



TECH NEWS



VOL. XXVII

WORCESTER, MASS., JANUARY 21, 1936

NO. 13

ROOSEVELT WILL SPEAK AT ASSEMBLY

FULLER LECTURE TO BE HELD ON TUESDAY, JANUARY 21ST

Mr. Roosevelt Is On the Editorial Staff Of the New York Tribune—and an Author and Lecturer

HE WILL HAVE AS HIS SUBJECT FOR HIS ADDRESS "THE RESTLESS PACIFIC"

Nicholas Roosevelt, prominent in political and literary fields, will be the speaker at the next assembly to be held in the gymnasium on Tuesday, January 21. It is the duty of every student to attend, as both the speech and the speaker are of a calibre that demand universal interest.

Mr. Roosevelt has had a rather checked career both as a politician, and as a writer. He has also spent a great deal of his time lecturing on various subjects.

He is a former United States Minister to Hungary, and was Vice-Governor of the Philippines for some years.

He has spent some years as a newspaperman, being employed as an editorial writer for the New York "Times" for four years. He is now on the staff of the New York "Herald Tribune."

He is the author of such timely works as "The Philippines—A Treasure and a Problem," "The Restless Pacific" and "America and England." On such subjects he is a recognized authority as his experiences in the Philippines and Pacific regions have given him a wealth of inside information on these very vital questions.

As if all these accomplishments were not enough to give a man all the prestige he desires, Nicholas Roosevelt goes convention one better and adds the field of lecturing to his already overcrowded list of accomplishments. He is a lecturer of no little note, being a very interesting and capable speaker. He has lectured widely on "Who Owns America," "The Restless Pacific" and "Keeping Up with the New Deal."

He has chosen his best known work as the subject of his lecture next Tuesday. This is "The Restless Pacific." Every student should make an earnest effort to attend as the benefits derived from attendance will be well worth the time.

SKEPT CHEMISTS HOLD MEETING

Three Speakers Present Topics On Chemical Subjects

The Skeptical Chemists held their regular meeting Friday night, January 17, in the Chemistry Lecture Room in Salisbury Laboratories at 7:45 P. M.

Vice-President Jack Sutcliffe was the presiding officer and also one of the speakers of the evening. Three topics of chemical interest were presented. Irving Arrondale gave a short discussion on "Heat Exchanges." This was followed by a talk on "Silica," given by Ed Hansen. The last speaker was Jack Sutcliffe who presented information on "Scovill Brass." Moving pictures illustrating this subject were shown after the talks were completed.

Refreshments were served, as usual, and the meeting adjourned at 9:45 P. M.

CHEMISTS MAKE ANNUAL TRIP TO CHARLESTOWN

Inspect Revere Sugar Refinery and Chem. Engineering Apparatus

The Senior Chemists in conjunction with their course in Chemical Engineering made their second inspection trip of this term to the Revere Sugar Refinery at Charlestown, Mass., on Wednesday, January 15, 1936. A group of seventeen men under the supervision of Mr. Petrie spent the day inspecting the chemical laboratories and the plant where cane sugar is produced from the raw sugar secured from the sugar plantations in Cuba and in the Philippine Islands.

This trip, now an annual feature of the Chemical Engineering Course, was particularly instructive to the Seniors since most of the unit processes, such as evaporation, flow of fluids, flow of heat, crystallization, classification, crushing and grinding, drying, absorption and filtration, studied in the Senior Chemical Engineering Course, were in operation.

The Revere Sugar Refinery is located on deep water to receive its raw sugar and coal, and on a railroad for long distance shipping. Extra space is required for raw sugar and coal storage and for maintenance departments.

The dock is about 1,000 feet long, making it possible to unload two boats at the same time. Each boat carries about 25,000 bags of sugar, each bag not weighing less than 325 pounds. The boats are unloaded at the rate of about 500 bags per hatch per hour, and weighed by the Customs Officers. The government sampler, with a stab, draws a small portion from each bag, takes them to the appraisers' stores where they are tested for sugar content, as the duty is paid according to the test. These small portions are eventually composited and reach the laboratory to be tested for sugar content, wax, mineral matter, moisture, insoluble material, filtrability and screenings.

The bags are then picked up by crane and carried to the refinery dump, where it is again sampled and tested for the refinery accounts. In the winter the bags in storage sometimes become so hard that the sugar must be put through a crusher before going into the conveyor to the Melt House. The raw sugar warehouse holds about 150,000 bags of sugar. About 2,000,000 pounds of raw sugar are refined daily.

Conveyors next take the sugar to the sixth floor of the Melt House where storage bins are provided with sufficient capacity to provide for the night operation. There are two of these bins each holding approximately one-half million pounds.

From the sixth floor storage bins the sugar is fed into the minglers on the

(Continued on Page 2, Col. 1)

CALENDAR

TUES., JAN. 21—

9:50 A. M.—Chapel Service
Rev. Oliver M. Frazer
11:00 A. M.—Student Assembly
at Alumni Gymnasium
Mr. Nicholas Roosevelt on
"The Restless Pacific."
6:00 P. M.—Interfraternity Basketball
L. X. A.—A. T. O.
P. G. D.—P. S. K

WED., JAN. 22—

9:50 A. M.—Chapel Service
Rev. Oliver M. Frazer
4:15 P. M.—Orchestra Practice
4:30 P. M.—Band Practice
4:30 P. M.—Interfraternity Basketball
S. A. E.—T. K. P.
T. X.—S. O. P.
8:00 P. M.—Basketball Game
R. I. State at Kingston

THURS., JAN. 23—

9:50 A. M.—Chapel Service
Rev. M. L. Cornell
4:30 P. M.—Glee Club Rehearsal
6:00 P. M.—Interfraternity Basketball
P. G. D.—A. T. O.
L. X. A.—T. U. O.

FRI., JAN. 24—

9:50 A. M.—Chapel Service
Rev. M. L. Cornell
6:00 P. M.—Interfraternity Basketball
T. X.—P. S. K.
S. O. P.—S. A. E.

SAT., JAN. 25—

2:30 P. M.—Swimming Meet
Wesleyan at Alumni Gymnasium
8:00 P. M.—Basketball Game
Springfield at Alumni Gymnasium

MON., JAN. 27—

9:00 A. M.—Final Exams Start

PREXY HOLDS DINNER FOR THE TECH COUNCIL

Regular Business Meeting Held After a Very Fine Dinner

Last Friday night it was the privilege of the Tech Council once again to enjoy another of Prexy's annual dinner meetings. For several years, President Earle has been kind enough to extend his hospitality in this way, and it is growing to be an occasion which no one who has an invitation can afford to miss.

The meeting was held after an informal dinner at which Mrs. Earle made everyone feel right at home, and the first business to come up was the Coombs Cheer Contest, the rules of which were accepted without change.

Some two months ago, the Council drew up a set of rules which would make cheerleading an organized sport, and submitted the same to the Athletic Council. A letter was read from Prof. Carpenter who suggested a slight change; the Council agreed that it was a good one.

TECH DOWNED BY NEW HAMPSHIRE 39-34 IN SEASON'S FIRST DEFEAT

Raslavsky Plays Brilliantly But Team Is Listless In Offense— Defense Fails To Hold Wildcats In Second Half

S.C.A. TO SPONSOR CHEER CONTEST PRIZES OFFERED

Dean Z. W. Coombs to Be Donor Of Fifteen Dollars to Be Divided Into Three Prizes

The Tech Student Christian Association has long realized the need of more cheers to add to the small number used at present. "The Tech Cheer," "A Long Worcester," and "The P. I. Cheer," these with the short cheer are the only ones that are used now.

The S. C. A. is now sponsoring a contest, and to inspire more and better cheers Dean Z. W. Coombs has offered a cash prize of fifteen dollars to be divided among the first, second, and third prize winners.

The rules of the contest are included in this article and they should be carefully read. This is something to help your Alma Mater so let's see some cooperation.

The Coombs' prizes totalling \$15.00 will be awarded to not more than three entries. The winners will be announced at the Tech Carnival.

The contest is open to all students, alumni, and faculty of W. P. I.

All cheers submitted become the property of the Institute.

The donor reserves the right to withhold the prizes if the number and quality of the entries is not acceptable.

The selection will be made on: appeal, spirit, and adaptability to routine.

All entries are to be submitted to Mr. Swan who will number them (the names to be withheld until final decision has been made.)

The dead line is twelve noon Saturday, March 7, 1936.

The decision of the judges will be final.

Judges—Dean Z. W. Coombs, President Ralph Earle, G. W. Huntley, F. K. Jones, and E. L. P. Krippendorff.

MASQUE NEEDS GIRL PLAYERS

Tryout For Production To Be Held Early In February

Tryouts for the Masque Spring Play to be held during the week of February 10th or 17th. As in previous years there will be a demand for good female players, either leads or characters. If there are any students who know of girls, who have dramatic ability, and who would care to try out for the play, it would be a good idea to see that they are notified as soon as possible. It is best that only Worcester girls be asked to try out because of the difficulty of

(Continued on Page 2, Col. 1)

21-12 FIRST HALF LEAD WIPED OUT WHEN JOSLIN STARTS SCORING OF N. H.

A rather tired and listless Worcester Tech basketball team went down to an unimpressive defeat at the hands of an aggressive New Hampshire team Saturday night in Alumni Gym by the score 39-34. Playing almost the entire game without Dick Munson, a high scorer, and the last few crucial minutes without Al Raslavsky, the team showed clearly that they need a lot more contact play to put them at their best. New Hampshire was the first opponent to appear which has a definite plan of offense against Pete Bigler's zone defense; the Durham men used the antiquated but still powerful attack of having three men always on one side of the center of the court. Employing this method throughout the game they were able to get passes into the forecourts time and time again and they made every shot from in close count. Tech, passing very raggedly, could not get under the New Hampshire basket and except for Raslavsky's overhand shots all Tech points were made on long shots.

As has been the custom for the past few games, Tech started very slowly and after five minutes of play were behind 6-0. Svenson then started the scoring by sinking a one-hand shot from the center of the floor. Raslavsky followed this with three shots in quick succession: an overhand, a follow-up and a long shot. Hendrickson added two foul shots and Grublevskas got a follow-up. In spite of this scoring spree the team was not very far ahead for New Hampshire made five free tries and a sucker shot count. Just before the half ended Svenson, Raslavsky and Hendrickson each added two points more, making the score 21-12.

The Tech team began the second half with the slowest playing that has been seen in the gym this year. Holding only a nine-point lead, they seemed not at all worried when the opponents opened with three quick baskets. Raslavsky, who was the only man playing his usual hard game, helped the cause with a long shot, but this only stopped the slaughter a short while. The Wildcats, playing their quick-passing game ran out to a four-point lead on three foul shots and three field goals. Svenson and Hendrickson momentarily tied the score when they each got a long shot, but New Hampshire went into a six-point lead on three perfect pass plays. Munson came into the game in spite of his bad leg and teamed up with Raslavsky and Svenson to score seven points. Only three points behind and two minutes to play, the team was beginning to snap out of their lag-gard game; but all hopes were dimmed when Raslavsky, trying to follow up a long shot by Munson fell on the mats in front of the band and came up with a bad cramp in his leg. He insisted on staying in the game but Bigler wouldn't allow it and substituted Hendrickson. Playing without

(Continued on Page 3, Col. 1)

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LET'S GO SKATING

How would you like to go ice skating on a real rink and also have that rink situated right on the campus? We are referring to the tennis courts which could easily be fixed so that they would be suitable for flooding. The expenses connected with this would be quite small and they could be taken care of in several ways. The equipment of the athletic department has received few additions in recent years and it is more than possible that N. Y. A. funds would be available for such an undertaking.

If this project is carried through it will definitely improve the campus and provide a fine recreation for every Tech student. We believe that there is a real interest in ice skating among the undergraduate body and that the construction of a rink would be practical and prove to be a benefit to the Institute.

If you are in favor of such action see what you can do toward making the project a reality.

WHAT? NO CUTS?

You have all by this time read Prexy's notice in this week's NEWS; he points out the fact that when a man takes a cut from class, it is his own loss. There is no doubt but that he is right. In a school of this kind where enough courses to keep a man busy for five years are crowded into four short ones, every minute of class means something. If the instructor is a good one (and he usually is in this regard) he will plan his work to get the most out of the time allotted to him. He will make certain, then, that class time is well filled with instruction that is really important, whether it seems so to the student or not.

The trouble is that more often than not, his students don't realize that the seemingly slight remarks dropped here and there may be useful later on. We are getting at Tech a well-rounded engineering education; we are covering the whole of one branch without taking any particular subject in which to specialize. Later on, if we stick with our chosen profession, we shall be forced to decide on that subject and try to make good in it by means of the limited knowledge given us at Tech. We must get everything we can out of our courses, then, and catch every hint passed to us. It should be unnecessary to penalize a student when he cuts. He should know that he may lose a tip that will mean the difference between success and failure.

MASQUE NEEDS GIRLS

(Continued from Page 1, Col. 4)

arranging rehearsals with out-of-town girls. It would be greatly appreciated if the names of those interested could be given to the Masque organization so that they might get in touch with them, and notify them as to the exact date for the tryouts. Names can be given to G. W. Huntley, D. LaField, Mr. Downing or K. Jones.

CHEMISTS MAKE TRIP

(Continued from Page 1, Col. 2)

fourth floor, a scroll equipped with mixing flights. A crystal forming from

a solution will have a higher purity than that of the mother liquor from which it separates. The raw sugar crystals are of a high purity but are covered with a film of this mother liquor from which they have been crystallized in Cuba. The refiner must remove this film. The molasses film is softened by mixing at the fourth floor mixers, with the wash syrup from the third floor centrifugals to a magma of a density that will just permit its flowing into the centrifugals. At this station enough lime is added to keep the sugar from inversion, and to keep it alkaline.

Next it goes to the mixers, which are merely tanks with agitators to keep the raw sugar from settling. From here it goes to the ten centrifugals. These are self-discharging machines that take in about 500 pounds of the magma, and spin at from 1,000 to 1,200 revolutions per minute.

The products of this operation are a washed sugar of higher purity and better color than the raw sugar, and second a wash syrup amounting to about 15 per cent of the whole. This contains the impurities removed from the sugar. Both the sugar liquor and the syrup are pumped to the next station, the Filter House.

Just before filtration the sugar liquor and syrup are pumped to the Blow-Ups which are iron tanks fitted with steam coils for heating the liquor. Here the temperature and density are adjusted. The nine Blow-Ups hold each 15,000 pounds. Lime is added to separate the impurities and kieselguhr or Distomaceous Earth is added to aid in the following filtration.

Entering the Sweetland presses from the Blow-Ups we have a yellowish brown liquor with minute particles of impurities and kieselguhr suspended throughout. This material is removed by filtration in the presses. There are twelve of these presses and in each there are seventy-two leaves of filter cloth, each filter cloth containing fourteen square feet of filtering area.

The filter press liquor then goes to the Char or Boneblack Filters. First, what bone char really is: Briefly, bone char is the carbonaceous residue obtained as a result of the destructive distillation of animal bones in the absence of air. Only fresh, hard bones, free from extraneous matter can be used.

The principal constituent by weight of bone char is the calcium phosphate. This phosphate skeleton is highly porous, and is coated throughout with about eight to ten per cent of finely divided active carbon. In addition, bone char contains from three to eight per cent of calcium carbonate. This supplies the necessary alkalinity to the sugar solution being filtered, and prevents inversion of the sugar, and consequent loss. The carbon, the most active and important constituent in the char, is the ingredient that accomplished the decolorization. In addition to decolorizing, the char removes other impurities, such as gums, alkaline salts, and organic salts, all of which are objectionable.

An individual filter in the refinery (of which there are 42) consists of a large vertical cylinder, ten feet in diameter and twenty feet high, with a conical bottom. In this bottom is a perforated plate over which is placed a coarse-weave blanket, and on top of it another blanket of finer weave. On this foundation rests the bone char, which is run into the filter from a chute supplied with char from an endless belt from the kilns. After the filter is filled with char, Press Liquor is run in until the char is covered. The top is then placed on the filter, the latter connected with the lines from the storage tanks, and filtration started. The liquor runs in at the top and passes down through the char and emerges a water-white liquid at the outlet. These liquors run through pipes in the Liquor Gallery where samples are taken and tested by the Laboratory and thence to the pans and evaporators to be boiled under vacuum into granulated sugar.

There are seven vacuum pans in the pan room where the liquors are boiled under vacuum to form crystals. Liquors too light for the vacuum pans are sent to the evaporators to be evaporated to the right density.

The white liquor from the char filters goes to the vacuum pans where the sugar boiler draws some into the pan, boils it until crystals begin to form and allows them to increase in number

Office of the President

ABSENCES

RULE 2 of our regulation states: "A student is expected to attend all exercises of his course." This I believe to be a reasonable request, inasmuch as the student at this Institute is studying for a professional career. When he enters on that career, it will be expected that he shall always be "on the job." The rule does not say he is "required" to attend all exercises. It leaves to the student himself the decision as to whether he will injure himself by absence from scheduled work. He makes the choice and, therefore, accepts all responsibility for his act.

(A) Absence from scheduled exercises because of prolonged illness, surgical operations, death in the family or other calamity.

In such cases the student or someone acting for him should notify the Registrar, who in turn will notify the student's instructors of the circumstances.

(B) Absence because the student is a member of a sports team, musical club, or of a scientific, engineering or other society recognized by the Institute, and which may have one or more meetings calling for the student's attendance during Institute sessions.

In this type of absence the individual student should present to his instructors a notice signed by the manager of his organization stating the reason for absence, just as is now done by the athletic manager.

(C) Absence just before or just after the regularly scheduled recesses, especially those at Thanksgiving and Christmas.

If a student wishes more time than is allowed by the Institute calendar, he must weigh the matter himself in conference with his instructors to determine if he can afford to be absent from exercises at those times.

(D) Occasional absence for a day or more for some good reason that would probably not be known to the instructor.

In such cases the student, as a matter of courtesy, should inform his instructors of the reason for absence.

There will be no further issuing of absence permits from the office.

RALPH EARLE,

President.

until his judgment tells him that he has enough. Then he adds liquor as required to build up the size of the crystals, always watching carefully to prevent new grain forming. The pan should be full when the crystals have become the proper size; the mixture of crystals and syrup is then dropped to mixers, or agitators to keep it from settling. Then to the final centrifugals. The syrup is thrown off, returning to various parts of the plant such as the Blow-Ups or the Char Filters, according to the test obtained at the Laboratory.

The grains of sugar are separated according to size by vibrating screens called bolters, then packed in barrels, bags or cartons automatically.

Powdered and pulverized sugars are made by grinding granulated sugar to the desired degree of fineness. Cubes and tablets are pressed from a damp sugar which has had special vacuum pan treatment to get a certain grain necessary for this process. Those pressed pieces are then dried in ovens and packed.

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CAMPUS CHATTER

Back in print after more than a month's absence, Campus Chatter has quite a bit of interesting news concerning the socially and otherwise prominent members of the student body and faculty. This columnist has heard some of the remarks made by the faculty members who were mentioned in the column once or twice concerning some "boners," and has concluded that discretion is the better part of valor; consequently the faculty will be immune from these innuendos unless something very special is heard of. The best one this week concerns "Stan" of the Civils; during the Sophomore inspection trip to Boston some of the boys were discussing the instructors not knowing they were standing directly behind them. "Walbridge" and "Swede" clearly stated their opinions of this instructor only to discover that he was listening with eager ears.

Saturday night saw three of the fraternities on the Hill holding their annual pledge dances. All of these were no doubt great successes, but the one at the corner of Dean and Institute proved to be the greatest drawing card to members of other fraternities. The party at "Coke's" before the game was one which will always be remembered by those who were there. The orchestra at the pledge dance quit playing before one but not because their contract called for that time.

During rush week mention was made here of the fraternity who "fixed up" some of the Freshmen who were attending a dance they were giving by getting them dates with their steadies. At the last basketball game the president of the Freshman Class was seen with one of these steadies with whom he was fixed up. The fellow who had done the fixing came alone. As a note we can say the Freshman pledged to another fraternity. It seems someone lost a Freshman and a girl all in one deal.

"Dead A." was rather downcast at Saturday's basketball game: two of his Worcester women were there but not with him. One was with a fraternity brother and was safe, but the other had him greatly worried for she was with the West Boylston soccer flash. She was surprised though when she saw him dance with a girl wearing a pin from his fraternity; that was more than she could get from him.

Rumors have been heard, and this columnist believes they are not groundless, that there is not to be a basketball game with Assumption College next year. Assumption being in the city does not get the \$50 guarantee which other visitors get and Tech would not get that guarantee from them next year if they played at Assumption. After Tech played host this year (and made more money than on any game for many years) those in charge do not intend to give Assumption a return engagement next year (because Tech will get nothing out of it and Assumption will get all profits).

Come on "Doc," remember we got everything this year; do what you can to further a relationship between two city teams which will add greatly to the athletic prestige of Tech.



TECH SWIMMERS LOSE TO MASS. STATE; GRAY BREAKS FREE STYLE RECORD

Five New Pool Records Set During Meet; Dearborn and Evans Take First In Diving and 200-yard Breaststroke

STATE SWIMMERS SET NEW POOL RECORD IN RELAY

Worcester Tech varsity swimmers lost to a fast Massachusetts State team 50-27, at Amherst last Saturday as five new pool records were set and another tied.

The first pool record to fall was the medley relay with Rounds, Hodder, and Lothrop of Mass. State completing the 300 yards in 3 minutes, 19.9 seconds. Cutter, also of M. S. C., set new records in the 100 and 220 free style. Gray of Tech established a new time for the fifty-yard free style, while Rounds of State tied the existing record for the 150-yard back stroke.

In all Worcester won three events. In the fifty-yard free style Captain Gray of Tech set a furious pace to beat Fisher of State and set a new mark of twenty-five seconds flat for the event. Evans applied the "butterfly" technique to the final stretch of the 200 yard breast stroke to nose out Hodder of State and take Worcester's second event. Similarly in the same event Murphy of W. P. I. edged Pratt of State for a third.

Dearborn captured Worcester's third event by outpointing Thurlow and Harrison of M. S. C. in the fancy diving.

The summary:

300-yard medley relay—Won by Mass. State (Rounds, Hodder, Lothrop); Worcester Tech (Hanson, Murphy, Smith), second. Time, 3 minutes 19.9 seconds (new pool record).

220-yard free style—Won by Cutter, M. S. C.; Thorndike, M. S. C., second; Howland, W. P. I., third. Time, 2 minutes 25 seconds (new pool record).

50-yard free style—Won by Gray, W. P. I.; Fisher, M. S. C., second; Jacobson, M. S. C., third. Time, 25 seconds (new pool record).

Diving—Won by Dearborn, W. P. I.; Thurlow, M. S. C., second; Harrison, M. S. C., third.

440-yard free style—Won by Lathrop, M. S. C.; Rozwenc, M. S. C., second; Howland, W. P. I., third. Time, 5 minutes 33.2 seconds (new pool record).

150-yard back stroke—Won by Rounds, M. S. C.; Lane, W. P. I., second; Hanson, W. P. I., third. Time, 1 minute 51 seconds (ties pool record).

200-yard breast stroke—Won by Evans, W. P. I.; Hodder, M. S. C., second; Murphy, W. P. I., third. Time, 2 minutes 42 seconds.

100-yard free style—Won by Cutter, M. S. C.; Gray, W. P. I., second; Thorndike, M. S. C., third. Time, 56.8 seconds (new pool record).

400-yard free style relay—Won by M. S. C. (Fisher, Rounds, Cutter, Lothrop); W. P. I. (Jones, Evans, Gray, Smith), second. Time, 3 minutes, 55 seconds.

TECH BOWS TO N. H. STATE

(Continued from Page 1, Col. 5)

the man who had been the main cog in what little offensive strength they had shown, the team could go nowhere. New Hampshire scored two points more just before the final gun.

Although this game is a deep disappointment to the rabid followers of the team it need not be taken to mean as much as the score indicated. With Jenkins playing in spite of a bad cold and Munson only in the game for a few minutes, the scoring combination could not get going. The defense, which had never before been used on a team which was as big as Tech now has that experience and probably will not falter again. One inexcusable fault of the team was their inability to make foul shots; they made only eight out of fifteen while New Hampshire made nine out of ten. Five of those seven missed foul shots would have tied the game. The only redeeming feature of the game was the sterling play of Al Raslavsky. In spite of the fact that his opponent was two inches taller and much heavier than he, Ras often out-

TECH PREPARES RELAY TEAM FOR GARDEN MEET

Red and Gray Runners To Line Against Tufts and Springfield In K. of C. Games At Boston

For the past two weeks a group of industrious runners have been practicing every night for the first relay race of the season in Boston. At present the lineup for the race is uncertain with only one runner certain of his position; he is Gil Ashwell who did such an excellent job in last year's races. However on Monday time trials will be held and the lineup will be chosen after the trials. Those who will probably be on the team are, Gil Ashwell, Barney Harvey, Norm Coffin, and Angelo Mauriello. The substitutes will be chosen from Stan Olson, Steve Stafford, and Ralph Berry; Olson is at least certain of a substitute position on the team if he does not make the regular squad.

The Tech baton passers will line up against Springfield College and Tufts in one of the many relay races to be held at the K. of C. games in the Boston Garden. Nothing is known of either team and no prediction can be made as to the outcome of the race, but Tech can be counted on to do its best.

While the relayists are practicing the remainder of the squad are rounding themselves into condition for the meets which come in February. The outlook is not at all bleak as might be expected after Tech had lost so many of its better runners. In the forty yard dash there are a number of good performers with Frawley, Olson, Coffin, and Mencow holding the upper hand. In the 300 there are Coffin, Olson, Bonin, and Ashwell. In the longer races, Ashwell, Stafford, Harvey, Lancaster, and Hollick are the most outstanding. Tech also has Mencow and Bonin in the hurdles and Banan and Bonin in the high jump.

Tech will run against Mass. State as usual and there is a rumor that Tech will participate in a triangular meet with Tufts and Mass. State at Tufts some time early in February. Last spring Tech won the triangular meet on the cinders with no great difficulty.

compound consisting of lead oxide and glycerine glue. This keeps the ball air tight. The two half shells are then fused together and fine molten cloth, coated on one side with rubber cement and cut into a figure eight pattern, is applied to the center.

Unlike the center of a tennis ball, the core of a golf ball is not air inflated. It contains a substance called liquid latex which is actually more of a paste than a liquid. This substance is enclosed in a soft rubber shell and pure gummed thread is wound around it by machine producing what is called the center.

The cover, which is made of material consisting chiefly of derisinated balatta colored with zinc oxide, is made into half shells. The center is capped with the two half shells and put through a final molding process which produces the finished ball. The completed product is then trimmed, painted and marked.

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Furnishings

T.U.O. DEFEATS S.O.P., P.S.K. AND A.T.O. TO LEAD INTRAMURAL B.B. LEAGUE

P.S.K., T.K.P., and L.X.A. Promise To Give Leaders a Run For the Cup; Fraternities Provide Snappy and Hard-fought Games

TECH FIVE TO PLAY TWO GAMES IN COMING WEEK

Rhode Island and Springfield Will Be Met With Squad Hampered By Injuries

The crippled Tech five faces two of its hardest games of the season in the coming week; Wednesday the squad journeys to Kingston to play the powerful Rhode Island State team and Saturday plays host to the basketballers from Springfield College.

The Rhode Island team has defeated all opponents with the exception of Providence College, which nosed them out in a hard game Friday night. Playing with practically the same team which so easily defeated Tech last year, Rhode Island may prove to be too much for Tech since they have the added advantage of playing on their home floor. Springfield College has had a mediocre season so far, its outstanding victory being that over Tufts by a score of 47-34. This team should be easy if Tech is playing up to standard.

Having come out much the worse for wear in its game with New Hampshire the squad will be rather depleted unless Raslavsky, Jenkins and Munson are much improved by Wednesday. Raslavsky, who is undoubtedly the star of the team, is still unable to use the leg which was injured Saturday night, although the injury was slight, it was painful and may heal too slowly to permit Ras to play against the Rhode Island team. Dick Munson, whose knee is in pretty bad shape, cannot take too many chances with it and will not be in action unless the going gets too rough. Frank Jenkins, suffering from a cold which greatly hampered his usual speed Saturday night, will probably be in good condition by game time.

WITH OUR OPPONENTS

Clark 26 Northeastern 25
Brown 65 Connecticut State 33
Springfield 47 Tufts 34
Amherst 44 Mass. State 24
A. I. C. 39 Clark 36

HOWES AND GRANT LEAD INDIVIDUAL SCORING WITH 71 AND 69 POINTS

The interfraternity basketball games have been going for two weeks now and the standings somewhat different with the leaders being toppled and those down low staging upsets and climbing upward. There has been new talent uncovered, causing many surprises. The interest that is being shown is justified because the games, although not especially scientific, are fun for the players and spectators.

On Monday, January 13, P. S. K. took S. O. P. 27-18 while T. K. P. defeated A. T. O. 30-16. Tuesday, January 14, P. S. K. was the victor over A. T. O. 29-26 and S. O. P. bowed to T. U. O. 42-12; Wednesday T. K. P. won over L. X. A. 24-12, and S. A. E. defeated P. G. D. 15-10. Thursday T. X. went down before S. A. E. 24-19, while P. S. K. was the victim of T. U. O. 35-20. Friday L. X. A. beat S. O. P. 27-17 and T. K. P. was victorious over T. X. 24-16, T. U. O. taking A. T. O. 30-23. There is one week to go with the last game coming Friday, January 24. In case of a tie there will be a play-off on Saturday afternoon. The summary shows T. U. O. in the lead.

	Won	Lost
T. U. O.	6	1
T. K. P.	5	1
P. S. K.	4	1
L. X. A.	4	1
S. A. E.	3	3
T. X.	3	4
A. T. O.	1	5
P. G. D.	0	5
S. O. P.	0	5

Below is a summary of the leading scorers and the number of points scored:

1. Howes	T. U. O.	71
2. Grant	T. U. O.	69
3. Sliva	T. K. P.	56
4. Burke	T. K. P.	50
5. Nimmo	T. X.	50
6. Houton	L. X. A.	45
7. Despotopoulos	S. A. E.	42
8. Rallis	T. U. O.	37
9. Borden	P. S. K.	35
10. Jaques	A. T. O.	34
11. Pizain	T. K. P.	33
12. Moussa	A. T. O.	32
13. Hastings	T. K. P.	31
14. Sadick	S. O. P.	29
15. Maine	P. S. K.	28
16. Estes	T. X.	25
17. Simons	L. X. A.	25
18. Mudgett	L. X. A.	25
19. Bradshaw	S. A. E.	21
20. Woodward	P. G. D.	20
21. Dahlstrom	L. X. A.	19
22. Boman	P. S. K.	18
23. Court	S. A. E.	17

(Continued on Page 4, Col. 1)

CHEM. DEPT. NOTES

H. Shepard Fuller, '37, has been awarded the prize for the best speaker of last year's meetings of the Skeptical Chymists.

The methods of manufacture employed in the making of golf and tennis balls are clearly explained by the exhibit now on display in the Chemistry Building. The exhibit, which was sent to the department by the Spalding Company, presents a graphic and educational picture of the various steps and materials employed in the making of Spalding tennis and golf balls.

In the manufacture of tennis balls, a combination of rubber, sulphur, and a pigment, such as zinc oxide, are united into a mass which is called the compound. Small sections of this compound which are termed slugs or lozenges are then molded into shells which are vulcanized and used as the center of the ball. These centers, which are made in the form of halved cylinders, are coated on the inside with a

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INTERMURAL BASKETBALL

(Continued from Page 3, Col. 5)

24. Howland	T. X.	16
25. Minaliza	T. X.	15
26. Lindegren	T. U. O.	15
27. Budam	P. G. D.	14
28. Clark	T. U. O.	14
29. Taylor	P. G. D.	13
30. Shepardson	P. G. D.	13
31. Cutler	S. O. P.	11
32. Rosco	A. T. O.	11
33. Constant	A. T. O.	10
34. Gamache	S. A. E.	10

SENIOR CLASS OF 1936

- An Experimental Study of Stiffened Circular Tubes Subjected to External Pressure.
A. O. Bell and S. K. Goodwin
- Effect of Approach Conditions on Venturi Meters.
J. D. Cahill and G. E. Silva
- Design and Test of Pelton Wheel Buckets.
R. W. Baker and H. P. Hendrickson
- Calibration of an Alden Transmission Dynamometer.
T. F. McNulty and G. A. Sherwin
- Investigation of Relation between Exhaust Gas Analysis and Air-Fuel Ratio in a Gasoline Engine.
D. L. Edmunds and G. W. Fuller
- Investigation of the Characteristics of Two Model Escargot Type Club Propellers.

- G. L. Chase and J. W. Phelps**
 Investigation of the Distribution of Spray from Simple Diesel Fuel Orifices.
- A. D. Wilcox and G. P. Wood**
 Investigation of the Effect of Graphite Lubricants on the Wearing Quality of Flat Sliding Metal Surfaces.
- L. B. Howard and G. A. Sanborn**
 Survey for Diesel Elec. Installation at City Farm.
- H. J. Erickson and W. C. Maine**
 Development of Equipment for Trouble Shooting on High Speed Gasoline Engines.
- J. A. Porter**
 Determination of a More Practical Formula for Computation of Steam Flow Through an Orifice, above and below the Critical Pressure Based upon Experimental Observations.
- H. T. Anderson, Jr., and C. H. Leach**
 Determination of Effect of Air Velocity on the Heat Transmission Coefficients of a Modern Type Steam Radiator.
- A. C. Ekberg and L. W. Johnson**
 Analysis of Steam and Power Cycle for an Office Building to Determine Present Costs of Operation and a Suitable Heat Balance for Future Rehabilitation or Extension.
- R. A. Morrill and H. C. Whitman**
 Installation and Tests Spray Type

- Washer for Washing and Humidifying Air.
J. A. Crane and F. W. Swan, Jr.
- Study of a Proposed Heating Installation in a Local Industrial Plant.
J. E. Guild and L. G. Humphrey, Jr.
- Strength of Keyways in Small Gears.
A. M. Parry
- Power Necessary for Milling Compared with Helix Angle of Cutters.
E. W. Armstrong and A. H. Gurnham
- An Investigation of Grinding Conditions from Standpoint of Wheel Manufacture.
W. F. Roth and A. P. L. Krippeford
- Photo-Elastic Studies.
H. E. Wilson and F. S. White
- Wear Resisting and Strength Qualities of Manganese Bronze.
L. T. Benoit
- Effect of Low Temperature Tempering on Quench Hardened Steels.
C. W. Borden and J. R. Brand
- Incomplete as far as aero section is concerned.

WHAT THE RAILWAYS DO IN AN HOUR

An hour is a relatively short time, yet within that brief period the railways of the country perform a service

for the public, on the average, of amazing volume. Some of the work done in an hour by Class I lines is shown below, based on figures for 1934 operations. All of these figures represent averages for the carriers as a whole and are based on reports made to the Interstate Commerce Commission.

In an hour the railways earn \$373,453 from transportation operations.

In an hour the railways spend \$278,741 in operating expenses.

In an hour the railways pay \$173,428 in wages. (Much of this total is included in operating expenses.)

In an hour the railways pay \$27,340 in taxes to national, state and local governments.

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