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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

B O S T O N , M A S S .

RICHARD C. MACLAURIN

President.

THE Institute offers four year Courses in Civil, Mechanical, Mining, Electrical, Chemical and Sanitary Engineering ; in Architecture, Metallurgy, Chemistry, Electro-Chemistry, Physics, Biology, Geology ; in Naval Architecture and General Science.

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Tech. coll.

HANDBOOK

OF THE

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Massachusetts

Institute of Technology

1913-1914

18th EDITION

Issued under the auspices of the
COLLEGE DEPARTMENT
BOSTON YOUNG MEN'S CHRISTIAN
ASSOCIATION

through the cooperation of the Technology
Christian Association and of the
Boston University Y. M. C. A.

✓

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This book is presented with the hope that it may be of help and that it may serve to introduce you to the best things in Institute life.

RECITATION SCHEDULE — FIRST TERM

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9-10						
10-11						
11-12						
12-1						
1-2						
2-3						
3-4						
4-5						

RECITATION SCHEDULE — SECOND TERM

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9-10						
10-11						
11-12						
12-1						
1-2						
2-3						
3-4						
4-5						

INSTITUTE CALENDAR.

1913.

- Sept. 18, Thurs.—Advanced Standing Examinations begin.
- Sept. 20-23, Sat. to Tues.—Second Entrance examinations.
- Sept. 25, Thurs.—Registration begins.
- Sept. 29, Mon.—**FIRST TERM** of the year 1913-1914 begins.
- Oct. 3, Friday evening.—Annual Reception of T. C. A. to new students.
- Oct. 13, Mon.—Columbus Day (exercises suspended).
- Nov. 1, Sat.—End of the first six weeks of the term.
- Nov. 8, Sat.—End of the first seven weeks of the term.
- Nov. 27, Thurs.—Thanksgiving Day (exercises suspended).
- Nov. 29, Sat.—Limit of time for making up marks of "D."
- Dec. 6, Sat.—End of the second five weeks of the term. Students may not drop first-term subjects after this date.
- Dec. 20, Sat.—Third-year students file choice of second-term General Study.
- Dec. 22-27, inclusive—Christmas Recess.
- Dec. 29, Mon.—First-year students file choice of Course.

1914.

- Jan. 22, Thurs.—Last exercises of the first term.
- Jan. 23-31—Semi-annual examinations.
- Jan. 2-7, inclusive—Recess.
- Feb. 9, Mon.—**SECOND TERM BEGINS.** Registration completed.
- Feb. 23, Mon.—Washington's Birthday (exercises suspended).
- March 21, Sat.—End of the first six weeks of the term.
- March 31, Tues.—Limit of time for making up first-term deficiencies.
- April 10, Fri.—Scholarship application due for next school year.
- April 16-20, inclusive—Recess.
- May 20, Tues.—Second-year students file choice of option in General Studies for third year, first term.
- May 26, Tues.—Last exercises of the second term.
- May 26, Tues.—Theses due.

May 27-June 9—Final Examinations.
 June 5-9, Fri. to Tues.—Condition Examinations.
 June 8, Mon.—Class Day.
 June 9, Tues.—Graduation.
 June 17-19, Wed. to Fri.—Entrance Examinations.
 Summer School (in June, July, August, and September).
 Summer Surveying Camp (in August and September).

TECHNOLOGY CHRISTIAN ASSOCIATION.

OFFICERS 1913-1914.

Miles E. Langley, '13 (Graduate).
President
 Charles G. Norton, '15 .. Vice-President
 Ralph H. Howes, '14 Treasurer
 L. Raymond Talbot, A. M.,
General Secretary

Chairmen of Committees.

J. Arthur Ball, '15—Social.
 H. Whittemore Brown, '15—Bible Study.
 Chauncey H. Durkee, '15, Boys' Work.
 Ralph H. Howes, '14—Finance.
 Harmon E. Keyes, '16—Deputation Work.
 Norrjs E. Kimball, '15—Church Cooperation.
 William T. Knieszner, '16—Publicity.
 Karl C. Mason, '14—Posters.
 Charles G. Norton, '15—Membership.
 Ralph D. Salisbury, '14—New Student Work.

Advisory Board.

Walter B. Snow, '82—Chairman.
 Prof. Dugald C. Jackson—Treasurer.
 A. Farwell Bemis, '93.
 Prof. George B. Haven, '94.
 William C. Ewing, '97.
 Dean Alfred E. Burton.
 Don S. Gates, Boston Y. M. C. A.
 F. Nathaniel Perkins, Pres. Trinity Club.

Information for Students.

The T. C. A. takes it for granted that one of the first things you do on registration-day is to come to its headquarters in Rogers Building and secure your copy of this little book. We want you to let us be of real service to you. We have a list of lodging-places which we have investigated and believe to be satisfactory; ask for a copy. During

the entire period of registration there will be at our information table a number of men who are ready to answer your questions, furnish all kinds of information about the Institute and the city, and help you in every way possible. After registration the headquarters of the Association will be at its office, Room 5, Engineering B, and we hope you will feel at home there.

Reception to New Students.

On Friday evening, October 3, occurs the first social event of the year in Institute life. This is the reception to new students given in the Union by the T. C. A. All new men are cordially invited to come and have a good time as the guests of the Association. This is the best opportunity to get into touch with Institute life and to learn about its various activities. It is also an excellent chance to meet representative men from all four classes, and to start the lasting friendships which will mean so much to the student during his four years at M. I. T. The presence of guests implies that there shall be hosts as well; this means that all upper-classmen are urged to come and do their part in making the evening a pleasant one.

Concerning the T. C. A.

The Technology Christian Association was formed in 1908. Previously the Association had been known as the Technology Y. M. C. A., while this organization had in turn taken the place in 1895 of the Technology Christian Union. In its reorganization the Association was put upon the broadest possible basis, so that membership in it is open to any man who can conscientiously sign the simple creed, given below, regardless of his church preference:

"Recognizing the responsibility of man as agent of God in the progress of the World;

"Finding in Jesus Christ the truest expression of God's will and character;

"Convinced that Christ is our highest ideal and our greatest inspiration to manhood;

"I accept God's will; I accept my responsibility to Him for mankind and for self; and I pledge my allegiance to Christ's leadership."

The purpose of the T. C. A., as stated in the constitution, is as follows: "To unite all Christian men of the Institute into one vigorous body, with the purpose of promoting the moral and spiritual welfare of the undergraduate."

The T. C. A. stands for the right kind of life and aims to help all Tech students to live up to the best that is in them.

That is what Christianity really stands for, and we invite every man who agrees with us to join the Association. Do not say you have no time. The larger the membership list, the less work will there be for each individual member. And even if for some reason it is absolutely impossible for you to do any Association work, we want at least the support of your name, if you are in sympathy with what we stand for.

The activities of the Association are of various kinds. First, and most important, are the practical talks given in the Union Thursdays at 1.30, by men prominent in different professions. These meetings are purely informal, and a large number of men have found it a most profitable way to spend the few minutes between lunch and the two o'clock classes on Thursday, to listen to a helpful talk by a successful man on some subject that has a direct bearing on a student's every-day life. Among the speakers last year were Presidents Maclaurin of M. I. T. and Murlin of Boston University, Judge Baker of the Boston Juvenile Court, Edwin Mulready of the Commission on Probation, besides many of the best-known pastors of Greater Boston churches. This year's list of speakers will be well up to the standard set last year. They are announced each week in the Tech and on the official bulletin boards.

The T. C. A. believes that Bible and social study is an important part of an all-round education. It arranges a series of discussions on practical topics, and classes will be held at any time to suit the convenience of the men. An announcement of the first term's plans is given on special topic cards. It is also glad to furnish information

about many men's classes held in the various city churches.

Every man, however busy he may be, ought to find at least a little time to do something for someone else. Social service is an important part of the T. C. A. program. The committees in charge of this work will be glad to get into touch with any men interested in any line of altruistic service.

Tech life is so crowded that there is less chance for the social side of the Association's work than in many colleges. However, in addition to the reception to new students, to which all are invited, other socials and entertainments are arranged occasionally for members of the Association.

The T. C. A. wants to help you in every way possible. The General Secretary keeps regular office hours, and he is at your service at any time. We have aimed to arrange for every new student to have an upper-classman to aid him in the intricacies of registration; it is hoped that each freshman will feel that he has a right to go to this upper-classman for advice in the many problems which arise during the first months of his course at Tech.

The T. C. A. stands at the center of things. It should be the most powerful influence for good in the Institute. In order to live up to its highest possibilities it needs your co-operation. Don't wait for someone to look you up with a special invitation to join the Association, but ask for a card today.

OTHER RELIGIOUS ORGANIZATIONS.

Besides the T. C. A. there are the following religious organizations, both in a flourishing condition.

The Brotherhood of St. Andrew.

Technology Chapter.

Tech Chapter of the Brotherhood of St. Andrew, a national organization, lives for the purpose of bringing men nearer to Christ through His Church. Each Wednesday evening at 7.30 the Brotherhood meets with Dr. Alexander Mann in the Parish House of Trinity Church in discussion of interesting or puzzling topics. At 9.00 a. m. on the

third Sunday of each month is held Corporate Communion at Trinity Church.

Catholic Club.

The Catholic Club was established during the year 1906-7. Its object is to develop social life among the Catholics at the Institute. Meetings are held regularly throughout the year, led by speakers of prominence. An annual banquet and dance terminates each year's work.

TECHNOLOGY PUBLICATIONS.

"The Tech."

Issued daily during the college year. It is a complete chronicle of the events of Tech life, athletic, social and otherwise. It is published by undergraduates.

"Technique."

Published in April by the Junior Class. "Technique" is the year book of the Institute, managed and edited by members of the Third Year Class. It contains catalogs of the Faculty and Classes and of the various fraternities and societies in the Institute, athletic records, pictures, grinds, etc. It appears during Junior Week.

"Senior Portfolio."

Published by the Fourth Year Class at Graduation time. It contains the photograph and history of each Senior.

"Technology Review."

Published quarterly by the Association of Class Secretaries. Through it the Alumni are kept in touch with Institute doings.

"The Technology Architectural Record."

Published quarterly by the Architectural Society. It illustrates the current work of the Department of Architecture. Its aim is to serve the student of architecture rather than the professional architect.

INSTITUTE ORGANIZATIONS.

Institute Committee.

Is the student governing body, and is representative of all important student interests. Its membership is as follows:

The four Class Presidents, two members elected from each class; the Presidents of the Professional Societies, the Editor-in-chief of the "Tech," the Editor-in-chief of "Technique," the General Managers of the Musical Clubs and the "Show," the President of the Athletic Association, and the President of the T. C. A.

Finance Committee.

Is made up of the treasurers of all the student activities. It has general supervision over the finances of the various organizations.

Union Committee.

Comprises Union, Entertainment, House and Dining Room Committees. Together they have charge of the management of the Technology Union.

Technique Electoral Committee

Elected from its own numbers by the Sophomore Class. The Committee elects Board of Editors and Editor-in-Chief for the publication of the book during the following year.

Co-Operative Society.

For the advancement of the comfort and pecuniary interests of the students of the Institute. Income is devoted to scholarships. The funds are raised by the sale of text-books and instruments at the co-operative branches in Rogers, Engineering A and C, and the sale of membership tickets. Many students have been aided through scholarships received from the earnings of this Society.

The Technology Club.

President, S. K. Humphrey, '98.

Secretary, R. S. Williams, '02.

Clubhouse, 83 Newbury St.

The object of the Club is to provide a suitable place for reading-rooms, libraries and for social meetings of the members, also to promote the welfare of the Institute and the common interests of its present officers and students. Membership in the Club is open to all past students of the Institute, all members of the corporation, faculty and instructing staff, and to a limited number of upper-classmen and college graduates.

The Tech Show.

Year by year the Tech show has become more famous, until it holds, without doubt, the first place among the College theatricals.

It is run entirely by undergraduates, and is a prominent factor in promoting the social life of The Institute. The proceeds of the Show are expended in the interests of athletics and other student activities.

All the parts, as well as the positions of management, are open to any student who shows ability to fill them, and early in the second term every man who has a spark of genius ought to get out for the show.

Walter P. Keith, '14, is the general manager of this year's show.

Musical Clubs.

The Glee, Banjo and Mandolin Clubs, numbering about fifty members, are one of the oldest activities in the Institute, and now have a strong organization with a firm financial backing. New men who have any musical ability, or who think they have, should turn out at the initial meeting of the year, when the officers will outline the progress of the Clubs and the program for the coming season. All new men are expected to attend this meeting. The officers of the various clubs, as well as of the organization, are given below:—

Glee, Banjo and Mandolin Clubs

Officers.

President E. C. Taylor, '14
Vice-President T. L. Chase, '14
Gen. Manager R. D. Salisbury, '14
Secretary H. A. Morrison, '14

Glee Club.

Leader V. M. F. Tallman, '14
Manager M. B. Dalton, '15

Mandolin Club.

Leader E. C. Taylor, '14
Manager G. R. Duryea, '16

Banjo Club.

Leader A. C. Sherman, Jr., '14
Manager R. W. Moorhouse, '14

ATHLETICS.

The rigorous curriculum of Technology does not leave a great amount of surplus time in which to engage in the heavy program of intercollegiate athletics in vogue at the average American college. The late opening of the fall term and the early closing of the spring one, together eliminate football and baseball from the list of possible Varsity sports; and track athletics and hockey come to the front as the major sports at the Institute. Of her many minor sports, Technology need not be ashamed; and in track she has maintained an intercollegiate record far above the average of the other colleges of New England; while in hockey, she ranks with the best of the college world of the East. If you have the slightest trace of an idea that you have any kind of athletic ability, get to it and do what you can to keep the standard of Technology always to the fore. If you have only doubts as to your ability, give the Institute the benefit of the doubt!

All athletics at the Institute are under the supervision of the Advisory Council, consisting of four alumni and three undergraduates. The management is entirely in the hands of undergraduate officials.

Field Day.

Technology Field Day, although primarily concerning the two lower classes, is still a matter of great interest to the student body as a whole; and a new man can hardly make a better start at the Institute than as a participant on Field Day—as a man who is backing his class from the very beginning. If you play football, there is the football game, counting four points for the winner toward the final score for the day. If you run, there is the relay race, counting three points. If you do neither, and weigh more than ninety pounds, there is the tug-of-war. If you think you don't fit in any of these teams, try for some one anyway—you may surprise yourself, and win your numerals if you are fortunate.

Note: To reach Tech Field, take any Brookline Village car, get off at Pond Ave., Brookline, and follow the crowd.

EVENT

HOLDER

TIME, HEIGHT OR DISTANCE

100-yd. dash	R. S. Franklin, '03	10 1-5 sec.
220-yd. dash	C. W. Gram, '09	22 sec.
440-yd. dash	T. H. Guething, '14	50 4-5 sec.
880-yd. run	P. D. White, '11	1 min. 58 sec.
Mile run	E. B. Germain, '13	4 min. 27 sec.
2-mile run	S. M. Udale, '07	9 min. 52 4-5 sec.
120-yd. high hurdles	E. L. Ovington, '04	16 2-5 sec.
220-yd. low hurdles	G. P. Burch, '99	25 4-5 sec.
Running high jump	C. D. Heywood, '93	6 ft. 1-2 in.
Running broad jump	G. W. Grosvenor, '99	22 ft. 1 1-2 in.
Pole vault	W. C. Salisbury, '11	11 ft. 7 in.
Shot Put (16 lb.)	O. V. Chamberlin, '11	41 ft. 1 1-2 in.
Hammer throw (16 lb.)	L. G. Metcalf, '12	130 ft. 10 in.
Discus throw	O. V. Chamberlin, '11	121 ft. 5 1-8 in.

QUALIFICATIONS FOR INSIGNIA.

T

A "T," of "standard design," six inches high and five and three-quarter inches wide at the top bar, is granted to:—

Winners of points at the annual meet of the N. E. I. C. A. A. or I. C. A. A. A. A.

Scoring members of a winning cross-country team, or any man making twelfth place or better, at the annual run of the I. C. A. A. A. A.

Scoring members of a winning cross-country team, or any man making eighth place or better, at the annual run of the N. E. I. C. A. A.

Members of a winning relay team at the B. A. A. annual indoor games making better than three minutes, ten seconds for fifteen hundred and sixty yards.

Participants in the semi-finals in singles, or finals in the doubles, at the annual tournament of the N. E. I. L. T. A. or the I. C. A. A. A. A.

In relay races "T" will not be awarded to substitutes.

SPECIAL AWARD OF

T

The Advisory Council at its discretion may award "T's" to:—

The first man in a dual, or first and second in a triangular intercollegiate track meeting.

To members of a winning team in intercollegiate relay races.

To any man making second place or better in a dual, or third place, or better in a triangular Intercollegiate cross-country race.

To members of a basket-ball or hockey team who participate in not less than two-thirds of the games in one season.

To the manager of the track team.

A T A

The following are entitled to A T A:

Winners of first place in open class meets.

Winners of points in dual or triangular intercollegiate track and field meets.

Manager of the track team.

C T C

The following are entitled to C T C:

Any man making thirtieth place or better at the annual cross-country run of the I. C. A. A. A.

Any man making tenth place or better in a collegiate dual or triangular cross-country race.

The four men making the fastest time in the annual M. I. T. open cross-country race.

G T T

The following are entitled to G T T:

First place winners in intercollegiate gymnasium meets previously applied for and approved by the Advisory Council.

L T T

The following are entitled to L T T:

The winners of singles and doubles in M. I. T. Intramural Championship.

The manager of the M. I. T. Lawn Tennis Team.

Special Awards of Insignia.

The Advisory Council may at its discretion award insignia as follows:—

H T T to members of a Hockey Team who participate in two-thirds or more of the games played in one season, and to the manager.

B T B to members of a basket-ball team who participate in two-thirds or more of the games played in one season, and to the manager.

The Advisory Council may allow insignia to be worn in games or races only (for uniformity of costume) as follows:—

Basket-ball, B T B; hockey, H T T; gymnasium, G T T.

In intercollegiate championships, lawn tennis, L T T.

In relay or cross country races, A T A or C T C respectively, to those not having either of such insignia or class numerals.

CLASS NUMERALS.

The following are entitled to class numerals four inches in height, three inches in width:—

Winners of points in open class meets.

Members of winning baseball team and manager, in the spring series.

Participants on Technology Field Day as follows: First, to members of both football teams and five substitutes and manager;

Second, to members of the winning team in the relay race and two substitutes and manager;

Third, to members of the winning tug-of-war team and the manager and the counter.

The first six to finish of the winning class in the annual Freshman-Sophomore cross-country run.

Men making first place in events in the Freshman-Sophomore spring class track games.

Addition of Points Excluded.

No combination or addition of points to aggregate the equivalent of a higher class will be counted.

GENERAL INFORMATION.

College Colors are Cardinal Red and Silver Grey.

Mail may be received at the Cage, 42 Trinity Place. Private boxes may be secured on application to the Bursar.

The General Library is in the rear of Rogers Building. Special libraries are located in the various departments.

Telegraph Office will be found in Hotel Brunswick, opposite Walker Building.

Public Telephones will be found at the Union, Rogers, Walker and Pierce Buildings. Local charge, five cents.

Trains for B. & M. points leave from North Station; for N. Y., N. H. & H. points from South Station; for N. Y. C. (B. & A.) points from South Station. Back Bay and Trinity Place Stations are the nearest stations to the Institute for the last two roads, respectively, but some trains do not stop. Certain N. Y., N. H. & H. trains do not pass through Back Bay Station.

Bulletin Boards will be found in the various buildings. Watch them for notices of Institute doings.

The office of the T. C. A. is Room 5, Engineering B. The General Secretary will be glad to see you there at any time.

Dean Burton's office hours are 10 to 12 A. M. and 1 to 2 P. M. (except Saturdays.)

If you desire:

INFORMATION, call at the information desk in Rogers Corridor on the right.

A ROOM, ask for the room list prepared by the T. C. A., in co-operation with the Bursar.

MAIL, call frequently at the cage at Union.

A MAP OF TECHNOLOGY BUILDINGS, look in Tech catalogue (first page).

A DOCTOR, consult with the medical adviser, Dr. F. W. White.

TO KNOW WHAT TECHNOLOGY GRADUATES HAVE DONE, read the "Technology Review" in the library of Rogers Building.

TO KEEP IN TOUCH WITH THE STUDENT ACTIVITIES, subscribe for "The Tech."

FRATERNITIES.

Alpha Tau Omega, 30 Newbury St.

Chi Phi, 44 The Fenway.

Delta Kappa Epsilon, 215 Newbury St.

Delta Kappa Phi, (Local), 261 Newbury St.

Delta Psi, 6 Loulsburg Sq.

Delta Tau Delta, 234 Newbury St.

Delta Upsilon, 1069 Beacon St.

Kappa Theta (Local), 264 Newbury St.

Lambda Phi (Local), 258 Newbury St.

Phi Beta Epsilon (Local), 237 Beacon St.

Phi Gamma Delta, 12 Newbury St.

Phi Kappa Sigma, 225 Newbury St.

Phi Sigma Kappa, 16 Exeter St.

Sigma Alpha Epsilon, 1004 Beacon St.

Sigma Chi, 1067 Beacon St.

Theta Chi, 1049 Becon St.

Theta Delta Chi, 262 Newbury St.

Theta Xi, 283 Newbury St.

Zeta Beta Tau, 276 Newbury St.

Lambda Chi Alpha, 292 Newbury St.

Local Societies.

Hammer and Tongs.
K2 S.
Osiris.
Pi Delta Epsilon.
Round Table.
Theta Nu Epsilon.

Professional Societies.

Architctural.
Architectural Engineering.
Biological.
Chemical.
Civil Engineering.
Electrical Engineering.
Mechanical Engineering.
Mining Engineering.
Naval Architectural.

Clubs and Associations.

Aero Club.
Alumni Association.
Association of Class Secretaries.
Boston English H. S. Club.
Brookline High School Club.
Brotherhood of St. Andrew.
Catholic Club.
Chess Club.
Chauncy Hall Club.
Cleofan (Women).
Cosmopolitan Club.
Exeter Club.
Masque.
Mechanic Arts High School Club.
Rifle Club.
Southern Club.
Technology Christian Association.
Technology Club.
Walker Club.
Wireless Society.

Officers in Charge of Courses.

Course	Professor	Room
I—C. M. Spofford,		43 Eng. A
II—Edward F. Miller,		10 Eng. A
III—Robert H. Richards,		1 Rogers
IV—D. Despradelle,		30 Pierce
V—Henry P. Talbot,		30 Walker
VI—Dugald C. Jackson,		7 Lowell
VII—William T. Sedgwick,		26 Pierce
VIII—Charles R. Cross,		11 Walker
X—Henry P. Talbot,		30 Walker
XI—Dwight Porter,		46 Eng. A
XII—Waldemar Lindgren,		14 Pierce
XIII—Cecil H. Peabody,		31a Eng. C
XIV—Harry M. Goodwin,		11 Walker

OFFICERS OF INSTRUCTION.

1913-1914

Adams, C. L., Prof. Draw.,	50 P.
Allen, C. F., Prof. R. R. Eng.,	51 B.
Bailey, F. H., Prof. Math.,	33 R.
Barrows, H. K., Assoc. Prof. Civ. Eng.	44 A.
Bartlett, D. P., Prof. Math.,	26 R.
Bartlett, H., Inst. Arch.,	35 P.
Batchelder, C. C., Inst. Engl.,	11 R.
Bates, Arlo, Prof. Engl.,	16 R.
Berry, C. W., Assoc. Prof. Mech. Eng.,	10 A.
Bigelow, R. P., Asst. Prof. Zoology and Parasitology	22 P.
Blachstein, J., Inst. Lang.,	22 L.
Blanchard, A. A., Asst. Prof. Chem.,	34 W.
Bradley, H. C., Asst. Prof. Draw.,	50 R.
Breed, C. B., Assoc. Prof. Civ. Eng.,	51 B.
Breed, S. A., Inst. Draw.,	43 R.
Brown, W. F., Asst. Prof. Draw.,	50 P.
Bugbee, E. E., Asst. Prof. Min. Eng.,	7 R.
Burnham, R. G., Inst. Mech. Eng.,	33 B.
Burrison, H. K., Asst. Prof. Draw.,	43 R.
Burton, A. E., Prof. Civ. Eng.,	12 R.
Carb, D., Inst. Engl.,	16 R.
Chandler, F. W., Prof. Arch.	35 P.
Collester, C. H., Inst. Engl.,	11 R.
Comstock, D. F., Asst. Prof. Phys.,	11 W.
Cox, A. H., Inst. Arch.,	35 P.
Cowdrey, I. H., Inst. Mech. Eng.,	10 A.
Cross, C. R., Prof. Phys.,	11 W.
Currier, C. F. A., Prof. Hist.,	34 R.
Daly, R. A., Prof. Geol.,	10a P.
Derr, L., Prof. Phys.,	11 W.
Despradelle, D., Prof. Arch.,	30 P.
Dewey, D. R., Prof. Econ.,	40 R.
Dole, M. W., Inst. Mech. Eng.	30 A.
Doten, C. W., Asst. Prof. Econ.,	40 R.
Drisko, W. J., Assoc. Prof. Phys.,	11. 16 W.
Duyser, C. A., Research Assoc. App. Chem.	
Eames, J. J., Inst. Mech. Eng.,	10 A.
Erhardt, J., Inst. Lang.,	30 L.
Everett, H. A., Asst. Prof. Nav. Arch.,	31c C.
Fay, Henry, Prof. Chem.,	46 W.
Fuller, C. E., Prof. Mech. Eng.,	10 A.
Gardner, H. W., Assoc. Prof. Arch.,	

	35 P.
Gegenheimer, R. E., Inst. Chem.,	46 W.
George, N. R., Jr., Assoc. Prof. Math.,	21 R.
Gideon, S. E., Inst. Draw.,	43 R.
Gill, A. H., Prof. Chem.,	38 W.
Goodrich, A. L., Inst. Draw.,	43a R
Goodwin, H. M., Prof. Phys.,	2, 11 W.
Gorton, W. S., Inst. Elect. Eng.,	16 L.
Gracey, F. M., Inst. Draw.,	52 R.
Gregg, D. A., Inst. Arch.,	35 P.
Green, C. W., Inst. Elect. Eng.,	28a L.
Gunn, Selska M., Asst. Prof. Biol. & P. H.,	28a P.
Gunn, Sidney, Inst. Engr.,	11 R.
Hall, W. T., Asst. Prof. Chem.,	32 W.
Hanson, H. H., Research Assoc. App. Chem.	
Haven, G. B., Assoc. Prof. Mech. Eng.,	24 B.
Hayward, C. R., Asst. Prof. Min. Eng.,	8 R.
Hayward, H. W., Assoc. Prof. Mech. Eng.,	10 A.
Heuter, R. R., Inst. Mech. Eng.,	24 B.
Hitchcock, F. L., Inst. Math.,	25a L.
Hofman, H. O., Prof. Min. Eng.,	8 R.
Holden, T. S., Inst. Math.	
Hollnagel, H. P., Inst. Phys.,	25 W.
Holmes, A. F., Inst. Mech. Eng.,	10 A.
Homer, E. B., Inst. Arch.,	35 P.
Hosmer, G. L., Asst. Prof. Civ. Eng.,	50 A.
Hovgaard, W., Prof. Nav. Arch.,	33a C.
Howard, J. W., Asst. Prof. Topog eng.,	50 A.
Howe, E. C., Inst. Biol & P. H.	23 P.
Hudson, R. G., Inst. Elect. Eng.,	15 L.
Humphreys, W., Inst. Mech. Eng.,	18 R.
Hunt, F. L., Inst. Phys.,	25 W.
Jackson, D. C., Prof. Elect. Eng.,	7 L.
Jaggar, T. A., Jr., Director Hawaiian Volcano Obs.	
James, W. H., Asst. Prof. Mech. Draw.,	20 A.
Johnston, W. A., Prof. Mech. Eng.,	10 A.
Jones, W. H., Inst. Mech. Eng.,	10 A.
Keith, H. H. W., Inst. Nav. Arch.,	33a C.
Keith, S. C., Jr., Asst. Prof. Bact.	
Kanaly, F. M., Inst. Gymn.,	G.
Kenison, E., Assoc. Prof. Draw.,	50 R.
Keyes, F. H., Inst. Chem.,	21 C.
King, W. W., Inst. Phys.	4 W.

Kneeland, F. R., Inst. Chem.,	44 W.
Kurrelmeyer, H. R., Asst. Prof.	
German,	31 L.
Lahee, F. H., Inst. Geol.,	14 P.
Lambirth, J. R., Inst. Mech. Arts.,	
	M. L.
Langley, E. F., Prof. Lang.,	29 L.
Lanza, G., Prof. (Emeritus), Mech. Eng.	
Lawrence, R. R., Assoc. Prof. Elect.	
Eng.,	10 L.
Lawrence, W. H., Prof. Arch.,	41a P.
Laws, F. A., Prof. Elect. Eng.,	4 L.
Lewis, W. K., Assoc. Prof. Chem.	
Eng.,	53 P.
Lieder, P. R., Inst. Ger.	
Lindgren, W., Prof. Geology,	10 P.
Lipke, Joseph, Inst. Math.,	25b L.
Littlefield, C. E., Inst. Mech. Arts.,	
	M. L.
Livingston, J. W., Res. Assoc. Chem.	
Locke, C. E., Asst. Prof. Min. Eng.,	1 R.
Luther, H. B., Inst. Civ. Eng.	
Lyon, W. V., Inst. Elect. Eng.,	14 L.
MacKenzie, J. D., Inst. Geol.,	14 P.
Mackenzie, M. C., Inst. Mech. Eng.,	
	20 A.
Maclaurin, R. C., President	
MacRae, D., Inst. Chem.	
Marston, N. S., Inst. Elect. Eng.	
Marvin, H. H., Inst. Phys.,	25 W.
Maxfield, J. P., Inst. Physics,	2 W.
Mead, S. W., Inst. Arch.,	35 P.
Meister, G., Inst. Lang.,	21 L.
Merrill, A. L., Prof. Mech. Eng.,	30 A.
Miller, E. F., Prof. Mech. Eng.,	10 A.
Moore, C. L. E., Asst. Prof. Math.,	36 R.
Moore, F. J., Prof. Chem.,	43 W.
Moore, L. E., Assoc. Prof. Civ. Eng.,	
	40 B.
Morrow, C. E., Inst. Arch.,	44 P.
Mueller, E. E., Asst. Prof. Chem.,	47 W.
Mulliken, S. P., Assoc. Prof., Chem.,	
	34 W.
Murray, W. J., Inst. Chem.	
Norton, C. L., Prof. Phys.,	4a W.
Norton, J. F., Inst. Chem.,	36 W.
Noyes, A. A., Prof. Chem.,	17 C.
O'Neil, J. F., Inst. Mech. Arts,	M. L.
Osborne, G. A., Prof. Math. (Emeri-	
tus),	27 R.
Page, N. C., Asst. Prof. Phys.,	10 W.
Park, C. F., Prof. Mech. Eng.,	20a A.
Passano, L. M., Assoc. Prof. Math.,	
	48 A.
Peabody, C. H., Prof. Nav. Arch.,	31a C.

Peabody, D., Inst., Mech. Eng.
 Pearson, H. G., Assoc. Prof. Engr. 13 R.
 Pender, H., Prof. Elect. Eng., 1 L.
 Perry, F. G., Inst. Elect. Eng., 28a L.
 Phelan, J. W., Inst. Chem., 34a W.
 Phelps, E. B., Assoc. Prof. Biol.
 Res. 24a P.
 Phillips, H. B., Inst. Math., 23 L.
 Pope, T. E., Prof. Chem., 7a W.
 Porter, D., Prof. Civ. Eng., 46 A.
 Prescott, S. C., Assoc. Prof. Biol. &
 P. H., 29 P.
 Reed, R. C., Inst. Min. Eng., 7 R.
 Reiman, C. K., Inst. Chem.
 Richards, R. H., Prof. Min. Eng., 1 R.
 Riley, J. C., Assoc. Prof. Mech. Eng.,
 10 A.
 Robbins, A. G., Prof. Civ. Eng., 50 A.
 Robinson, A. T., Asst. Prof. Engr., 11 R.
 Rogers, R. E., Inst. Eng.
 Rolfe, G. W., Inst. Chem., 39 W.
 Russell, G. E., Assoc. Prof. Civ. Eng.,
 5a A.
 Schneider, Franz, Inst. Biology 28 P.
 Seaver, H. L., Asst. Prof. Engr., 13 R.
 Sedgewick, W. T., Prof. Biol. & P.
 H., 26 P.
 Sherrill, M. S., Assoc. Prof. Chem., 9 C.
 Shimer, H. W., Assoc. Prof. Geol., 14 P.
 Smith, H. W., Assoc. Prof. Elect. Eng.,
 16 L.
 Smith, H. W., Inst. Eng., 11 R.
 Smith, L. S., Asst. Prof. Mech. Eng.,
 10 A.
 Smith, R. H., Inst. Mech. Arts. M L.
 Spear, E. B., Asst. Prof. Chem., 47a W.
 Spofford, C. M., Prof. Civ. Eng., 42 A.
 Stiles, P. G., Inst. Biol. & P. H., 21 P.
 Sumner, J. O., Prof. Hist., 41b P.
 Sutherland, C. H., Inst. Civ. Eng., 40 B.
 Swett, G. W., Inst. Mech. Eng., 24 B.
 Taft, T. H., Asst. Prof. Mech. Eng.,
 10 A.
 Talbot, H. P., Prof. Chem., 30 W.
 Thomson, H. F., Inst. Elect. Eng.
 Thompson, M. DeK., Prof. Electro-
 Chem., 2 W.
 Thorp, F. H., Asst. Prof. Chem., 22 B.
 Turner, R., Inst. Draw., 35 P.
 Tyler, H. W., Prof. Math., 22 R.
 Vogel, F., Prof. Lang., 24. 33 L.
 Walker, C. H., Inst. Arch., 35 P.
 Walker, W. H., Prof. Chem., 55 P.
 Warren, C. H., Prof. Geol., 7 C.
 Wengert, W. H., Inst. Mech. Eng.
 White, R. H., Inst. Inorg. Chem., 47 W.

Wickenden, W. E., Asst. Prof. Elect. Eng.,	28 L.
Williams, R. S., Asst. Prof. Chem.,	46 W.
Wilson, E. B., Prof. Math.,	20, 27 R.
Woodbridge, S. H., Assoc. Prof., Mech. Eng.,	33 B.
Woodman, A. G., Asst. Prof. Chem.,	36a W.
Woods, F. S., Prof. Math.,	20 R.
Zimmerman, R. E., Inst. Theor. Chem.,	28 W.

Office hours of Dean Alfred E. Burton—10-12 a. m. daily and 1-2 p. m. (except Saturdays).

Office hours of Secretary Allyne L. Merrill—Mon., Wed., Fri. 1.30-2.30; Tues. and Thurs. 11-12.

Office hours of Registrar Walter Humphreys—9-10 except Monday.

Office hours of Bursar Frank H. Rand—9-2 daily, Saturday 9-12.

Office hours of Med. Adv. Dr. Rockwell—Monday and Thursday, 4-5 p. m.

Buildings.

- R. Rogers Bldg., 491 Boylston St.
- W. Walker Bldg., 525 Boylston St.
- A. Engineering Bldg. A, Trinity Pl.
- B. Engineering Bldg. B, Trinity Pl.
- C. Engineering Bldg. C, Trinity Pl.
- P. Henry L. Pierce Bldg., Trinity Pl.
- L. Lowell Bldg., Clarendon St.
- M. L. Mechanical Laboratories, Garrison St.
- G. Gymnasium, Garrison St.
- U. Union, Trinity Pl. (Enter Eng. C.)

Institute Libraries.

1. Architectural, 33 Pierce Bldg.
2. American Statistical Association
40 Rogers Bldg.
3. Biological, 27 Pierce Bldg.
4. Chemical, 39 Walker Bldg.
5. Electrical and Modern Languages,
Lowell Bldg.
6. Engineering, 40 Engineering A.
7. General, including English Literature,
European History and Military Science, 15 Rogers
Bldg.
8. Geological, 14 Pierce Bldg.
9. History and Economics, 40 Rogers
Bldg.
10. Mathematics, 20 Rogers Bldg.
11. Margaret Cheney, 12 Pierce Bldg.
(for Women).

12. Mining, 8 Rogers Bldg.
13. Naval Architecture, 8 Engineering C.
14. Physical, 14 Walker Bldg.
15. Library in Union.

A guide to the libraries can be obtained at the General Library, which is open for students' use every week day until 10 P. M. Students of the Institute are allowed non-resident privileges at the Boston Public Library, by courtesy of the trustees, on presenting slips obtained at the information desk in Rogers Building.

POINT SYSTEM.

The Point System is an institution which aims to prevent a student from carrying too much outside work, to the detriment of his studies, and enables more men to take part in student activities. Every office and activity is assigned a definite number of points, and no man may carry more than a total of ten points, except in the case of athletics. With athletics a man may carry any one other office, even though the two total more than ten points.

The system was put into operation by the Institute Committee in the fall of 1908 and is enforced by one of its standing committees.

The ratings of the Point System are as follows:

Class A—10 points. Pres. Senior Class, Gen'l Mgr. Tech Show, Ed.-in-Chief Technique, Gen'l Mgr. The Tech, Chairman Union House Comm., Pres. M. I. T. A. A. (if Capt. of Track Team).

Class B.—9 Points. Pres. Junior Class, Executive Comm. of Institute Comm., Ed.-in-Chief The Tech; Managing Editor The Tech, Mgr. Track Team, Gen'l Mgr. Musical Clubs, Bus. Mgr. Technique, Bus., Adv., and Stage Mgrs. Tech Show, Treas. Tech Show.

Class C—8 points. Adv. and Circ. Mgrs. The Tech, Treas. The Tech, Technique Board, Asst. Gen'l Mgr. Musical Clubs.

Class D—7 points. Pres. Sophomore Class, Pres. T. C. A., News Board The Tech, Senior Portfolio Comm., Junior

Prom Comm., Mgrs. Separate Clubs of the Musical Clubs, Mgr. Tech Orchestra, Asst. Bus. Mgrs. Tech Show, Asst. Stage Mgr. Tech Show (2d term), Members Union Comm., Chairman Union Dining Room Comm.

Class E—6 points. Pres. Freshman Class, Capt Track Team, Pres. M. I. T. A. A., Pres. Professional Societies, Leader and Concert Master of the Orchestra, Mgr. Hockey Team, Mgr. Basketball Team, Assistants News Board The Tech, Business Board The Tech, Leaders Musical Clubs, Principals Tech Show, Asst. Adv. Mgr. Tech Show.

Class F—5 Points. Members Institute Comm., Members and Candidates Track Team, Asst. Mgr. Track Team, Chorus Tech Show, Members following teams: Cross-country, Hockey, Basketball; Members of Musical Clubs and Orchestra (1st term), Pres. Aero Club, Candidates for Asst. Gen'l Mgr. Musical Clubs, Members and Candidates News and Editorial Staffs The Tech.

Class G—4 points. Treas. four Classes, Treas. T. C. A., Mgrs. Gym., Wrestling and Class Teams, Members Musical Clubs and Orchestra (2d term), Asst. Mgrs. Hockey and Basketball Teams, Sec.-Treas. Aero Club, Members and Candidates Business Staff The Tech.

Class H—3 points. Sec.-Treas. M. I. T. A. A., Members Advisory Council A. A., Class Teams, Gym. Team, Wrestling Team, Mgr. Tennis Team, Librarian Aero Club.

Class I—2 points. Sec.-Treas. all Professional Societies and Clubs, Pres. all Clubs and non-professional Societies, Mgr. Golf Team, Members M. I. T. A. A., Tennis Team, Golf Team, Aero Club.

Class J—1 point. Vice-Pres. four Classes, Class Clerk, Exec. Comm. or Directors Classes, Pres. Musical Clubs, Vice-Pres. T. C. A., M. I. T. A. A., Musical Clubs, Sec. Musical Clubs, Sec. of all Clubs and Societies, Treas of all Clubs and Societies, Standing Committees all Clubs and Societies, other officers of Clubs and Societies not already listed, officers of Co-op. Society.

The captaincy of any team adds one point to the membership rating of the team.

In effect Oct. 1, 1913.

F. D. MURDOCK,
Chairman Point System Comm..
Employment Bureau.

Men who desire part-time employment should apply to the Dean. A limited number of positions are always available and he will gladly try to provide needy men with part time employment. The Boston Y. M. C. A. employment office, 312 Huntington Ave., is also available for students.

THE TECH SONG.

Dear Old M. I. T.

Words and Music by H. S. Wonsou, '07.

The sun with glowing crimson
Has ting'd the sky's dull gray;
The glory of the sunset
Uplifts our flag to-day;
While here beneath our colors,
With hearts that never yield,
Our boys are fighting onward,
Fighting onward 'cross the field.

CHORUS.

Fight on, boys, we are cheering for you,
For we want you to win to-day;
Do your best, we are all behind you,
And you're wearing the Red and
Gray.

Though the odds may be great against
you,

Full of sturdy courage be,
And we'll raise a song of vict'ry
For dear old M. I. T.

Before old Harvard's crimson,
Before the rows of Brown,
Before the green of Dartmouth
Our colors will not down;
Though Amherst, white and purple,
Bid the Red and Gray to yield,
Our cheer, still strong and clear, boys,
Will ring across the field.

Chorus.

On the days that are before us
We will gather as of yore,
And raise in swelling chorus
The grand old cheer once more.
And when the battle's over,
Then at the close of day
Once again we'll raise our colors,
Vict'ry crowns the Red and Gray.

Chorus.

THE TECH CHEER.

M. I. T. Rah! Rah! Rah!

M. I. T. Rah! Rah! Rah!

M. I. T. Rah! Rah! Rah!

Technology!

CITY CHURCHES.

The following notices are given by churches that strive to make their work of special interest to college men. They invite all students to visit them during their first weeks in Boston, and desire that each man shall find from among them a church home for himself during his college career. Introduce yourself to the pastor of the church you prefer.

BAPTIST.

The First Baptist Church in Boston (1665), corner Commonwealth Ave. and Clarendon St. Rev. Austin K. DeBlois, Ph.D., pastor. Sunday morning service, 10.30. Sunday School, Young Men's Class, 12 m. Sunday Vesper service, 4.30. Friday, 7.45 to 8.45 p. m. Meetings of the young people twice a month for the study of civic and social problems.

Clarendon Street Baptist Church, cor. of Clarendon and Montgomery Sts. Rev. James A. Francis, minister. Services, Sunday 10.30 a. m. and 7.30 p. m., preaching 12.15, Bible School; Friday, 7.30 p. m., prayer meeting.

Dudley Street Baptist, 139 Dudley St., Rev. Charles A. Fulton, D.D., pastor; Rev. Charles L. Page, asst. pastor.

Ruggles Street Baptist, 165 Ruggles St. Rev. Charles C. Earle, D. D., pastor. Rev. Samuel Russell, asst. pastor. Sunday School, 12 m. Y. M. C. A. and Y. W. C. A. branches.

Tremont Temple Baptist Church, Strangers' Sabbath Home, 82 Tremont St. Rev. Cortland Myers, D.D., pastor; Rev. Herbert Handel, asst. pastor. Rev. D. M. Lockrow, Supt. of Men's Work. Sunday services: Morning prayer, 9.30; preaching, 10.30; Sunday School and Bible classes, 12.15; Vesper prayer and praise, 5.45; Evening service, 7.30. C. E. service Tuesday evenings, and church prayer meeting on Friday evenings at 7.30.

All seats free. Welcome.
Tabernacle Baptist Church, Boston, cor. Warren Ave. and West Canton St. The Rev. Herbert S. Johnson, D. D., and Rev. Frederick E. Heath, pastors. Sunday morning service, 10.30. Sunday School, 12 m. Young Men's Class. Song service, 7 p. m. Sunday evening service, 7.30. Prayer meeting, Friday at 7.30 p. m.

CONGREGATIONAL.

Central Church, Newbury and Berkeley Sts. (back of Massachusetts Institute of Technology) Sunday morning service, 10.30 a. m. Young people's discussion classes at 12 m. Musical vesper service at 4.15 p. m., with brief address. All seats are free in the afternoon. Pews reserved for students in the morning. Informal Sunday evening gathering for students. Tuesday vesper service at 4.30 p. m.

Mount Vernon Church (Trinitarian Congregational), corner of Beacon St. and Massachusetts Ave. Rev. James Austin Richards, minister. Sunday services at 10.45 and 7.30. Mount Vernon Young People's Association on Sunday, 6.45. Church prayer meeting on Friday, 7.45. All young men and women are most heartily welcome at all these services.

Old South Church, Copley Sq. Rev. George A. Gordon, D.D., minister; Rev. Willis H. Butler, associate minister. Preaching Sunday at 10.30 a. m. and 7.30 p. m. All seats free at the evening service. Bible School, 12 m. Special classes for students. Public service every Friday evening from 8 to 8.45 with brief address by the pastor.

Park Street Congregational Church, cor. Park and Tremont Sts. A. Z. Conrad, D.D., Ph.D., pastor. Preaching by Dr. Conrad every Sunday, 10.30 a. m., 7.30 p. m. Bible School, 12 m. Devotional service, Friday, 7.30 p. m. Supper, with social and entertainment, first Wednesday of each month, November to April, inclusive.

Shawmut Congregational, Tremont, cor. West Brookline St. Rev. E. Ellsworth Shumaker, Ph.D., pastor. Sunday services: 10.30 a. m., 7.30 p.

m. Bible School, 12.15 p. m. Prayer meeting, Friday evening at 7.45.

Union Congregational Church, cor Columbus Ave. and West Newton St. A wide-awake church, formed by the combination of Berkeley Temple and Union Church. Rev. Allen A. Stockdale, pastor. Sunday services: Morning worship, 10.30 a. m.; evening service, 7.30 p. m.; large men's class, 12.15; Christian Endeavor meeting, 6.30. People's Hour service Friday evening at 7.45. Church always open. This church is situated in the heart of the student section of the city. It affords a fine social and religious life for young people. All seats free, morning and evening.

EPISCOPAL.

Church of the Advent, Mt. Vernon and Brimmer Sts. All seats always free. Rev. William Harman van Allen, S.T.D., L.H.D., D.C.L., rector; Rev. Fathers Cabot, Nattress and Scarritt, curates. Rectory, 28 Brimmer St.; telephone, Haymarket 771. Parish house, 30 Brimmer St. Church telephone, Haymarket 3357-R. Sunday services: Holy Communion, 7.30 and 8.15 a. m.; Sunday School, 9 a. m.; Matins, 10 a. m.; Choral Eucharist and sermon, 10.30 a. m.; Choral Evensong, 4 p. m. (Dec.-April) Evening service and sermon, 7.30 p. m.; after meeting, 8.45 p. m. Daily services: Mass, 7.30 a. m. (Thursdays and holy days, 9.30 a. m. also); Matins, 9 a. m.; Evensong, 5 p. m.; Friday evening, service and sermon, 8 p. m. Clergy office hour, daily after matins. Clergy "at home" Tuesday evenings in the Rectory, 8-10 p. m. College men specially invited. Confirmation lectures as announced. Students especially welcomed to all services, and the clergy will gladly call on men desiring to know them or to inquire about the Church and the Faith once for all delivered. Men willing to help in Sunday School, B. S. A. work, etc., will please address the Rector.

Emmanuel Church, 15 Newbury St. Rev. Elwood Worcester, D.D., rector. Rev. Samuel McComb, D.D., asst. rector. Sunday services: Celebration of

the Holy Communion, 9.30 a. m.; morning prayer and sermon, with second celebration, on the first Sunday of each month, 10.30 a. m.; afternoon service, with lecture, 4 p. m.; on the first Sunday of the month musical service; Bible classes for Tech and Harvard students, 7.30 p. m.; Sunday night social meetings for men and women students, 8.15 p. m. (this meeting consists of the singing of hymns, short service, interesting talk by some distinguished person, simple supper and social intercourse); health conference, Wednesday, 8 p. m.

Church of the Good Shepherd, Cortes St. Rev. George J. Prescott, rector. Sunday services, 10 and 10.45 a. m.; 12.15 and 7.30 p. m.

The Cathedral Church of St. Paul, Boston, Mass. The Very Rev. E. S. Rousmaniere, D. D., Dean. Services: Sundays: 8 a. m., Holy Communion; 10 a. m.—1st, 3d and 5th Sundays of the month. Morning Prayer; 2d and 4th, Holy Communion. 11 a. m.—1st, 3d and 5th Sundays of the month, sermon and Holy Communion; 2d Sunday, Morning Prayer, Litany and Sermon; 4th Sunday, Morning Prayer and Sermon. 4 p. m.—Evening Prayer (Choral) and Address, 7.30 p. m. Later Evensong and Address. Week Days: Holy Communion—7.00 a. m. Mondays, Wednesdays and Fridays; 8.30 a. m. Tuesdays, Thursdays Saturdays; 11 a. m. Thursdays and Holy Days. Morning Prayer, 10.00 a. m. daily; Noonday Services, 12.10 p. m. daily (Saturdays, Singing of Familiar Hymns); Evening Prayer, 5.00 p. m. daily; Fridays, 11.00 a. m., Class in Personal Religion..

Church of the Messiah, St. Stephens, cor. Gainsborough Sts. Rev. John McG. Foster, rector. Sunday Services: 8.00, 10.30, 7.30. Rector's Bible Class, to which all students are welcome, Sundays at 12.15.

St. John the Evangelist, Bowdoin St. Rev. Henry Power Bull, Superior. Sunday: Holy Eucharist, 7.30, 9.30, and 11.00 a. m., with sermon; Evening, 7.30 p. m., with sermon. Week

Days: Holy Eucharist, 7.00 a. m.
St. Stephens, Florence St. Rev. Fred-
eric C. Lauderburn, vicar.

Trinity Church, Copley Sq. Rev. Alex-
ander Mann, rector; residence, 233
Clarendon St. Rev. Reuben Kidner,
16 Brimmer St., first assistant. Rev.
Edwin H. van Etten, 22 St. James
Ave., second assistant. Sunday ser-
vices: Holy communion, 8 a. m.;
morning service and sermon, 10.30 a.
m.; evening service and sermon, 4
p. m. One of the clergy may always
be found in the parish house between
12.30 and 1.30 o'clock. Trinity House,
22 St. James Ave., open from Oct. 1st
to June 1st, offers pleasant reading-
rooms, etc., to students attending
Trinity Church.

METHODIST.

First Methodist Church of Boston,
Temple St., rear of the State House,
Rev. Frank W. Collier, pastor. Resi-
dence, 42 Mt. Vernon St. Tel. Hay-
market 1238-M. Morning service, 10.30.
Sunday School, 12 m. Large Baraca
Class for young men. Delta Alpha
Class for young women. Epworth
League devotional meeting, 6.30.
Evening service, 7.30. Friday night
prayer meeting, 7.30. All seats free.
Young people always especially wel-
come.

People's Temple, Columbus Ave. and
Berkeley St. Rev. A. H. Nazarian,
pastor; residence, 261 Beacon St.
Sunday 9 a. m., prayer meeting. Di-
vine worship, 10.30 with preaching.
12 m. Bible School with classes for
young men and young women. 6
p. m., Epworth League. 7.15 p. m.,
praise service, led by large chorus,
followed by preaching. All seats
free. Everybody welcome.

Tremont Street Methodist Church, cor.
Concord and Tremont Sts. Parson-
age, 176 Huntington Ave. Worship
with sermon, Sundays at 10.30 a. m.
and 7.30 p. m.; Sunday School 12.10
p. m. Classes for young women and
young men, many of whom are stu-
dents. Epworth League service at
6.15 p. m. Prayer meetings Friday
nights at 7.45 p. m. Room registry

as a special help to students. Leopold A. Nies and Joel M. Leonard, pastors. All are welcome.

UNITARIAN.

Arlington Street Church, corner Arlington and Boylston Sts. Rev. Paul Revere Frothingham, minister. Miss Harriet E. Johnson, parish assistant. Sunday services: Sunday School at 9.45 a. m.; morning service at 11 a. m.; vesper service (all seats free) at 4 p. m.

Church of the Disciples, corner Jersey and Peterborough Sts., Fenway. Rev. Abraham M. Rihbany, minister. Disciples' School at 9.45 a. m. Morning service at 11 a. m.

First Church in Boston (Unitarian), corner of Berkeley and Marlborough Sts. Services at 10.30 Sunday mornings. Rev. Charles E. Park, minister. All are cordially invited.

King's Chapel, corner of Tremont and School Sts. Rev. Howard N. Brown, minister. Sunday morning service at 10.30; afternoon service at 3.30. The general public is cordially invited to attend the morning service. At the afternoon service all seats are free.

South Congregational, Newbury, cor. Exeter St. Rev. Edward Cummings, minister.

PRESBYTERIAN.

First Presbyterian Church, Columbus Ave. and Berkeley St. Rev. W. M. Tufts, D.D., pastor. Public Worship: Sundays, 10.30 a. m. and 7.30 p. m.; women's classes and men's class at 12 m. Prayer service Fridays at 8 p. m. A cordial welcome.

First Reformed Presbyterian, Ferdinand and Isabella Sts.

Second Reformed Presbyterian, 27 Chambers St. Rev. James M. Foster, pastor.

St. Andrew's Presbyterian, 85 West Concord St. Rev. Alex. D. MacKinnon, pastor, 85 W. Concord St.

First United Presbyterian, West Brookline and Warren Ave. Rev. K. M. Munroe, pastor.

ROMAN CATHOLIC.

The Cathedral, Washington and Union Park Sts. The Rt. Rev. M. J. Splaine, D.D., Administrator. 75 Union Park. Sunday masses at 6, 7, 8, 9, 10 and 11.30 a. m.*

St. Cecilia, Belvidere and St. Cecilia Sts. The Rev. John J. McGarry, Administrator, 30 St. Cecilia St.

Notre Dame Des Victoires, 25 Isabella St. The Rev. Henri de La Chapelle, S.M., Rector, 25 Isabella St.

Church of Immaculate Conception, Harrison Ave. and E. Concord St. Rev. Thomas I. Gasson, S.J., Rector, 761 Harrison Ave.

St. Joseph Church, Chambers, cor. Allen St. Rt. Rev. J. E. Millerick, Rector, 8 Allen St., West End.

St. Francis de Sales, 110 Vernon St., Roxbury. The Rt. Rev. D. J. O'Farrell, Rector, 116 Vernon St.

*Masses at other church usually at same hours except at 11.30 mass.

OTHER CHURCHES.

Second Universalist, Columbus Ave., cor. Clarendon St. Rev. S. H. Roblin, D.D., minister. Students are especially welcome.

Friends' Church, Townsend St., Roxbury. Wilbur K. Thomas, pastor. Morning service, 10.30. Bible School, 12 o'clock. Cordial welcome to all.

Church of the New Jerusalem, Bowdoin St., opp. the State House grounds. Rev. James Reed and Rev. H. Clinton Hay, pastors. Divine worship every Sunday at 10.30 a. m. Bible classes at 12 m. Vespers at 4 p. m., when announced. The public cordially invited to all services.

Temple Adath Israel, Commonwealth Ave., cor Blandford. Harry Levi, rabbi. Services, Saturdays 10.30 and Sunday 11.15 a. m.

Zion Lutheran, 91 West Newton. Rev. Henry Birkner, pastor.

The First Church of Christ, Scientist. First Reader, John C. Lathrop. Sunday, 10.45 a. m., 7.30 p. m.; Wednesday, 7.30 p. m. New Church, Norway, Falmouth, and St. Paul Sts.

Reading Rooms:

Berkeley Building, 420 Boylston Street, 9 a. m. to 9 p. m., except Wednesday; Wednesday until 5 p. m.

International Trust Company Building, Devonshire and Milk Streets, 9 a. m. to 5.30 p. m.

Coolidge Corner Building, 1316 Beacon Street, Brookline, 9 a. m. to 6 p. m.

All the writings of Mary Baker Eddy and all the publications of The Christian Science Publishing Society on sale.

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Students are requested to show the Handbook when making purchases.

September 1913

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Dinner, 5.00 to 7.30

Sundays

Breakfast, 8.00 to 10.00 Dinner, 12.30 to 3.00

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31 ST BOTOLPH STREET

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PRINCIPAL COUNTRIES OF THE WORLD

COUNTRY	Square Miles	Popula- tion	Capital
Chinese Empire	4,274,170	433,553,030	Pekin
British Empire	11,467,294	396,294,752	London
Russian Empire	8,647,657	160,095,200	St. Peters'g
U.S. & Islands	3,742,155	101,100,000	Washington
France & Col's	4,296,130	92,531,325	Paris
German Empire	1,140,290	76,096,000	Berlin
Japan	147,655	51,458,037	Tokio
Austria-Hung'y	261,035	46,973,359	Vienna
Gt. Brit'n & Irl'd	121,391	41,976,827	London
Holland & Col's	795,648	41,347,182	Amsterdam
Turkish Empire	1,622,080	41,049,720	Const'nople
Italy & Colonies	449,050	36,825,253	Rome
Brazil	3,218,430	19,910,646	R. de Jane'o
Spain & Col's	450,320	19,292,455	Madrid
Portugal & Col's	838,442	14,582,084	Lisbon
Mexico . . .	767,005	13,607,259	Mexico
Korea . . .	82,000	10,519,000	Seoul
Egypt . . .	400,000	9,821,100	Cairo
Belgium . . .	11,373	7,774,910	Brussels
Persia . . .	628,000	7,653,600	Teheran
Canada . . .	3,729,665	7,358,000	Ottawa
Siam . . .	220,000	7,000,000	Bangkok
Argentine Rep'c	1,135,840	6,805,684	Buenos Ay's
Roumania . . .	50,720	5,912,520	Bucharest
Sweden . . .	172,876	5,294,885	Stockholm
Morocco . . .	219,000	5,000,000	Morocco
Colombia . . .	428,436	4,500,000	Bogota
Peru . . .	697,640	4,500,000	Lima
Afghanistan	215,400	4,000,000	Cabul
Abyssinia . . .	150,000	3,500,000	Magdala
Switzerland . . .	15,976	3,315,443	Berne
Chili . . .	291,544	3,249,092	Santiago
Denm'k & Col's	102,022	2,630,000	Copenhagen
Venezuela . . .	593,943	2,591,000	Caracas
Servia . . .	18,630	2,493,770	Belgrade
Greece . . .	25,014	2,433,866	Athens
Bolivia . . .	709,000	2,267,935	La Paz
Norway . . .	124,129	2,240,032	Christiana
Liberia . . .	35,000	2,060,000	Monrovia
Cuba . . .	41,164	2,048,980	Havana
Guatemala . . .	42,290	1,804,000	NGuat'mala
San Salvador	7,225	1,707,000	S'n Sal'dore
Ecuador . . .	429,000	1,500,000	Quito
Hayti . . .	10,204	1,400,000	Pt au Prince
Uruguay . . .	72,210	1,111,758	Montevideo
Honduras . . .	46,250	745,000	Tegucigalpa
Paraguay . . .	196,349	635,571	Asunsion
Dominica . . .	18,045	610,000	S. Domingo
Nicaragua . . .	49,200	600,000	Managua
Panama . . .	32,380	360,542	Panama
Costa Rica . . .	18,400	351,176	San Jose
DIVISIONS	OF	THE	EARTH
Africa . . .	11,513,579	127,000,000	
America, North	8,037,714	115,000,000	
America, South	6,851,306	45,000,000	
Asia . . .	17,057,666	850,000,000	
Australasia . . .	3,456,290	5,200,000	
Europe . . .	3,754,282	380,000,000	
Polar Regions	4,970,265	300,000	

THE METRIC SYSTEM.

A *gram* is the weight of a cube of water at its greatest density, having an edge of .01 meter.

The prefixes used with the units of measure signify as follows:

Mikro, . . . . .	.000001	Deka,	10.
Milli, . . . . .	.001	Hekto,	100.
Centi, . . . . .	.01	Kilo,	1,000.
Deci, . . . . .	.1	Myria,	10,000.

Table of Length.

1 mikron	= .000001	of a meter.
1 millimeter (mm)	= .001	" "
1 centimeter (cm)	= .01	" "
1 decimeter (dm)	= .1	" "

Meter (m)

1 dekameter	= 10	meters
1 hektometer	= 100	"
1 kilometer	= 1,000	"
1 myriameter	= 10,000	"

Table of Square Measure.

1 sq. millimeter	= .000001	of a sq. meter.
1 sq. centimeter	= .0001	" "
1 sq. decimeter	= .01	" "

Square meter.

1 sq. dkameter (are)	=	100	sq. meters
1 sq. hektometer (hektare)	=	10,000	"
1 sq. kilometer	=	1,000,000	"
1 sq. myriameter	=	100,000,000	"

Table of Cubic Measure.

1 cu. millimeter	= .000000001	of a cubic meter.
1 cu. centimeter	= .000001	" "
1 cu. decimeter	= .001	" "

Cubic meter (stere).

1 cu. dekameter	=	1,000	cu. meters.
1 cu. hektometer	=	1,000,000	"
1 cu. kilometer	=	1,000,000,000	"
1 cu. myriameter	=	1,000,000,000,000	"

Table of Weight.

1 mikrogram	= .000001	of a gram.
1 milligram (mg)	= .001	" "
1 centigram (cg)	= .01	" "
1 decigram (dg)	= .1	" "

Gram (g.)

1 dekagram	=	10	grams.
1 hektogram	=	100	"
1 kilogram (kg)	=	1,000	"
1 myriagram	=	10,000	"
1 quintal (q)	=	100,000	"
1 metric ton (t)	=	1,000,000	"

A metric ton is the weight of one cubic meter of water.

A kilogram is the weight of one liter of water.

Table of Capacity.

1 mikroliter	= .000001	of a liter.
1 milliliter (ml)	= .001	" "
1 centiliter	= .01	" "
1 deciliter	= .1	" "

Liter (l).

1 dekaliter	= 10	liters.	1 hektoliter	= 100	liters.
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ANTIDOTES FOR POISON.

First.—Send for a physician.

Second.—Induce vomiting, by tickling throat with feather or finger; drinking hot water or strong mustard and water. Swallow sweet oil or whites of eggs.

Acids are antidotes for **Alkalies**, and *vice versa*.

Special Poisons and Antidotes.

Acids.—Muriatic. Oxalic. Acetic. Sulphuric (Oil of Vitriol.) Nitric (Aqua Fortis.) { Soap-suds, magnesia, lime water.

Prussic Acid. { Ammonia in water, Dash water in face.

Carbolic Acid. { Flour and water, mucilaginous drinks.

Alkalies.—Potash. Lye. Hartshorn. Ammonia. { Vinegar or lemon juice in water.

Arsenic.—Rat Poison. Paris Green. { Milk, raw eggs, sweet oil, lime water, flour and water.

Bug Poison.—Lead. Salt-petre. Corrosive Sublimate. Sugar of Lead. Blue Vitriol. { Whites of eggs, or Milk in large doses.

Chloroform. Chloral. Ether. { Dash cold water on head and chest. Artificial respiration.

Carbonate of Soda.—Copperas. Cobalt. { Soap-suds and mucilaginous drinks.

Iodine.—Antimony. Tartar Emetic. { Starch and water, astringent infusions, strong tea.

Mercury and its Salts. { Whites of eggs, milk, mucilages.

Opium.—Morphine. Laudanum. Paregoric. Soothing Powders or Syrups. { Strong coffee, hot bath. Keep awake and moving at any cost.

HELP IN CASE OF ACCIDENTS.

Drowning. 1. Loosen clothing, if any. 2. Empty lungs of water by laying body on its stomach and lifting it by the middle so that the head hangs down. Jerk the body a few times. 3. Pull tongue forward, using handkerchief, or pin with string, if necessary. 4. Imitate motion of respiration by alternately compressing and expanding the lower ribs, about twenty times a minute. Alternately raising and lowering the arms from the sides up above the head will stimulate the action of the lungs. Let it be done gently but persistently. 5. Apply warmth and friction to extremities. 6. By holding tongue forward, closing the nostrils and pressing the "Adam's apple" back (so as to close entrance to stomach), direct inflation may be tried. Take a deep breath and breathe it forcibly into the mouth of patient, compress the chest to expel the air, and repeat the operation. 7. DON'T GIVE UP! People have been saved after HOURS of patient, vigorous effort. 8. When breathing begins, get patient into a warm bed, give WARM drinks, or spirits in teaspoonfuls, fresh air and quiet.

Burns and Scalds. Cover with Cooking Soda, and lay wet cloths over it. Whites of Eggs and Olive Oil. Olive or Linseed Oil, plain, or mixed with Chalk or Whiting.

Lightning. Dash cold water over the person struck.

Sunstroke. Loosen clothing. Get patient into shade, and apply ice-cold water to head.

Mad Dog or Snake Bite. Tie cord tight above wound. Suck the wound and cauterize with caustic or white-hot iron at once, or cut out adjoining parts with a sharp knife.

Venomous Insects' Stings, &c. Apply weak Ammonia, Oil, Salt Water, or Iodine.

Fainting. Place flat on back; allow fresh air and sprinkle with water.

Tests of Death. Hold mirror to mouth. If living moisture will gather. Push pin into flesh. If dead the hole will remain, if alive it will close up.

Cinders in the Eye. Roll soft paper up like a lamp lighter, and wet the tip to remove, or use a medicine dropper to draw it out. Rub the other eye.

Fire in One's Clothing. *Don't run,* — especially not down stairs or out of doors. Roll on carpet, or wrap in woolen rug or blanket. Keep the head down, so as not to inhale flame.

Fire in a Building. Crawl on the floor. The clearest air is the lowest in the room. Cover the head with a woolen wrap, wet if possible. Cut holes for the eyes. Don't get excited.

Fire in Kerosene. *Don't use water,* it will spread the flames. Dirt, sand or flour is the best extinguisher; or smother with woolen rug, tablecloth or carpet.

DOMESTIC POSTAGE.

FIRST CLASS MATTER.—Letters and all other written matter (whether sealed or not), excepting manuscript copy accompanying proof-sheets, also all matter sealed (see below), 2 cents an ounce, excepting drop letters, at NON-CARRIER offices, 1 cent an ounce. (Postal cards 1 cent each.) Limit of weight 4 lbs.

SECOND-CLASS.—Newspapers and periodicals published quarterly and oftener, and not for gratuitous distribution. The general public pay by affixing stamps at the rate of 1 cent for each 4 ounces or fraction when not sealed. No limit of weight.

THIRD-CLASS.—Books (printed, not blank), circulars, other printed matter, not of a personal nature, proof-sheets and manuscript copy accompanying same, valentines, sheet-music, heliotypes, chromos, posters, lithographs, and printed advertising matter in general, all, when not sealed 1 c. for two ounces or fraction. Except single books limit of weight 4 lbs.

FOURTH-CLASS.—Merchandise and samples, blank-books and paper, ores, all matter not included in any of the other classes, and not in its nature perishable or liable to injure the contents of the mails. (By express rulings the postage on seeds, cuttings, roots, scions and plants, is at the rate of 1 cent for each 2 ounces). All, when not sealed, and not exceeding 4 pounds in weight, 1 cent an ounce or fraction.

Domestic Classification and Rates apply to and from United States and island possessions of Porto Rico, Hawaiian Islands, Philippines, Guam Tatuila (Samoan group), Shanghai, China, and Isthmian Canal Zone. United States postage stamps used.

SEALING.—Any matter is regarded as sealed when it is not so wrapped as to allow of a thorough examination without in any way injuring the wrapping.

REGISTRATION.—All classes of matter may be registered at any post-office by affixing 10 cents in stamps in addition to the regular postage.

MONEY ORDER RATES.—Sums not exceeding \$2.50, 3c.

Over \$ 2.50 and not exceeding \$	5.00	. . .	5c.
“ 5.00	“	“	10.00 . . . 8c.
“ 10.00	“	“	20.00 . . . 10c.
“ 20.00	“	“	30.00 . . . 12c.
“ 30.00	“	“	40.00 . . . 15c.
“ 40.00	“	“	50.00 . . . 18c.
“ 50.00	“	“	60.00 . . . 20c.
“ 60.00	“	“	75.00 . . . 25c.
“ 75.00	“	“	100.00 . . . 30c.

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FOREIGN POSTAGE.

Letters per oz. 5 cents; each additional oz. or fraction 3 cents. Gt. Britain and Ireland 2 cents per oz. or fraction. Germany (if by direct steamer) 2 cents per oz. or fraction. Postal Cards 2 cents

❁ 1913 ❁

JANUARY

Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.
..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
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JULY

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❁ 1914 ❁

JANUARY

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FEBRUARY

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JUNE

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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IDENTIFICATION.

My Name is

My Address is

In case of accident or serious illness notify

HOW EASY IT IS TO FORGET.

My Insurance Policy is with

The No. on the Case of my Watch is

The Number on the Works is

The Number of my Bank Book is

My Weight was

and my height..... feet..... inches

on..... 191

Size of my Hat.....

“ Gloves

“ Hosiery

“ Collar

“ Cuffs

“ Shoes

YOUR
VACATION

IF SPENT AT

Camp Buena Vista

LAKE WINNIPESAUKEE,
NEW HAMPSHIRE

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of the

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Will be an assured success



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