipitation Processes, and to solve them as far as possible. This company produces no dividends, for its profits are turned over to the Smithsonian Institute to further research work. Mr. Bradley has been one of the men who has had  
(Continued on Page 3, Col. 2.)

## Y. M. C. U. INVITES ALL TECH MEN TO RECEPTION

Mr. Frank J. Locke, M. I. T. '86,  
Anxious for Large Attendance.

The secretary of the T. C. A. has received a letter from the President of the Boston Young Men's Christian Union, Frank L. Locke, '86., cordially inviting any Technology men that may remain in the city during vacation to attend an informal reception in the Union, 48 Boylston street, on Christmas Eve. The Entertainment Club, assisted by the Union Orchestra, will give a program.

Mr. Locke is an active alumnus of the Institute and is very much interested in the T. C. A. He is anxious to have as many Technology students as possible come into touch with the Y. M. C. U. There are many young men, members of the Union, who can be helped by meeting and talking with Tech men, and Mr. Locke feels that this is a chance for some very practical Social Service.

Any men who can attend this reception should not fail to meet Mr. Locke himself, who is especially interested in Tech men, and who always keeps himself posted through the T. C. A. secretary and others in regard to affairs here at the Institute.

## SAMPSON, '07, KILLED.

Mr. Roswell Eustis Sampson, M. I. T. '07, was killed last week in a railroad accident, at his place of business, Pullman, Washington. The particulars of the accident could not be ascertained. His funeral took place yesterday at his home in Medford.

Mr. Sampson was educated in the Medford public schools, graduating from Medford High in 1902. He then entered Course III at M. I. T., graduating in 1907. During the following year and a half he engaged in mining engineering work in Nevada. He then entered research work in Boston, and later spent considerable time with the Quincy Copper Mining Company in Hancock, Michigan. In September, 1911, he accepted the position of Assistant Professor in the Mining Department of the State College at Pullman, Washington, and remained there until the accident which caused his death.

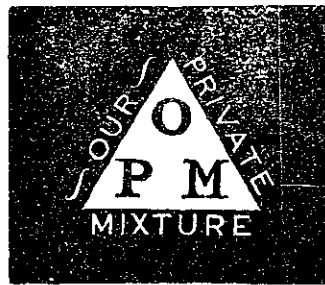
He was a member of the Mount Vernon Masonic Lodge, the Appalachian Mountain Club, the Technology Club and several mining engineering societies.

## COMMUNICATION.

Many of you fellows who read THE TECH are leaving this afternoon to spend a very short but happy Christmas vacation at home or visiting. At any rate, you will be gone for a whole week, during which time studies and all such things will be far from your minds.

As to vacation, the management of Tech Show extends its best wishes to every man for a very Merry Christmas and at the same time a happy holiday. While away, however, do not completely forget the Music and Poster Competitions for the Show, and put a little thought on these two subjects.

Quite a few men are out for both of these competitions, but there is still room for more. The lyrics seem very easy to write music to and the men should not have a very hard time composing their songs. For the convenience of those who would like to try and write, lyrics may be obtained from Stage Manager Charles P. Fiske at any time in the Show office.



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**HAYWARD SPEAKS.**

(Continued from Page 1, Col. 3.)  
 variations; they contain machines for special purposes, machines for testing the product at each stage of the process, from the raw material to the finished, marketable article.

Very few of these laboratories, however, are equipped for research work. The men employed are not of great intelligence, and are inclined to be very narrow, due to the fact that they are constantly working on the one material manufactured by that particular firm.

Another class of testing laboratories is a combination of the first two. These are equipped both for practical tests on materials and for research work. In these much valuable data is obtained and made use of in the manufacturing processes.

The Government Testing Laboratories form another distinct group, being arranged for special work, such as the testing of different alloys, metals, bricks, cement, etc. As a rule, they are very complete and therefore well adapted for research work. But the trouble with the government laboratories is their extreme slowness, occasioned by the great amount of red tape. They are, nevertheless, very reliable, and accomplish much.

The fourth group of testing laboratories are those found in technical schools. The lecturer said that they are probably the best equipped of all as far as size and adaptability are concerned, because of the great variety of tests which they must be able to make. Prominent engineers, inventors and manufacturers call upon the technical school testing laboratory to make tests of every conceivable kind. The speaker provoked much laughter and comment by citing incidents and experiences here at the Institute testing laboratories. He said also that many engineers request the Institute to make tests just at the time when the men can devote least time to it. He urged the engineers to present their specifications to be tested in the fall when a large number of men can do the work. His suggestions, if carried out, will provide Course II men with a large amount and variety of testing machine work.

Professor Hayward laid considerable stress on the quality of the specimen to be tested. He emphasized the fact that the slightest flaw will cause a resulting test which will misrepresent the actual quality of the material. Some materials of good quality are turned down because of the fact that the specimen was poorly prepared or poorly selected.

After discussing many other points of interest to the practical engineer, Professor Hayward showed the assembly by means of lantern slides a few of the tests performed here at Technology, and he described them in detail. The slides were very interesting and they well demonstrated the speaker's words, the fact that the tests made at the technical school were of such a varied nature.

After the close of Professor Hayward's talk, which was greatly enjoyed and appreciated by both the young and old engineers present, the subject was opened for discussion, and several prominent men spoke briefly and interestingly on some of their own experiences.

**CHEMICAL SOCIETY.**

(Continued from Page 2.)  
 to solve the practical difficulties that have arisen in the application of this process, and so he has a first hand knowledge of its principles.

He first read a paper on "The Development of the Cottrell Electric Precipitation Process," showing how the phenomena observed in the case of dry particles suspended in a gas could be explained by the logical reasoning from the fundamental laws of energy relations, provided some simple as-

sumptions were made. Thus he demonstrated that the fall of very minute particles was greatly affected by their relative sizes, the smaller the particle the slower being its velocity of fall. He showed that if the particles were suspended in a gas that was in motion through a pipe, and if we assume that the particles lag behind the gas stream ever so slightly (as is possible because of their greater density and inertia), that the falling of these particles would be even slower than were the gas at rest. Thus it is impossible to remove the finer particles of suspended matter in motion by the action of gravity alone.

Then came the problem of finding a force sufficiently powerful to cause a settling out at a speed far greater than any gravity was able to accomplish. He mentioned the fact that centrifugal separation encountered the same difficulty that gravity separation did, namely, that the forces acting on the particles diminished rapidly with the size. But the separation by means of silent electric discharge overcomes this difficulty, for the repulsion of very small particles is great enough to cause them to settle out quickly on the metal pipe through which the cloud of dust is being blown.

After explaining why the electric discharge is able to make the particles fly to the discharging electrode, he went on to demonstrate the way the actual apparatus works. He had a grounded iron pipe, about eight inches in diameter, and five feet long. A wire under a potential of many thousand volts occupies an axial position in the tube. The gas with the suspended particles (ammonium chloride) enters near one end, and when the silent discharge is passed, the cloud of smoke fails to issue from the tube.

Owing to the fact that a direct current under a potential of only 18,000 volts was available last night, the complete precipitation of the smoke was impossible, but to make up for that he showed by some slides that excellent results that have been obtained in practice. In a sulphuric acid manufactory it was possible to completely condense and save all the extremely obnoxious sulphuric acid mist that had defied treatment by other methods. In a smelter in the West it prevents the escape of arsenic fumes into the air through the chimney, so that now no smoke leaves the factory except as it is shipped away in carloads. He went into the interesting details of the application of this process to a cement mill, which had been killing the orange trees for miles around with the dust that escaped from its kilns. By using this process the mill now allows no dust to escape into the air. It is stated that from the ten kilns this apparatus condenses and saves each day fifty tons of cement dust, which is ready for use as a source of available potash, for it is particularly rich in the more soluble salts of this element. The power required is negligible, being only three or four kilowatts per day for the treatment of hot flue gases that pass through the apparatus at the rate of 50,000 cubic feet a minute.

During the whole of the talk Mr. Bradley gave his hearers glimpses of the difficulties that he and his co-workers overcame. Even now they are able to completely remove any amount of dust from a gas passing with a speed of thirty feet a minute through a pipe eight inches in diameter and only fifteen feet long, and better results are promised in the future.

The members of the two societies gave Mr. Bradley a hearty vote of thanks after several of the men had questioned him about the various phases of the process. There were over 130 men who heard his talk.

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### FACULTY NOTICE.

The exercises of the Institute will be suspended during Christmas week, December 23rd to 28th, inclusive.

A. L. MERRILL, Secretary.

(tf)

### FACULTY NOTICE.

Third-year problems in Physics Heat are returned now in the basement of Walker Building.

(Signed) PROFESSOR NORTON.

### FACULTY NOTICES.

THE UNION DINING ROOM will be closed from December 22 to 29, inclusive, on account of the Christmas Holidays. During the same time the Social Room of the Union will be open daily from 11 A. M. to 9 P. M.

LOST—Slide rule in red leather case. Initials A. S. B. on lap of case and on rule. Reward at Cage for finder. (Fri-Saturday)

F. H. RAND, Bursar.

BEGINNING MONDAY, December 30, the Bursar's office will be open daily for the transaction of business from 9 A. M. to 1 P. M.

F. H. RAND, Bursar.

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