

WINTER CONCERT HELD THURSDAY EVENING

Hotel Somerset Scene of Annual
Affair of Combined Clubs—
Musical Program Followed by
Dancing

LARGE ATTENDANCE

A most enjoyable musical program was rendered by the Combined Musical Clubs at the Hotel Somerset last Thursday evening at the annual Winter Concert. The music and other amusing numbers were followed by dancing until 2.00 o'clock.

The concert began with "Take Me Back to Tech," rendered by the Glee Club and accompanists. There followed numbers by the Banjo Club, the Mandolin Club and the Glee Club quartet. J. S. Coldwell '19, C. Parsons '19 and E. D. Harrington '18 offered some very interesting numbers, "Miss" Coldwell acting as Harrington's dancing partner in this selection and taking part as the lady with Parsons in singing "A Picture I Want to See." C. T. Proctor '20, held the audience with his performance on the xylophone, and was called for several encores.

The attendance was quite large and later the ballroom was filled to its capacity, but not too crowded to annoy the dancers. Refreshments were served during a short intermission and then the rest of the dance program was fulfilled.

The musical program was:

1. Take Me Back to Tech, GLEE AND INSTRUMENTAL
 2. Hang-over Blues, MANDOLIN CLUB
 3. Swing AlongCook GLEE CLUB QUARTET
 4. Bostonian MarchKenneth BANJO CLUB
 5. The Two GrenadiersSchuman GLEE CLUB
 6. Selected, HARRINGTON AND COLDWELL
 7. Selection, MANDOLIN CLUB QUARTET
 8. Selected, PARSONS AND COLDWELL
 9. Bullfrog Blues, MANDOLIN CLUB
 10. Xylophone Solo, C. T. PROCTOR '20
 11. To the FieldBuck GLEE CLUB
 12. Cardinal and GreyMoody COMBINED CLUBS
- Finale, Stein Song and Star Spangled Banner,
ALL

SIGNAL CORPS COMMISSIONS LIMITED TO ENLISTED MEN

Training Camp to Start About January 5, 1918

The following article, regarding the awarding of commissions as second lieutenants in the land division of the Signal Reserve Corps, has been approved by the War Department:

At present there are no vacancies in the land division of the Signal Reserve Corps, except in the grade of second lieutenants, that are not in process of being filled. It is desired and contemplated filling these vacancies in the grade of second lieutenant by the promotion of qualified enlisted men of the various sub-divisions of the Signal Corps of the Army after such men have been selected for, and have satisfactorily completed, a course of instruction in the duties of an officer at a Signal Corps training camp.

It is intended to establish this training camp about January 5, 1918, and to have approximately 400 enlisted students under instruction for a period of about three months. The students for this camp will be selected by Signal Corps authorities from enlisted men of the Signal Corps, exclusive of the aviation section, under their command or observation.

Appeal to Technology Men to Aid in Wood Cutting Campaign to Relieve Fuel Shortage

The Massachusetts Forestry Association has made public a request to the students of the various colleges in and about Boston to aid in the Cord Wood Cutting Campaign to take place during the coming Christmas recess. The sole object of this campaign is to relieve the scarcity in the fuel supply.

Referring to this, Professor Henry G. Pearson of the English Department, made the following statement: "This is really a very important work, for the coal situation in Massachusetts within the next month will become exceedingly acute. In the immediate vicinity of my home in Newton Center there is a demand for forty or fifty men who are willing to do this work. They will be paid as high as \$2.50 per day, depending on their ability as wood cutters. The work is to begin the day after Christmas and, I believe, that it can be made to fulfill both a war time emergency and a good time for the men concerned."

All undergraduates who wish to avail themselves of this opportunity should hand in their applications at the Bursar's office immediately.

The letter received from Mr. Harris A. Reynolds, secretary of the Massachusetts Forestry Association, is published in full on page two of this issue.

ADVANCE BATTALION

Lieutenant Washburn Lectures on Machine Guns

Cadet Lieutenant F. A. Washburn '18, an instructor in the Naval Aviation School at Technology, gave a lecture on machine guns to Companies A and B of the Advance Battalion Thursday afternoon. This same lecture will be given to Companies C and D on Wednesday.

Lieutenant Washburn began his lecture with an historical sketch of the development of the machine gun. "The object of such a gun is, as we all know, to increase the firing-power per man. As far back as 1066 we can see the beginnings of the idea behind the machine gun. At the battle of Hastings in that year, crossbows were used which could shoot more than one arrow at a time. This idea was later applied to firearms. In the South African War a row of guns was fired by an iron bar running the length of the row and acting on all triggers at once. The first real machine gun, however, was invented in 1861 by the American, Richard Jordan Gatling. This gun had rotating barrels and a gravity-feed. The French Mitralleuse gun appeared at the time of the Franco-Prussian War, and the Maxim, later, in 1883."

After comparing the machine-gun in its various parts to the army rifle, the lecturer spoke of the types of guns. "Machine guns," he continued, "are of two classes: 'machine guns' and machine rifles. The 'machine gun' is an automatic, non-portable gun; the machine rifle is much the same, but light enough to be carried by one man. The Vickers, Colt and Maxim guns belong to the first of these classes; the Benet-Mercier, Lewis and Hotchkiss, to the second."

Lieutenant Washburn here took up the construction, methods of operation, feeding and cooling of the different makes of machine guns mentioned above, and explained the causes of jams and stoppages common to all types of guns.

In discussing the tactical importance of the machine gun in the air and on land, the Lieutenant said: "The machine gun is the only arm which the aviator has to rely upon. If it doesn't work when he needs it, he is not likely to make another flight. It is only rarely that over 100 rounds of cartridges are

(Continued on page 3)

MUSICAL CLUBS

There will be an important meeting of the Musical Clubs this afternoon at 1.00 o'clock in room 2-190. All members of the clubs are requested to be present.

All Mandolin Club rehearsals will be suspended until after the Christmas recess.

SOPHOMORE ELECTIONS TO BE HELD TOMORROW

Treasurer and One Member of the
Institute Committee to Be Chosen

On account of a misunderstanding occurring in the nominations held this fall of the Institute Committee and Treasurer of the same class were declared invalid. According to the rulings governing all elections of class officers, at least three members must be nominated for each office, this law failed to be complied with and as a result the election was contested by some of the nominees. The papers which were handed in Saturday show the following nominations for the final elections to be held tomorrow:

For Treasurer

JOHN J. HINES—Course X; Delta Tau Delta; Manager of Class Crew (2); Temporary Class Treasurer (2).

DAVID L. FISKE—Course II; Tug-o'-War (1); Publicity Manager of the Musical Clubs.

W. J. DEAN—Course XV; Phi Kappa Sigma; Class Baseball (1); Class Football (2).

LAUREN B. HITCHCOCK—Course X, Freshman Regiment Officer (2); Adjutant R. O. T. C. Coast Artillery (2); Chemical Society; E. H. S. Club.

For Institute Committee

THEODORE W. BOSSERT—Course X; Theta Xi; Chemical Society; Assistant Business Manager of Technique 1917; Varsity Track Team (2); Class Relay (1) and (2).

ERNEST P. WHITEHEAD—Course I; Tech Show 1917; Rifle Club; Tech Regiment.

ALBERT KRUSE—Course IV; The Tech, Night Editor; Class Baseball (1); Tech Show Chorus (1); Architectural Society.

W. LAWRENCE WINANT—Course XV; Business Staff and 1st Asst Advertising Manager, The Tech (1); Cast of Tech Show 1917; Advertising Manager, The Tech (2).

Since the place and time of the polling has not been definitely decided upon, a notice will be posted upon the bulletin board in the main lobby of Building 10 this morning announcing the same.

NAVAL ARCHITECTURE DEPT. TO APPROVE CONCRETE SHIP DESIGN

The United States Shipping Board has announced the acceptance of a Boston shipbuilding concern's proposal for building concrete ships of 3,500 tons. The firm will build one vessel on approval and if the ship is accepted it proposes to construct nineteen more of the same type.

The Naval Construction Department of Technology will approve the design for these ships and will probably supervise their construction. The ships are to be built in the South, and the builders claim that they can turn out a hull in sixty days.

DRAFT QUESTIONNAIRE WILL BE EXPLAINED TO ALL REGISTRANTS

Through the Efforts of The Tech Mr. Richard W.
Hale, a Prominent Boston Lawyer, Will
Speak at Convocation Today

CONFERENCES IN DEAN'S OFFICE

BEGINNING today, there will be at Technology various lawyers to aid Technology registrants in gaining a working knowledge of the new draft regulations, especially as they are affected by the new questionnaire. The first step will be taken today when all registrants will be addressed at the Convocation, which has been called by President Maclaurin for 1.05 o'clock, by Mr. Richard Hale.

RED CROSS DRIVE

Attempt to be Made to Secure
1000 Members at Technology

In response to the call sent out to the various educational institutions throughout this country to co-operate in the present Red Cross drive to secure twenty million members, Technology has volunteered to aid in this work by endeavoring to total one thousand subscriptions. R. W. VanKirk and W. C. Wilson, of 1918, are to be in charge of the work.

The campaign, which the Red Cross is conducting at present, is country wide, and the attempt is being made to raise the number of members from five millions, the total enrollment for 1917, to twenty millions. As in the case of the recent Y. M. C. A. War Fund Campaign, all the universities, colleges and technical schools in the United States have been asked to help in this humane work.

The slogans of the Red Cross are numerous at present and are presented to the public through the medium of thousands of posters. Perhaps the most appealing of these are the phrases "The Red Cross Follows the Flag" and "Christmas Eve Candles to Shine Behind Emblems of Mercy." It is by no means an accident that the present drive comes within the holiday season. The special campaign pamphlet reads:

"We have set Christmas time to attain this goal because we believe that the Red Cross and Christmas spring from the same spirit, and we wish to bring together these two great symbols of mercy, sacrifice and cheer. On this, our first Christmas in the war, we want the Red Cross symbol to add not a spirit of dejection, but the thought of the serious purpose and sacrifice, which through accomplishment it represents."

"We hope that from this Christmas campaign of 1917 will grow a permanent custom which will increase the significance of both Christmas and the Red Cross."

The dues for membership in the Red Cross are one dollar per year and entitle the owner to wear a button. Since nearly one thousand undergraduates contributed to the Y. M. C. A. drive, it is expected that there will be little trouble in securing the desired number of subscriptions at Technology.

There is to be a meeting of the men on the committee at the Institute for conducting this work in the Caf at 1.10 o'clock this afternoon. Any men who are interested and would like to aid in canvassing the different undergraduates should see either R. W. Van Kirk or W. C. Wilson immediately.

FRESHMAN HOCKEY PRACTICE

Arrangements have been made with the Arena to hold freshman hockey practice there. It has not been definitely decided yet on what days there will be practice, but that will be posted on the bulletin board later.

There has been a general movement among the lawyers to aid all registrants in filling out the questionnaire. The Tech, thinking that there were at the Institute enough men interested in the new draft regulations to warrant it, decided to have something done to help the men who have registered in further understanding what is required of them. Mr. John A. Curtin '92 became interested and invited one of the members of the Managing Board to attend a meeting of the Local Board in Brookline, to which he is attached as legal adviser. Mr. Curtin has volunteered his services in aiding the men, as have Mr. John L. Newell '95 and Mr. William A. Quigley who will be here this week in the Dean's office from 1.00 to 2.00 o'clock to answer questions and advise registrants.

It was thought that, in order to have all registrants at the Institute appreciate what the questionnaire is, a general discussion was warranted. The Tech therefore got in touch with the Lawyers' Preparedness Committee and arranged to have Mr. Richard W. Hale, of the firm Hale, Grunell and Swain, speak to registrants at the Convocation which Dr. Maclaurin has called for 1.05 o'clock today in room 10, 250. It is requested that only those who have registered attend owing to the limited seating capacity of the hall. Mr. Hale will outline the duty of registrants so far as the questionnaire goes and will give his interpretation of what the questionnaire means.

Other men have volunteered to give Technology registrants help in regard to the new draft, but definite dates have not yet been arranged. Further details will be outlined later.

PROFESS ALLEN TO ADDRESS ELECTRICALS ON GASOLINE

Professor C. M. Allen of the Worcester Polytechnic Institute will address the Student Branch of the American Institute of Electrical Engineers tomorrow evening at 7.30 o'clock in room 10-250 on the subject of "Gasoline." Dr. Allen has worked on gasoline for several years and has devised a series of experiments, with which he applies his theories. One of the important things in the lecture will be the presentation of the phenomena which occur upon the ignition of gasoline or gasoline vapor. Professor Allen will also explain the dangers surrounding the modern gas engine and their preventatives. All members interested are invited.

THERE WILL BE AN IMPORTANT MEETING OF ALL CANDIDATES AND MEMBERS OF THE NEWS STAFF OF THE TECH TOMORROW AT 1.05 O'CLOCK IN THE TECH OFFICE.

CALENDAR

- Monday, December 17, 1917
1.00 P. M.—Musical Clubs Meeting, Room 2-190.
Tuesday, December 18, 1917
5.30 P. M.—Meeting of 1920 Assistants of Technique 1919, Technique Office.
7.30 P. M.—E. E. Society Meeting, Room 10-250.

Convocation Today at 1.05 O'clock---Smith Hall, Room 10-250

The Tech

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MANAGING BOARD

Paul C. Leonard '17.....Chairman of the Board
A. J. Giuranovich, Jr., '18.....Editor-in-Chief
W. Raymond McKenney '19.....Managing Editor
Lawrence Winant '20.....Advertising Manager
Arthur E. Farrington '19.....Circulation Manager
John W. Meader '19.....Treasurer

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Although communications may be published unsigned if so requested, the name of the writer must in every case be submitted to the editor. The Tech assumes no responsibility, however, for the facts as stated nor for the opinions expressed.

The Editor-in-Chief is always responsible for the opinions expressed in the editorial columns, and the Managing Editor for the matter which appears in the news columns.

IN CHARGE THIS ISSUE

A. Kruse '20.....Night Editor
G. Russell Steininger '21.....Assistant Night Editor

MONDAY, DECEMBER 17, 1917

THE QUESTIONNAIRE

THE TECH has made arrangements whereby registrants at the Institute will be aided in gaining a working knowledge of the new draft questionnaire and its purpose. There is undoubtedly much uncertainty about the new rulings and what will be accomplished by them, but the interpretations of such men as have volunteered their services will certainly dispel most of it.

The lawyers who have undertaken the work will give, essentially, information rather than advice. They are all members of local draft boards and the interpretations which they will give are the best obtainable. Of course there is nothing official about anything which they may say, but coming as it does from men who are competent to interpret the questionnaire, the information which they will advance will carry much weight.

At the Convocation today, matters of interest to registrants only will be taken up. Therefore it has been requested that only men who have registered attend the meeting. Room 10-250 will not seat the entire student body, but it will probably accommodate all men who are in the draft. If there are any men who propose to come to the Convocation merely out of curiosity, let them realize that they will most likely do so to the exclusion of registrants who are vitally interested.

Finally, The Tech wishes to take this opportunity of thanking the men who have so kindly volunteered their time and services to help Technology registrants.

Today will usher into Technology another campaign, this time for the Red Cross. In these days of campaign after campaign, a worthy cause may be overlooked. It is scarcely necessary to even mention the worthiness of the Red Cross. Dig for that dollar and have a hand in a great work!

The Sophomore elections for Treasurer and member of the Institute Committee will be held Tuesday. The men who are elected will be factors in deciding the policies of the second year class. Only a representative vote will be satisfactory. Don't be a deadhead, vote.

With smallpox running rampant in Boston it is best for those who have not been vaccinated recently to be inoculated at once.

There have been so many changes during the last few weeks in the personnel of The Tech Staff that it is deemed advisable to print the following list:

Managing Board: Paul C. Leonard '17, Chairman of the Board; A. J. Giuranovich, Jr., '18, Editor-in-Chief; W. Raymond McKenney '19, Managing Editor; Lawrence Winant '20, Advertising Manager; Arthur E. Farrington '19, Circulation Manager; John W. Meader '19, Treasurer.

News Department: E. S. Burdell '20, Ass't Managing Editor; C. B. Capps '20, A. Kruse '20, Night Editors; K. Roman '20, G. R. Steininger '21, Ass't Night Editors; J. H. Coyle '20, Sporting Editor; Max Seltzer '18, H. M. Noelke '20, J. W. Barriger, 3rd, '21, M. N. Bauer '21, C. A. Clarke '21, E. Edwards '21, H. Flemming '21, W. A. Gallup '21, Z. Giddens, Jr., '21, S. J. Hill '21, H. Kurth '21, J. T. Rule '21, R. H. Smithwick '21, W. J. Waterman, Jr., '21.

Advertising Department: A. D. Harvey '21, 1st Ass't Advertising Manager; A. W. Morse '21, L. W. Moss '21, N. F. Patton '21, R. A. St. Laurent '21, 2nd Ass't Advertising Managers.

Circulation Department: Wm. M. B. Freeman '20, Ass't Circulation Manager; Roger H. Damon '21, Barker '21, C. H. Leander '20, Moore '21, 2nd Ass't Circulation Managers; Richard P. Windisch '20, Ass't Treasurer.

COMMUNICATION

Mr. Paul Leonard,
Massachusetts Institute of Technology,
Cambridge, Mass.

Dear Leonard:

The following is a brief statement of our Student Cord Wood Cutting Campaign.

Owing to the present scarcity of cord wood and the fact that the public is warned that we can expect a severe shortage of coal, the Massachusetts Forestry Association believes that every effort should be made to cut cord wood by those who are physically able. There is a great scarcity of labor for this work and the Association has asked the students of the various colleges about Boston to consider cutting cord wood during their Christmas vacation, and has received a very hearty response.

It is the purpose of the Association to serve as an employment bureau to connect the students who wish to cut wood with the parties who are in need of such men. It is believed that woodlots can be found within reasonable distance from Boston, by which the men can return to their usual rooming place at night. In some cases the work may be so far from Boston that it will be necessary to room and board in the vicinity. The wages will depend upon the ability of the men and where the wood is cut by the cord, the local prices will hold.

As this is really a war emergency measure, it is the patriotic duty of those who can, to assist in this important work, and it is hoped that many of the Technology students, who are not otherwise employed, will consider applying their energies to this work.

Not only is working in the woods a healthful occupation, but the satisfaction that comes from feeling that one is taking a part in emergency work, together with the compensation, will fully repay any one for the effort expended.

Sincerely yours,
(H. A.) "PETE" REYNOLDS,
Secretary.

ALUMNI NOTES

2nd Training Co.,
Fort Monroe, Va.,
Dec. 10, 1917.

Editor of The Tech,
Mass. Institute of Technology,
Cambridge, Mass.

Dear Editor:

In the first place you will have to consider a pencil letter "legitimate"—some one used my fountain pen for a pillow and it has assumed a shape similar to the Boomerang—hence it's useless.

But time is short. They work us down here from 6.15 a. m. to approximately 11 p. m. (and its mighty interesting work) so down to facts.

It appears that there are in the vicinity of 40 Technology men here at this camp. There are 320 men here at present. So 40-320 is a fair percentage. There is no other college or institute that can come anywhere near us in number (we won't boast of quality till later).

Technology's latest Alumni Club.

Sunday evening 20 of us gathered at the Hotel Chamberlin here on the post for a (welcome) change of diet from regular army mess. After our "feast" (eyes included) we organized what I believe we will call the Fortress Monroe Technology Club.

Those present at the dinner and meeting were:

T. D. Brophy '16, L. I. Noyes '17, D. L. Patten '17, A. Abrams '18, L. H. Merrill '19, P. Hatch '16, H. F. O'Donnell '18, G. A. Hunt '17, W. J. Wolfe '16, Aldrin '17, F. C. Harlow '17, C. M. Black '16, F. T. Ingraham '16, W. P. Ryan '18, W. B. Strong '17, G. H. Gaus '17, R. E. DeMerritt '17, J. M. Evans '16, J. M. Ralston '16, C. E. Ames '17, C. Miller '17, M. M. Read '18, S. H. Franklin '18, Hamilton '18, R. J. Miszkovsky '17, H. Y. Keeler '18, H. R. Crowell '15, Swain (S. S. and S. C.), E. C. Gere '13. With the exception of Gere '13 all are in the present camp. There are also several men stationed here who are from Technology. A. C. "Buck" Dorrance is a captain on the Post, as are Green and Perry of the Electrical Department. Hope to have all of the names later for you. Thus we 29 organized. "Steve" Brophy '16 was chosen President and I, "Lin" Noyes '17, was dubbed Secretary-Treasurer—fortunate for me perhaps for being "broke" the dues may help!

We plan to take club rooms at the Hotel Chamberlin and make that our week-end home during our stay, which we understand has been pronounced a four months' sentence.

With regard to all (including the faculty) and good luck, I am

Sincerely,

LINWOOD I. NOYES,
2nd Lieut. C. A. O.
Sec.-Treas. Fortress Monroe Technology Club.

Gifts for Men

Jewelry

Seal Pins	\$.85 to \$3.00
Seal Fobs	2.25 to 6.25
Full Dress Sets	1.75 and up
Waldemere Chains	2.50

Neckwear

.50 to 2.00

Mufflers

Wool	1.50 to 3.00
Silk	1.50 to 4.00

Gloves

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Cape Skin Lined	2.50
Mocha	2.50
Grey Lined	2.50
White Dress	2.00
Buckskin	3.00

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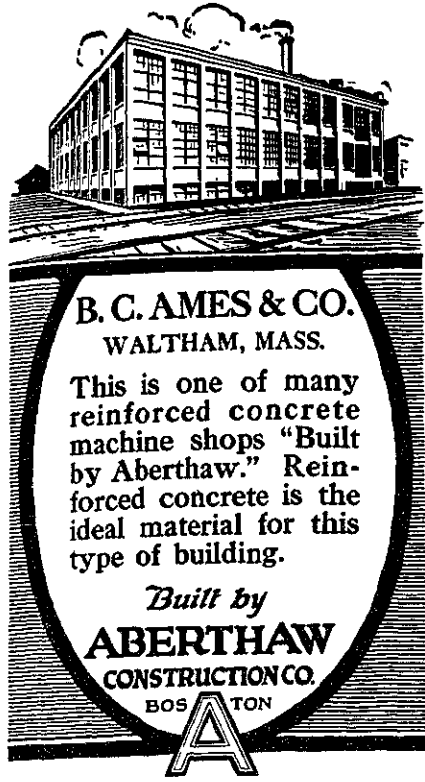
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NOMINATIONS FOR OFFICERS OF CHEMICAL SOCIETY DUE

Nominations are now open for the officers of the Chemical Society for the coming year. The officers to be elected are a president, vice-president, secretary, treasurer, and two members of the program committee. One of the lat-

ter is usually a Sophomore. To be valid, nomination papers must be signed by at least ten members of the society who have paid their dues to date and the nominees must also be members in good standing. All nomination papers should be turned in at the Chemical Society office, room 4-252, before 5.00 o'clock Friday, December 21.



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TWO BRANCHES OF R. O. T. C. RECEIVE RECOGNITION FROM WAR DEPARTMENT

Signal Corps and Coast Artillery Corps Divisions of Technology Unit Begin Work Under Government Sanction

A communication just received by President Maclaurin of Technology from the War Department states that the Government has now officially recognized two Reserve Officers' Training Corps units composed of Technology undergraduates, the Coast Artillery and the other Signal Corps. This action confirms with the seal of authority the work that the Institute has been taking up recently, and in fact had taken up even before the war was declared.

The story of the development of this movement, which is prominent among the many that the Institute has undertaken in the service of the country, is a very interesting one. Its beginnings reach back long before the war in the realization on the part of Major Edwin T. Cole, U. S. A., retired, Professor of Military science at Technology. War and engineering have in later years become so much involved one with the other that the Institute in its educational work was directly in the lines most necessary for the training of military and naval officers. An effort was made to make this plain to the authorities, but until the beginning of the war no action was taken in Washington in the matter. As soon as war was declared Dr. Maclaurin tendered to President Wilson the Institute laboratories and instructing staff. It was some time later that the War Department sent to Boston a commission of Army officers to look over the curriculum at Technology with a view to rating its possibilities in regard to military education. The report of this commission was practically that, with the addition of some small amount of special military training, perhaps an hour or two a week, the courses at the Institute were precisely those which were required in military work. Since that time the War Department has in a general way approved what has been popularly termed a four-year military option at the Institute, but has been unable to act officially, until the details of the courses could be fixed. This has been done and Technology has now two recognize units of the R. O. T. C.

Before the official action was taken in the matter the Institute had already made changes to comply with the R. O. T. C. requirements. In fact, it was at the Institute that the details of the general plan were worked out. All these factors were carefully detailed by Major Cole and the members of the faculty.

The plans for courses of study relating to technical education in the Ordnance and the Engineer Corps were also made with as much care and study as in the case of the other divisions. The Government has not yet been able to act on the outlines for these Ordnance and Engineer Corps units, but it is hoped that they will presently be approved. They are virtually approved by the War Department, but the work of fitting in the special training with what is at the Institute, a heavy and trying scientific course of study has not yet been possible.

In the hope that the outlines of the four-year military option might be ready in time for the opening of the Institute last fall, the Registrar circulated a questionnaire among the students asking how many would like to take up such an option. Although the particulars about the course were exceedingly hazy the replies were eminently satisfactory and some four hundred of the students indicated a desire to pursue such studies. When school opened, however, the last of September, the War Department was not ready, although the Institute and the students were, and accordingly, on account of the enthusiasm shown, the Advance Battalion was organized by Major Cole, to take up military studies in addition to the regular work. The men enrolling in the Advance Battalion were to wear regulation uniform and to devote extra hours to the military studies.

This idea was successful and served in a measure to quiet the unrest that developed when the students came back to Technology and found that no recognized military work was open to them. Practically the whole of the four hundred who had expressed interest joined the battalion and with the five hundred freshmen to whom drill is compulsory by act of Congress, and who were also in khaki, Technology took on a very military aspect. This was the more pronounced in that the men of the two Government schools of aviation, the Army and the Navy, numbering about two hundred and fifty each, were also in uniform.

Some four or five weeks ago word was received at the Institute that the Government would accept in part the plans for the military option, but this was put in a tentative way and had application only for a year. On the basis of this a R. O. T. C. was organized, drawing one hundred and fifty or more men from the Advance Battalion. It has proceeded since its beginning on

NEW ELECTRICAL FEATURES AT GENERAL ELECTRIC CO.

Electrical Engineering Society Takes Second Trip

Last Thursday afternoon twenty members of the Electrical Engineering Society took a trip to the General Electric Company to observe several new features which have been introduced there by the engineers of the plant.


One of these features, in use in the small motor department, is a new speed indicator composed of a small centrifugal pump, which is flexibly coupled to the motor, supporting a column of water in a calibrated tube. This indicator is very accurate, for the pressure of the water varies directly as the speed of the motor.

A new idea in the transformer department is a line condenser which is used to take up the lag of the transformers. Heretofore stationary condensers have been impracticable because of their bulk and rotary synchronous condensers were largely used. The General Electric engineers have developed a fixed condenser which is built in units, less than a cubic foot in size, each unit having a rating of about five kilovolt-amperes.

A new feature in generator rotor design is the one piece aluminum cast armature. Laminations having closed slots in the rim, instead of the usual open ones, are assembled and put in a mould where the aluminum casting is made, leaving two solid rings at each side. The effect of this smooth casting in contrast with the open slotted one, is the large decrease in wind resistance when running, and the increase of starting torque.


the same general plans as those just now confirmed. Today the confirmation is complete as far as the units are concerned, and there exists now at the Institute a Reserve Officers' Training group whose members come from the Sophomore class, numbering 185 in the Coast Artillery unit and thirty in the Signal Corps. There remain in the Advance Battalion of Sophomores and upper classmen some 250, so that counting in the freshman and their officers there are over one thousand of the students in Army uniform and, with the aviation schools, about seventeen hundred men in the school who are under military training. The R. O. T. C. groups have been dependent on one feature in military drill at the Institute. Nearly at the close of the negotiations the War Department came upon the rule that to secure the establishment of a R. O. T. C. in a school two years of compulsory drill was necessary on the part of the school. The faculty met this requirement at a meeting some time ago, so that at Technology the student who enters now must take two years of military science and evolutions in place of the one that has been required during the past fifty years.

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ADVANCE BATTALION

(Continued from page 1)

used by both sides in an air duel, so quickly is the decision reached, and it is not often that the range in such engagements is over 400 yards. Usually the best range for the machine gun in the air is about 200 yards.

"On land, the machine gun is considered as an addition to the infantry or cavalry and not as constituting a separate arm of the service. It is used in emergencies, and in advance guard and rear guard actions to keep the enemy deployed. In placing the guns, two positions for each gun are selected. As soon as the enemy's artillery has discovered the first and best position, it is moved to the second and next best position. A machine gun company has four guns. A captain commands the whole, and two lieutenants and two sergeants each have charge of one gun. In the present war, the English use the Vickers gun, the French, various makes, and the Germans, the Vickers and a new gun of their own invention."

Technology Men in War Service

The Tech wishes to print the names of Technology men in War Service, whether in a military or industrial capacity, together with the branch of such service with which they have allied themselves.

Notification of any corrections or changes in the information given in this column will be appreciated. Address any information of this character to the Managing Editor, The Tech, Massachusetts avenue, Cambridge, Mass.

- Class of 1883
DAVID M. LITTLE, Lieut., U. S. N. R.
- Class of 1888
THEODORE F. LAIST, Major, E. O. R. C.
- Class of 1891
WOODRUFF LEEMING, Major, Commanding Officer Motor Sup. Tr., 401st Q. M. C.
- Class of 1894
PROF. FRANK P. MCKIBBON, S. P. E. E.
- Class of 1895
HERMANN KOTZSCHMAR, JR., 1st Lieut., Engrs., U. S. Coast Guard.
- Class of 1897
WM. A. KENT, Lieut.-Col., 162nd Brig., 87th Inf.
EDW. S. MANSON, JR., 1st Lieut., Adj. Gen., Statistical Sec.
EARLE P. MASON, Lieut., U. S. N. R. F.
- Class of 1898
JOHN H. LAMBERT, M. D., Capt., Base Hospital No. 7, Med. Corps.
- Class of 1899
GEORGE E. LYNCH, Capt., E. O. R. C.
A. WALLACE McCREA, in service.
- Class of 1903
CHAS. J. McINTOSH, Capt., Engrs. Res. Corps.
JOHN A. McKENNA, 3rd Field Co., Canadian Engrs.

- Class of 1905
ROBT. F. LUCE, Lieut., U. S. N. R.
ROBT. W. McLEAN, 1st Lieut., E. O. R. C.
MITCHELL MACKIE, in charge of trucks transp. sup to France.
- Class of 1906
CHARLES T. LEEDS, Capt., E. O. R. C.
- Class of 1907
WALTER B. KIRBY, Royal Flying Corps.
EMORY S. LAND, Condr., Bu. Con. and Rep., Navy.
FREDERICK E. LANGENHEIM, Capt., Ord. O. R. C., France.
JOS. T. LAWTON, Capt., Am. Univ. E. O. R. C.
ERNEST F. LEWIS, 1st Lieut., Sonst. Dept., Sig. Corps.
- Class of 1908
ROY G. KENNEDY, Supply Sergt., 106th Artillery.
JOHN R. KIBBEY, 1st Lieut., C. A. C.
- Class of 1909
JOHN H. LOCKE, Capt., Ord. O. R. C.
WM. C. KERR, Sergt., Research Div., Avia. Sect., Sig. Corps.
CHRISTIAN KURTZMANN, 2nd Lieut., Camp Q. M's Asst.
DAVID P. MARVIN, 2nd Lieut., U. S. Coast Guard.
- Class of 1910
W. W. KING, 1st Lieut., Aia. Sect., Sig. Corps.
KENNETH LEAVENS, 1st Lieut., E. O. R. C.
HAROLD LOCKETT, 2nd Training Camp, Ft. Sheridan.
- Class of 1911
GEORGE C. KENNEY, 1st Lieut., 3d Foreign Detach. Avia. Corps.
MARK C. KINNEY, Royal Flying Corps.
HARRY P. LETTON, Capt., E. O. R. C.
CHARLES B. MAGRATH, Capt., Canadian Army. (Wounded).
JOHN D. MacKENZIE, Lieut., 185th Bat., Witley, S. Surrey, Eng.
- Class of 1912
W. W. LANG, Private, N. A.

- ORCHESTRA MEETING.**
- At the meeting of the Technology Orchestra on December 13, it was decided to continue the rehearsals on Thursday of each week, as before. P. H. Gilbert '19, manager, and C. L. Eksbergian '20, leader, handed in their resignations; and P. R. Thompson '19 was elected to the managership. Thompson has played with the orchestra since his first year in the Institute. No new leader was definitely decided upon.
- WM. G. LYNCH, 1st Lieut., Ord. Oept.
 - KARL McKENNEY, 2nd Lieut., C. A. C.
 - WM. F. MacKNIGHT, 1st Lieut., Med. Res. Corps.
 - E. M. MARSHALL, 2nd Lieut., Ord. Repair Shop.
 - Class of 1913
WM. V. A. KEMP, Aviation Corps.
MALCOLM W. LEONARD, Private, 23rd Engrs. Corps.
EDW. B. LONG, JR., 2nd Lieut., E. A., U. S. R.
 - THOS. J. LOUGH, 1st Lieut., E. O. R. C.
 - Class of 1914
HAROLD W. LEATHER, 1st Lieut., Ord. Dept.
MERTON B. LEWIS, JR., 1st Cl. Private, Co. A, 14th Ry. Engrs. Corps.
ALEXANDER G. LONG, JR., Prov. 2nd Lieut., Engrs. Corps.
GEORGE L. McKAY, E. O. R. C.
NORMAN D. MacLEOD, Capt., Adj., 103rd Reg., 6th F. A.
 - Class of 1915
KENNETH T. KING, Lieut., O. O. R. C.
CLIVE W. LACY, Lieut., Equip Div., Ord. Dept.
GEORGE C. LAWRENCE, Draftsman, Ord. Dept.
WM. J. McDONALD, Major, Med. Res. Corps, San. Off.
CLYDE C. MacKENZIE, Cadet, Avia. Sect., Sig. Corps.

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MAJOR AULD, OF THE BRITISH MISSION, DISCUSSES THE USE OF GASES IN WAR

Major Auld of the British Mission to the United States addressed a joint meeting of the Northeastern Section of the American Chemical Society and the Chemical Society of the Institute last Friday evening in Huntington Hall in the Rogers building. The major's talk concerned both the offense and the defense of the gas attack.

The use of gases is one of the greatest and most important developments of modern warfare. It was first used against the French troops on the Western front in 1915. That first attack came as a complete surprise and the Allies were overwhelmed.

Immediately, an investigation was set on foot; and, by methods of elimination, for few gases could be obtained in large enough quantities and transported easily enough, it was determined that the Germans had used chlorine. This decision was later confirmed by captured enemy documents.

The respirators used to protect the men from this gas were simply pads of cotton wool. Since the concentration of gas during these first attacks was low, these improvised masks were efficient enough. "The idea of the respirator is to protect against the unknown." Those which the British use consist of a box, containing the chemicals, which is worn on the chest, and a mask which fits over the head tightly, thus protecting the eyes as well. The Germans wear a similar mask, but the can containing the chemicals is carried on the top of the head instead of on the chest. To show the thoroughness with which the chemists have solved the problem, Major Auld stated that the masks now used would withstand practically any gas except carbon monoxide.

The cloud method of gas attack was quite uncertain, for the wind even when it was favorable, was liable to change at any moment. The Germans were once caught by this freak of fortune: the gas cloud was about half way between the opposing first-line trenches when the breeze veered around and the cloud returned.

The first gas attack made against the British line lasted one and one-half hours; the second, made on May 10, 1915, lasted three hours; while the third, made in December, lasted only thirty minutes. In this last one, the concentration was greatly increased.

There were but nine gas-cloud attacks made in all against the British line. "The idea of gas-warfare is to get a higher concentration than the enemy." The gas-concentration at the beginning of the war was about one part in ten thousand; now it is about one part in one thousand.

The gas bomb was the next development to come to the front. At first, no one realized the importance of this method, for they thought that the number of shells which would be necessary would be prohibitive. Considering that the ratio of the amounts which a bomb and a cylinder contain are respectively about sixty to several hundred, and that a large number of cylinders were used, the use of gas bombs would seem an impossibility. Still, when using the bomb, the shell can be placed, and, in this way, the highest concentration is near the enemy's trench rather than near your own.

It was found, in some cases where a very high explosive shell would not touch a gun crew, a gas shell would have great effect.

A new gas was now introduced which had a harassing, rather than deadly effect upon the soldier. When the men are compelled to wear their masks for a great length of time, or are compelled even to sleep in them, because the enemy keep throwing these shells near them, the morale of the soldier is lowered a great deal.

Some of the gases used are bromethyl, methyl, ketone and ethylidiods acetate, and benzol bromide. Dichlorethyl sulphide, sometimes called "mustard" gas, will blind a man for about two weeks and affects the throat and lungs. There is another gas called "sneezing" gas. The "mustard" gas causes much distress and makes a man wish to do anything but fight; it is not, however, fatal. Prussic acid is not used.

Cylinders filled with gas were introduced on the front at one time. But in this case, the infantry had to be depended upon to carry the cylinders.

The gas bomb method has replaced this inferior method. Rapid-firing trench mortars and projectiles are best for this purpose, and are worked to the utmost. Shrapnel and high explosives are sometimes mixed with the gas.

Professor Talbot, chairman, then introduced Professor Spear as the chairman for the coming year.

8.30 o'clock and the orchestra struck up on the minute, but few couples were present until a half-hour later. From then on, however, the floor was always filled until the dance finally came to an end. Invitations were issued to the Army and Navy Aviation Schools at the Institute and the olive-drab and khaki uniforms, mingling with those of the freshman regiment and the R. O. T. C. gave the dance a decidedly military air. As the affair was of an informal nature, the programs were very simple and cutting in was the rule. Professors Phillips and Moore were present with their wives acting in the capacity of chaperones.

These dances are a distinct innovation in Institute life and to judge by the success of the first two are fulfilling a long-felt want. The next will be held soon after the mid-year vacation and more will be held throughout the next term.

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TECHNIQUE ANNOUNCES COMPETITION RESULTS

Five Sophomores Retained as Assistant Business Managers

As the result of the Sophomore competition which has been running since early fall, T. W. Bossert, M. S. Burroughs, G. H. Burt, R. G. Mooscrop and L. D. Wilson, have been retained by the Technique 1919 Board as assistant business managers. The four members of the Technique 1920 business staff will be appointed from these men as soon as the Electoral Committee has elected the Editor-in-Chief.

The Sophomore class President has announced that the election and organization of the Technique 1920 Electoral Committee will take place before the mid-year examination period, as has been the custom of former years.

There will be a meeting of the Sophomores who have been appointed assistants to the Technique 1919 Board Tuesday afternoon at 5.30 o'clock in the Technique Office.

At the last meeting of the Technique Board, Eugene R. Smoley '19 was admitted to membership as Associate Business Manager of the organization. Smoley has done exceptional work for Technique, and has proven to be one of the most dependable men on the Board.

TECHNOLOGY WILL ENTERTAIN TWO SOCIETIES THIS WEEK

Charles T. Main '76 Will Speak on "Foundations of the New Buildings"

On Tuesday and Wednesday of this week Technology will entertain two visiting societies, the Society of Printers and the Boston Society of Civil Engineers. The Society of Printers, a Boston organization, which is viewing printing from the aesthetic rather than the commercial side, comes through the mediation of Henry L. Johnson '92, and will assemble in the central building at 3.30 o'clock on Tuesday, December 18. Here a brief outline of the laboratories will be given to the company by John Ritchie, Jr., after which the printers will go through the buildings. At 6.30 o'clock there will be a dinner in the Faculty Dining Room at the Walker Memorial, following which will be the more formal exercises, including addresses by Professors C. F. Park, W. A. Johnston and R. A. Cra m .

The meeting of the Boston Society of Civil Engineers will be in the evening of Wednesday, December 19. The members will assemble in building 2 in the old Cafeteria for dinner and later will gather in Smith Hall, room 10-250, under the dome, for the addresses of the evening. The principal one will be given by Charles T. Main '76, whose topic will be the "Foundations of the New Technology Buildings." Mr. Main, who has just been elected president of the American Society of Mechanical Engineers, was the consulting engineer with reference to these foundations. It is expected that President MacLaurin will be present.

After the meeting the engineers will have the opportunity of visiting the laboratories, which will be opened for their benefit. One of the special features will be the little Niagara of 24,000 gallons a minute, impelled by the great Worthington pump. This has been termed "the biggest bit of equipment ever given to students in the laboratory to work with."

G. B. HAVEN TELLS AERO CLUB OF "AIRPLANE FABRICS"


The subject of Professor George B. Haven's address at the meeting of the Aero Club last Friday evening was "Airplane Fabrics." The lecture was complete in detail, and was illustrated to advantage with slides.

He first discussed the classes of fabrics which are of interest to the aircraft engineer—tire fabrics for wheel tires, balloon fabrics for dirigibles, and wing fabrics for airplane wings. He declared that cotton would probably be the ultimate material; and that linen and flax were very desirable, but are also very scarce. Silk is too costly, and therefore it is not often used. Ramie fiber is used, and there are other compositions which are in the experimental stage only.

Professor Haven reviewed briefly the typical manipulations of a fiber in its manufacture, taking cotton as an example. He showed samples, and illustrated each stage with slides. He described the character of the yarns and fabrics; and reviewed the rules for twisting. He told of the methods by which the fabrics rendered impervious; the doping, the rubberizing and the varnishing, and also discussed the composition of the dope, and the hot calendering.

The testing of the materials is an important factor. There are two methods used—the "strip" test and the "crab" test. The effect of moisture and the jaw speed must also be taken into consideration. The professor described the effect of weather and exposure, and the methods of re-doping. He compared lastly, the American and the English specifications for airplane fabrics.

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INSTITUTE COMMITTEE DANCE BIG SUCCESS

Innovation in Technology Life is Proving Popular to Student Body

Last Saturday evening the second informal dance of the season was held in the Walker Memorial. The affair lived up to all expectations and proved as much of a success as did the dormitory dance a few weeks ago. The floor was well filled, the music left nothing to be desired, the decorations, although few, were interesting and artistic, and in short there was only one flaw—the dancing had to stop at twelve. As at the first dance, no elaborate attempt was made at decoration. Class pennants, from the class of 1864 to the class 1917, were hung on the balcony around the room. A large American flag floated from one side and on the other side the Institute flag was displayed. These pennants on the balcony and the varicolored dresses of the girls gave the big room a distinctly festive appearance, quite different from its ordinary work-day aspect.

The dance was scheduled to begin at