

# THE TECH

VOL. XXXIII. NO. 114.

BOSTON, MASS., TUESDAY, JANUARY 6, 1914.

PRICE TWO CENTS

## E. E. SOCIETY TO DINE AT ENGINEERS' CLUB

Interesting Program Has Been Arranged—No Tickets After 12 O'clock Today.

Members of the Electrical Engineering Society will dine tonight at the Engineers' Club at 6.30 o'clock. Tickets to the dinner are still on sale, but cannot be obtained after 12 o'clock today. The Engineers' Club is situated on the corner of Commonwealth Avenue and Arlington Street, the entrance being on Commonwealth Avenue. The dress will be informal.

It is said that a very interesting program has been planned for the evening. C. W. Green will outline the work in the Electrical Laboratory. Prof. D. C. Jackson will discuss the changes that have been made in Course VI as they appeared in the new Catalogue. Mr. H. L. Thompson will speak in Prof. Wickenden's place, and will present the plans for the Mid-year trip. Mr. B. A. Dahrend will be present to give a talk on the student course that has been established at the Westinghouse Electric Company's plant. Entertainment will also be furnished by some of the members of the Society.

Next Friday there will be another trip to the Fore River Shipyard. Thirty-two went last time, and about as many expect to go this time. As it is not desirable to have more than twenty-five, it is suggested that those who expected to go sign up as soon as possible on the paper provided in the corridor of the Lowell Building.

## C. E. SOCIETY FRIDAY

Major Cole To Speak On "Rapid Fire Surveying."

Friday at 4.30, in the Union, Major Cole will talk to the C. E. Society on the subject of "Rapid Fire Surveying." Major Cole has for many years been connected with the Engineering Corps of the U. S. Army, having seen service in Cuba and the Philippines. He has also collaborated in several books on the subject of Military Engineering. He gave a similar talk last year.

## CLASS PIPES

The sale of 1916 class pipes, which was expected to close today, has been extended until tomorrow. The committee will be in the large room of the Union to receive orders from 1 to 2 and from 4 to 6 P. M. today and tomorrow. The price is \$2.50, of which \$1.00 must be paid when the order is given.

## TECH CATHOLIC CLUB

The regular meeting of the Catholic Club, which is usually held on the first Wednesday of the month, will not be held next Wednesday. Announcement of a special January meeting will be made later.

## GLEE CLUB REHEARSAL

There will be a rehearsal of the Glee Club today, Tuesday, at 5 P. M. in the Union. All members are expected to be present.

## SUCCESSOR CHOSEN TO BURSAR RAND

Mr. Horace S. Ford of Dorchester Now With Old Colony Co., To Fill Position.

Horace S. Ford of Dorchester was installed yesterday as the Bursar of the Institute, taking the place of Frank H. Rand, recently deceased. Mr. Ford comes to Technology from the Old Colony Trust, where he was assistant cashier. He is a Gloucester boy, a graduate of the High School in that city, and like his predecessor has made his own way in life. It had been his intention to enter Harvard University, and indeed he had taken part of his examinations, but the death of his father made a change in his plans.

He entered at once into a business calling, joining the force of the New England Trust Company, with which he remained a year; next he became associated with the national bank of his home city, and since March, 1903, he has been with the Old Colony Trust. Here he has advanced rapidly, and two years ago was appointed



MR. H. S. FORD

assistant cashier. He is just short of thirty, is married and resides on Wheatland Avenue, Dorchester. Francis R. Hart, vice-president of the Old Colony Trust, is treasurer of Technology; but Mr. Ford was not particularly related to him at the bank, so that his appointment is a selection purely on merit.

## FOOTBALL PICTURES

The 1916 Football pictures will be taken at Notman's, 3 Park Street, on Thursday at 1 P. M.

## CERCLE FRANCAIS

Cercle Francais will meet tonight in the Union at 8 o'clock. The meeting will be conducted entirely in French, as usual, and anyone interested in the language is invited to be present. Refreshments will be served.

## TECH PROFESSOR TALKS ON CANDY INDUSTRY

Outlines Method of Inspection For Factories Producing Confectionery.

Professor Samuel C. Prescott of the Institute, speaking recently before the American Public Health Association at its last session, at Colorado Springs, took as his subject, "Public Health Aspects of the Candy Industry." He has, since his connection with the Biological Department of the Institute, been



PROF. S. C. PRESCOTT

carrying on extensive investigations with regard to the conditions under which candy is manufactured, and has reached in these investigations a stage where he has been able to make public, in outline, some of the methods in sanitation and hygiene the application of which he believes to be of especial interest and importance in the product of candy manufacture.

The candy industry, said the speaker, is increasing in scope and size to an extent which places it well within the field which the sanitarian is accustomed to study. In Massachusetts, for example, the candy industry ranks fifteenth among industries in general, and gives employment to some six thousand persons. It bids fair, moreover, to increase rapidly in the future, since the demand for confectionery of all kinds is growing, and the possibilities of variety in product are emphasized by the constantly broadening variety of substances which are made usable as raw materials. The use, for instance, of such materials as glucose, eggs, dried and evaporated milk, gelatin, etc., which are in no sense harmful if wisely used, make possible the bewildering

(Continued on page 4)

## PROGRESSIVE CLUB

The Executive Committee of the Progressive Club will meet this afternoon at half past three in Room B in the Union. The meeting is held to consider the financial situation of the club, and it is important, says the chairman, that all men on the committee be present.

## TECH VS. BROWN MEET WRESTLING ON SATURDAY

Preparations For A Big Meet—The Probable Lineup—Tickets On Sale.

Preparations for the Tech vs. Brown wrestling meet, which takes place Saturday, are under way. The latest reports from Brown indicate that the Tech team will compete with a team of unusual strength. The Institute team will be picked from the following men: Loo, 115-pound; Means and Stebbins, 125; Smythe-Martin, Kelly, Durkee and Rounds, 135; Morse, Treat and W. C. Wood, 145; Goodell and Walter, 158; Crowell and Leslie in the heavy-weights.

It is not at all certain whether Kelly will wrestle on Saturday, as his injury, received at East Weymouth, may keep him out. Treat's injury is coming on well. Leslie is laid up with a bad ankle received last Saturday, and it is doubtful whether he will get into the game.

Tickets for admission, which are 25 cents, may be bought at the Cage, or may be obtained from any member of the team. Assistant Manager Morse announces that a novice meet with the Boston Y. M. C. U. has been secured, the match to be played immediately after the mid-year examinations.

## INSTITUTE FORUM

Dr. Mackaye Speaks This Noon—Everybody Welcome.

At 1.30 P. M. today the M. I. T. Forum will hold a meeting in 8 Eng. C. The speaker will be Dr. James Mackaye, Chief Chemist for Stone & Webster. Dr. Mackaye received the degree of Ph. D. from Harvard, and is a Socialist, though he is not a Marxist. He is the author of "The Economy of Happiness," and three years ago delivered a series of lectures on Political Engineering at Harvard, which created considerable comment in newspapers in the East. In addition Dr. Mackaye has done much research work of importance. The meeting is open to all who may be interested.

## CALENDAR

Tuesday, January 6, 1914.

- 1.05—Institute Committee Picture—Notman's, 3 Park Street.
- 1.30—M. I. T. Forum—8 Eng. C.
- 3.30—Progressive Exec. Committee—B. Union.
- 5.00—Glee Club Rehearsal—Union.
- 8.00—Cercle Francais—Union.

Wednesday, January 7, 1914.

- 4.00—Preliminary 180 Yard Trials.
- 4.00—Rifle and Pistol Club Practice—Armory, Columbus Ave.
- 4.15—Wireless Club Meeting—11 Eng. B.
- 5.00—Business Meeting, Cosmopolitan Club—8 Eng. C.

Thursday, January 8, 1914.

- 1.00—Soph Football Picture—3 Park Street, Notman's.

Penn is running a series of free public lectures in French.

# THE TECH

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TUESDAY, JANUARY 6, 1914.

## In Charge of This Issue

Editor—P. W. MacNeill.

Associates—R. B. Stringfield '15; J. G. Fairfield '16.

## OUR NEW BURSAR

We are glad to extend to our new Bursar so much as we can of friendly greeting and wishes for success. A young man, a clean-cut man, and a man who has fought his way from the bottom, we feel that he will appeal to Technology students as one who will command both their friendship and their respect. We are conscious that he has no easy place to fill, for Mr. Rand was a man so big and so broad that to replace him, both in the hearts of Tech's men and in the administrative duties of the Institute, will be a task of no small magnitude; but we feel that Mr. Ford, working with a spirit and energy which has gained for him the place which he now holds, will prove fully equal to its performance.

It is good to see that the political activities are waking up again after the post-election quiet. The Progressive Club's executive committee meets this afternoon, and the Forum is bringing before us today a man of national prominence.

That Tech men should be sufficiently interested in politics to keep organizations in the field the year round is indicative of two facts: First, that politics is not the superficial and transitory thing that some of us have imagined, to be considered only at election times and on occasions when important legislative measures are attracting nation-wide attention; second,

## SCIENTIFIC AND ENGINEERING NOTES

The reduction of speed and other hindrances to navigation which are caused by barnacles and similar marine growth on the submerged portion of a ship's hull are remembered as very real troubles by those who have had any experiences with ships, large or small, especially where dry-dock facilities were poor or entirely lacking. A novel device known as a torpedo submarine cleanser, which has been recently tested in England, appears to afford method of overcoming these difficulties which is worthy of consideration. The vessel selected for treatment, a screw steamer of some 3,000 pounds, was cleaved one day and dry-docked on the following day for inspection, when it was seen that the work had been successfully accomplished. The entire plant is carried on a self-propelled barge, 30 feet long and 12 feet 6 inches in beam, and can be used in dock, river or open sea. Motive power is obtained from a 30-horsepower petrol engine directly coupled to a Bruce Peebles dynamo. Current is supplied to three motors, one of which is used to propel the vessel, one to control the raising and lowering of the brush gear, and the third to drive the brush itself. The brush, which is 5 feet long and about 1 foot in diameter, is made of coir fibre, and can be unshipped and replaced in 15 minutes. The frame in which it is mounted carries an enclosed motor, which in addition to driving the brush actuates a small screw propeller, the shaft of which is perpendicular to the axis of the brush. This propeller forces the brush up to its work, and by keeping the water near to it in a state of agitation aids the cleaning operation. Air tanks attached to the brush frame reduce its weight when immersed to 1 1/2 cwt., the out-of-water weight being some 6cwt. The brush gear is suspended by two separate cables, which enable the brush to be passed under the bilge keels if necessary. The movements of the two lifting cables and of the electric cable leading to the brush motor are simultaneously controlled by a winch fitted with a dial to indicate the depth at which the brush is working, the maximum being 32 feet. It is stated that the machine is capable of cleaning a 3,000-ton ship in six hours, and the weight of the entire plant, barge included, is given as eleven tons.

A new lamp, known as the Wotan 1 1/2 watt lamp, designed for high efficiency on large candle power, is being introduced into the electrical world. As the name indicates, this lamp consumes one half watt per candle power and sizes varying from 600 to 3,000 candle power capacity

and, that Tech men realize that the places they will hold in professional life will not be so minor as to entail no obligations to the public.

The engineer is becoming a more prominent factor in public life. The increasing attention which is being given to sanitary work, to high-class construction, and to such enterprises as the Panama Canal or the Keokuk dam, are drawing the technical man into the limelight; and as the government is coming to take a larger interest in such work, positions "political" in the best sense of the term will be of increasing influence and number. It is essential that Tech men understand this new relation which the engineer is bearing to society, and that they are preparing to discharge these obligations.

## ARROW DAM PROJECT

Mr. Chas. H. Paul To Speak At Engineers' Club

Mr. Charles H. Paul, Construction Engineer for the U. S. Govt. Reclamation Service on the Arrow Dam near Boise, Idaho, will address the Sanitary Section of the Boston Society of Civil Engineers Wednesday, Jan. 7, at the Engineers' Club, Commonwealth Avenue and Arlington Street, at 7.45 P. M. The Society has kindly invited any Tech men interested to be present, and a special invitation is extended to the members of Courses VII and XI. Prof. Sedgwick hopes that the men of Course I will also turn out.

The Arrow Dam is the highest in the world, and is the largest masonry dam ever constructed by the Reclamation Service. Its situation and the difficulties encountered in its construction, have made the project one of note, and Mr. Paul is expected to give much interesting information.

The prize of \$200 for the best manuscript submitted for this year's Mask and Wig play at Penn has been awarded to Darrell H. Smith '12, for his production, entitled "The Princess Returns." The story is of two foreign princes traveling in America incognito. They are suspected of robbing a bank and the usual misunderstandings occur.

are being manufactured. This lamp is designed to replace the troublesome arc lights for street illumination, etc. They have several advantages over the latter. There are no mechanical parts to get out of order and the trimming and replacing of carbons are eliminated. The filaments are formed of a very closely coiled spiral of drawn wire, and this instead of being arranged in vertical stripes is looped to supports in such a manner that practically its entire length is in the horizontal plane, an arrangement which is said to give an actual downward candle-power equivalent to 80 per cent of the total candle-power of the lamp. The whole of the illuminating structure is suspended on the leading-in wires, and the lamps can thus be used in positions subjected to vibration.

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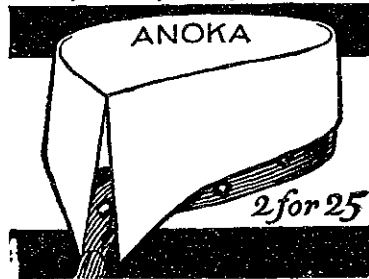
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### DATES FOR ALL- TECHNOLOGY REUNION

President Maclaurin To Attend Association Meeting At Chicago.

The dates selected for the All-Technology Reunion in Chicago (the second annual convention of the Technology Clubs Associated) are February 20-21, 1914, Friday and Saturday preceding Washington's Birthday, which latter falling on Sunday, the legal holiday will be observed on Monday, thereby giving ample time for the return trip to the out-of-town guests.

The plans now being perfected insure that this convention will hold more of interest, give expression to greater enthusiasm and promise more for the future of Technology than any meeting of Tech men ever held.

The first complete exposition of the plans of the New Technology will be presented by President Maclaurin personally, illustrated by lantern slides of details hitherto unpublished. The faculty will be represented, the dates decided on having been suggested originally by the Institute representatives. Former students will hear directly from the heads of the respective courses of the changes in the curriculum, and of the equipment whereby in the new buildings the facilities for keeping abreast of the times will be wonderfully amplified. An excursion to the Cary Steel Plant and the Universal Portland Cement Co., has been definitely decided on. The possibility of further tours of inspection to the Drainage Canal, Mississippi Dam at Keokuk, and industrial communities of which Chicago is a center, are under consideration. The attendance, as guests of honor and as speakers, of some of the most distinguished engineers and business executives in the country, is assured by the local committee.

The Chicago Reunion is your Reunion and not a local affair. It takes the place of the regular All-Technology five year reunion, which would ordinarily be held in Boston, June, 1914, but which has been shifted to Chicago instead, as the new buildings will not be ready for dedication until 1915, at which time a special celebration will be held.

The classes which are planning five, ten, fifteen, etc., year reunions in Boston next June, are urged to transfer their activities to Chicago. They will thereby gain the double advantage of a 1914 reunion at a centrally located point, and a 1915 eastern reunion. The attendance will necessarily be different at the two meetings, and neither will detract from the other.

The different Alumni Associations are urged to undertake at once a canvass of their members and communicate with us as to the probable attendance. Arrangements should also be made for special cars to be picked up along the line, forming special Reunion trains.

ST. ANDREW TUES. EVE.

Last Meeting Of Term—All Tech Men Invited.

The Brotherhood of St. Andrew will hold its regular bi-monthly meeting Tuesday evening, January 6 at 7.15 in the Trinity House, 93 St. James Avenue. This will be the last meeting of the term, and will be devoted to the discussion of any subjects which may be brought up. Rev. Van Etten will lead as usual, and all Tech men are invited.



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UNDER COVER

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## CANDY INDUSTRY

(Continued from page 1)

variety of confections which we know today.

That these candies are useful is not to be denied. They furnish energy to the body in large amounts and in quickly available form, and the craving for them, so commonly regarded as evidence of an unhealthy appetite, cannot be viewed by the scientist as differing from the craving for other carbohydrate food. That candies are still to be classed as luxuries is undoubtedly true, but in view of their food value and the extent of their consumption they may well take a place among other more staple edibles. The problem of the sanitarian is to see that substances are pure, processes sanitary, and handling strictly supervised.

Although danger from materials containing deleterious substances has been minimized among reputable producers, careful watch must be maintained lest a few particular substances gain entrance with the use of raw materials. The salts of arsenic, zinc and lead, sulphur dioxide, and certain preservatives, such as formaldehyde, are to be especially guarded against. Bacterial infection cannot be avoided so easily, but only by care in handling and cooking; so that bacteriological examination should constitute a large part of the work of the sanitarian in the industry in question.

Professor Prescott brought out a plan which he has devised for the study of candy plants and which he believes to cover the different phases of the industry so far as they affect the public health. The plan is as follows:

### Plan For Hygienic Control

1. The Plant or Factory.
  - A. Construction, arrangement and cleanliness—floors, walls, ceilings and windows.
  - B. Ventilation.
  - C. Light.
  - D. Freedom from dust.
  - E. Cleanliness of machines.
  - F. Sanitary arrangements
2. Study of Raw Materials.
  - A. Examination as to suitability for use.
  - B. Examination for harmful substances.
  - C. Examination for bacteria.
3. Study for Operations.

Under this head comes mainly study of processes for efficiency, food value, infection, deterioration, etc., with special regard to the principles upon which they rest.

4. Hygienic Supervision of Operatives, or Welfare Work.

Here should be regarded physical well-being of operatives, their personal cleanliness, etc.

Professor Prescott gave a detailed account of what he thought should be done in putting this system of control into practice. Inspection of the whole plant for cobwebs, cleanliness of painted surfaces, etc., is comparatively easy, but examination of machines must be made with minute care, in order that small crevices and hidden joints may be cleansed more thoroughly than would ordinarily be the case, since they often afford excellent opportunities for bacteriological infection of materials passing over or through them.

Ventilation and light supply should also be watched, the sources of air in the factories being regulated, and carbon dioxide tests made. Sanitary arrangements should be looked after, and employees taught the necessity for personal cleanliness and careful attention to the sanitary aspects of their work.

The study of raw materials should aim to exclude any which contain de-

leterious or objectionable organisms. Harmful ingredients such as arsenic, lead or zinc should, of course, be barred. It must be borne in mind, however, that these substances are often unavoidably present in some of the raw materials used, and such occurrence must be carefully differentiated from that of materials present, as the result of deliberate addition as impurities or adulterants. As proper examinations for such impurities are suggested that of starch for bacteria; glucose for microorganisms of fermentation and for arsenic; chocolate for arsenic and for other metals and for bacteria; various gums for bacteria; gelatin for arsenic and zinc, and for bacteria; and similar examination in the cases of egg and milk products. If pastes, jellies or the like be employed, they may be examined for bacteria, as well as for mineral substances and bacteria. Examination for the end-products of fermentive or putrefactive change should be made, for it may happen that the bacteria which effect these changes are killed by heating, etc., and will not be detected in examination for them.

The study of operation should be carried on with a view to bringing about the results desired in the shortest time, with the smallest amount of waste, and the minimum amount of handling. The scientist, moreover, should endeavor to discover whether the proper chemical or physical change is going on, and whether the process favors chemical deterioration of any sort. The operator should be studied as a part of the machine. Dirty finger-nails, spitting on or wetting the fingers, unnecessary fingering, or any act on the part of the operative which could transfer germs from the mouth or fingers to the food materials being prepared should be eliminated so far as possible.

Welfare work among the employees is important in modern factories. It is done not so much as a matter of philanthropy as for the sake of efficiency. In the particular plant which he was investigating at the time, said Professor Prescott, much attention has been given to the items mentioned above. Shorter days are required of women than of men, rest rooms are provided, lockers are supplied, and, among other things, a resident nurse is employed, who attends to minor ills which occur among the operatives. New employees are examined by a physician, who is in attendance for general purposes three days a week. Older workers also are examined from time to time. Finally, lectures are given by the nurse to the women employees—lectures which may be of importance to them personally, and of help in carrying out the operations in which they are engaged. Professor Prescott expressed the hope that this sort of work would be carried further, since simple talks on the relation of germs to disease, putrefaction and fermentation, on cleanliness, etc., improve the attitude of the operative toward the whole problem of sanitary production, because they have a personal relation to him and to his own welfare.

### ASST. TRACK MANAGER

Twenty candidates came out for the second assistant track manager yesterday afternoon. Manager Thomas addressed the first detachment of candidates at 1.05, while the second crowd was met by Webster, First Assistant, at four o'clock. About twice as many men came out for the competition as ever before. The men worked in the gymnasium in the afternoon. The competition will extend until the last of May.

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