

HATTERS,

English and American

SILK DRESS HATS,
OPERA CRUSH HATS,
FELT and CLOTH HATS,
In Choice Shades.

LADIES',
GENTLEMEN'S,



FURRIERS.

LEATHER HAT CASES,
CANES, UMBRELLAS,
and WALKING STICKS

Variety Unsurpassed
FOR STUDENTS' WEAR

D. P. ILSLEY & Co.,

381 Washington St., Opposite Franklin, Boston.

1885. *—* FALL AND WINTER. *—* 1885.

35 STYLES OF COLLARS

For Young Men.

SIZES COMMENCING WITH THIRTEEN INCH.

Send your address for our ILLUSTRATED CATALOGUE. Fall Supplement just issued.

RICHARDSON & GERTS,

Men's Outfitters,

385 Washington Street, Boston.

STUDENTS' NOTE BOOKS,

5 cents to \$5.00.

STYLOGRAPHIC PENS, | WRITING PAPERS,

\$1.00 and upward.

15c. to \$1.00 per lb.

GENERAL STATIONERY IN PROPORTION.

BLANK BOOKS

OF EVERY DESCRIPTION.

WARD & GAY,

Paper Merchants & Stationers,

184 Devonshire Street, Boston.

HENRY H. TUTTLE & Co.

BOOTS AND SHOES

Special Prices to members of the M. I. T.

The attention of Students is called to our immense
Stock of

BUTTON, CONGRESS, AND LACE BOOTS

Prices from \$4.50 upward.

A fine line of Hand-Sewed at \$6.50.

English and French Boots in great variety

— ALSO —

GYMNASIUM AND TENNIS SHOES.

Corner Washington and Winter Street

Special Card!

I give 10% discount to members of the M. I. T., on cash orders.

Dress and School Suits, Fall and Winter Overcoats, English Trouserings, White
Silk and Marseilles Vests for Dress. Rubber Coats to order.

For Overcoats we have an excellent line of beautiful colorings.

P. S. Send address for one of our
books on dress.

S. Grant Smith,

338 Washington Street, Boston

Massachusetts Institute of Technology,

BOYLSTON STREET, BOSTON.

FRANCIS A. WALKER, President.

THIS school is devoted to the teaching of science, as applied to the various engineering professions; viz., civil, mechanical, mining, and electrical engineering, as well as to architecture, chemistry, metallurgy, physics, and natural history.

Besides the above distinctly professional courses, the Institute offers scientific courses of a less technical character, designed to give students a preparation for business callings. A four years' course in biology, chemistry, and physics has been established, as preparatory to the professional study of medicine.

Modern languages are taught, so far as is needed for the ready and accurate reading of scientific works and periodicals, and may be further pursued as a means of general training.

The constitutional and political history of England and the United States, political economy, and international law are taught, in a measure, to the students on all regular courses, and may be further pursued as optional studies.

Applicants for admission to the Institute are examined in English grammar, geography, French, arithmetic, algebra, modern history, and geometry. A fuller statement of the requirements for admission will be found in the catalogue, which will be sent without charge, on application.

A clear admission paper from any college of recognized character will be accepted as evidence of preparation, in place of an examination.

Graduates of colleges conferring degrees, who have the necessary qualifications for entering the third year class in any of the regular courses of the Institute, will be so admitted, provisionally, on the presentation of their diplomas, and will be given opportunity to make up all deficiencies in professional subjects.

The feature of instruction which has been most largely developed in the school is laboratory training, shop work, and field practice, to supplement, to illustrate, and to emphasize the instruction of the recitation and lecture room.

Surveying-instruments are provided for field work in civil and topographical engineering. Extensive shops have been fitted up for the use of both hand and machine tools, and a laboratory of steam engineering has been established as a part of the instruction in mechanical engineering. Several steam-boilers and steam-engines of various types are available for experiments and tests, as well as a large amount of special apparatus for measuring power, for gauging the flow of water, for tests of belting, etc. The laboratory of applied mechanics contains two testing-machines,—one for ascertaining transverse strength, the other for tension and compression,—besides apparatus for time-tests on timber, for tests of mortars and cements, for tests of shafting, etc. The department of mining engineering and metallurgy has the use of laboratories in which the milling and smelting of lead, copper, silver, and other ores, in economic quantities, are regularly performed by the students themselves. The classes in architecture supplement the work of the drawing and designing rooms by the examination of structures completed or in course of erection, and by practical experiment in the laboratory of applied mechanics, testing the strength of materials and working out problems in construction. The Kidder Chemical Laboratories consist of a laboratory for general chemistry (288 places); a laboratory for analytical chemistry (108 places), together with a special room for volumetric analysis (20 places) and a balance-room with 22 balances; a laboratory for organic chemistry (30 places); a laboratory for sanitary chemistry (16 places); a laboratory for industrial chemistry (16 places); two convenient lecture-rooms; and a well-supplied library and reading-room. The laboratories are thoroughly equipped for the purposes of ordinary instruction, and they also possess excellent facilities for the promotion of original research. The Rogers Laboratory of Physics, the first laboratory in which instruction was systematically given to classes by means of elementary physical measurements conducted by the students themselves, is well provided with the needful facilities for laboratory instruction in both elementary and advanced technical physics, especially in the different branches of electrical engineering.

On the successful completion of any one of the four-year courses of the Institute, the degree of "Bachelor of Science" will be conferred. The degrees of "Master of Science," "Ph.D.," and "Doctor of Science" are open to persons pursuing advanced studies and conducting original researches. Special students are allowed to enter special divisions of any of the courses, on giving evidence that they are prepared to pursue with advantage the studies selected.

The fee for tuition is \$200 a year. Besides this, \$25 or \$30 are needed for books and instruments. There are no separate laboratory fees; only payment for articles broken is required.

For information, address, JAS. P. MUNROE, Secretary.

PREPARATION FOR THE INSTITUTE OF TECHNOLOGY.



259 BOYLSTON STREET.

Wm. H. Ladd.

M. Grant Daniell.

REFERENCE

Is made to the President and Faculty of the Institute in regard to the thoroughness with which pupils are fitted at

**CHAUNCY-HALL SCHOOL,
BOSTON,**

not only for passing the entrance examinations, but also for pursuing successfully their subsequent work.

FITTING

for the Institute has long been a specialty at Chauncy Hall. Thorough preparation is made also for Business and College.

J. B. McALOON & Co.



Merchant Tailors



SPECIAL STYLES

FOR STUDENTS

First-Class Work. Low Prices.

BOWDOIN SQUARE

CHAS. L. HOVEY,

13 AVON STREET, BOSTON,

Club Tailor

To the Massachusetts and Boston Clubs,

— FOR —

BICYCLE SUITS

In Every Style,

Made from the Best English Serges and Cassimeres.

A full assortment of Foreign and Domestic Woolens always on hand for gentlemen's fine wear, at moderate prices.

CAFÉ WAQUOIT

249 COLUMBUS AVENUE.

A la Carte and Table d'Hôte.

21 Meal Ticket, \$5.00.

14 Meal Ticket, \$3.00.

Breakfast from 6.30 until 10 A.M. Lunch from 12 M. to 4 P.M.
Dinner and Supper from 5 to 8 P.M.

CUISINE IN CHARGE OF A FRENCH COOK.

C. H. TROTT, - - - Proprietor.

ART SCHOOL,

NEW STUDIO BUILDING, 145 DARTMOUTH STREET
INSTRUCTORS.

DENNIS MILLER BUNKER.

ABBOTT P. GRAHAM

MERCY A. BAILEY.

FREDERICK M. TURNBULL, M.I.

CLASSES NOW OPEN.

Drawing and Painting, Portraiture, separate Life Classes for Ladies and Gentlemen, day and evening, Artistic Anatomy, Still Life, Flowers, Water-Colors, Composition, Perspective.

Students may commence at any time. Circulars at Art Studio. Apply or address as above.

FRANK M. COWLES, Manager

Special arrangements made on Saturdays for those unable to attend on other days.

TOOL DEPOT.

CALL AND EXAMINE THE LARGEST ASSORTMENT

— OF —

MACHINISTS' TOOLS

AND SUPPLIES

To be found in New England

A. J. WILKINSON & CO.

184 and 188 Washington Street, Boston,

The Tech.

VOL. V.

BOSTON, NOV. 18, 1885.

NO. 3.

THE TECH.

Published on alternate Wednesdays, during the school year, by the students of the Massachusetts Institute of Technology.

BOARD OF DIRECTORS, 1885-86.

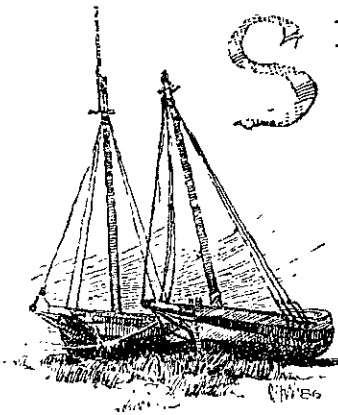
JAS. E. SIMPSON, '86, <i>Pres.</i>	WM. H. CHADBOURN, Jr., '86.
H. C. SPAULDING, '87, <i>Sec.</i>	EDWIN O. JORDAN, '88.
T. W. SPRAGUE, '87, <i>Treas.</i>	_____, '89.

EDITORS.

W. R. INGALLS, '86, <i>Editor-in-Chief.</i>	
ALBERT E. LEACH, '86.	F. M. WAKEFIELD, '87.
CHAS. H. WOODBURY, '86.	_____, '87.
WILLIAM M. TAYLOR, '86.	FRANCIS L. V. HOPPIN, '88.
BENJ. C. LANE, '87.	_____, '89.
THEODORE STEBBINS, '86, <i>Adv. Agt.</i>	

Subscription, \$2.00 per year, in advance. Single copies, 15 cts. each.

FRANK WOOD, PRINTER, 352 WASHINGTON STREET, BOSTON.



SITUATED as it is in the midst of the city, the Institute has no campus, with the exception of the small extent of grass between the buildings; as for grounds for field and athletic sports, it has none at all. It is needless to discuss the necessity for these, for no one believes that it is well to work and study all the time, with no recreation, and every one acknowledges that the most beneficial form of recreation is athletic sports. Hence, is it not apparent that students at the Institute should be provided with grounds for this purpose?

There is in the immediate neighborhood of our buildings a place which is used as athletic-grounds, and which our athletic organizations have been in the habit of renting. They are well adapted for our purposes, and are most conveniently located for all students who would use them. There is plenty of room there, besides the foot-ball and base-ball field, for a number of tennis-courts. We have reason to believe that,

at the present time, these grounds could be leased for a very small amount, and, in view of this fact, we think it to be no less than the duty of the Corporation to secure them for us. It certainly does not seem right that the students themselves should be compelled to do so, as they are now. Relieved of this expense, the money could be spent in improving the grounds, providing better conveniences in the dressing-rooms, better accommodations for watching games, etc.

We think that the proper thing to do would be to address a petition to the Corporation in regard to this subject. Such a petition, however, must not come from the Athletic Club, nor the Foot-Ball Association, nor from any or all of the athletic organizations, but from the students of the Institute as a whole. Such a petition, we think, would receive a careful consideration. Who will start it?

JOSEPH COOK, in a recent address, said that he congratulated the students of Boston for having chosen the "best place in America in which to be educated. Were he to study medicine, or law, science, politics, art, literature, oratory, theology, — in fact, whatever might be his chosen field of labor, he ought to come to Boston to prepare for it." This, like everything from that enthusiastic speaker, carries with it a great deal of originality and truth. We think that, while there might be exceptions to so broad a statement on the part of conservative people, yet we feel so in sympathy with the spirit which prompts the remark, that we would accept it almost without comment. We indeed feel sure that there is no other of our American cities which affords to the student incentives in so broad a field of study. We are a firm believer in surroundings, as enhancing or detracting from the quality of the work done therein.

We can but admire the unflinching, almost stoical, self-reliance of Emerson in his independence of all externals. "Man must be so much, that he must make all circumstances indifferent," he says. But he wrote for himself when he says, "Man is a cause, a country, an age." And he forgot that all men are not Emersons. We must have a congenial atmosphere; and how much more can be accomplished in a *positive* than in a *negative* atmosphere!

OCCASIONALLY some enthusiastic Freshman whose curiosity has been aroused, during the hours of military drill, by the sight of the different pieces of gymnastic apparatus about the gymnasium, seeks out that remote solitude, and variously employs the pulley-weights and other appurtenances to the place. He may return for a second time, but the probabilities are that, unfavorably impressed by the scarcity of the apparatus and the general inconveniences of the place, he will not. If he has a natural fondness for athletic sports and exercise, he will join some other gymnasium; if not, as is the case with three fourths of them, he will never again enter our own, except when compelled to for military drill.

The good derived from gymnastic exercise, and even the necessity for it, has been plainly recognized by the faculties of many colleges by making it compulsory. Assuming that our gymnasium — or drill-shed, as it is variously called — was intended, in a certain measure, for a gymnasium, it seems to us strange that better facilities for exercise are not afforded there. The greatest need, however, is for a gymnasium instructor, who could teach the students in regard to the proper use of the apparatus, and point out their deficiencies and their needs. Every one desiring it should be examined, and provided with a formal report, showing, on the marking system, as at Amherst, his physical status in comparison with that of the average. Then, with his own deficiencies clearly presented, and a counsellor available to show him the proper methods to attain the right results, systematic and intelligent gymnastic

exercise would become a regular custom with a far greater proportion of students than at the present time, and an improved bodily tone would soon manifest itself in the improved quality of technical work.

IT is a bad practice to introduce — that of changing old customs to suit the whim of the moment — unless the innovation be, beyond all doubt, for the better. As the Institute is a comparatively modern institution, it has but few old customs, and hence what there are should be the more carefully preserved. The new Institute cheer is doubtless an excellent one for certain purposes, and, for those purposes, a great improvement upon the old one; but it must not be allowed to entirely replace the latter. The new cheer has already proved itself very useful at the foot-ball games, on account of its shortness, and is very encouraging to the team. If the latter is losing, it has a defiant sound, while if winning, it rings forth triumphantly. The old cheer is long, and has a very unsatisfactory ending, which faults cannot be said of the new one. Let us keep them both, and, if our foot-ball team continues to gain victories, we shall have plenty of chances to use them.

THE disgusting and asinine actions of the fresher portion of the class of '89, who attended the opening of the new Hollis Street Theatre in a body, has been called to our notice through the columns of the daily papers.

An exhibition such as they gave is not only silly and babyish in itself, but reflects discredit upon the Institute, and deserves our most positive condemnation. If the Freshmen thought they were doing something funny, they were very much mistaken, if popular opinion counts for anything, for expressions of disgust from the audience were numerous.

It is hoped that the sensible, solid members of the class of '89 will do their utmost to put a stop to all such outbreaks in future, thereby saving their class and the upper classes from disgrace.

A Very Honest Knavery.

RIGHT merrily sang the maiden Bianca as she sat by her open window, drawing the brown thread repeatedly backward and forward, and readjusting her distaff from time to time. The song floated out on the soft, light wind of the fair September morning, out over the winding Arno; and even yonder in the convent garden her sweet voice must have been audible, for now and then some nuns who were walking there under the trees, among the dewy flowers, looked across the river to the window where they knew their little Bianca was sitting at her spinning, and smiles of pleasure crossed their calm faces.

Indeed, the little maiden's singing was very pleasant to hear, and more than one of the fruiters who were slowly making their way down stream to the market, their boats laboring under the weight of the harvest, glanced up from the muddy water to see whence came the clear, fresh tones of the song:—

“ Love is o'er,
Flown too fast;
Lengthened past,
Years three score!”

“ By Saint Puncinello! a blithe song from a fair maid of sixteen,” cried some one in a wide, clumsy boat, in a tone that drew Bianca's attention to the speaker. She paused for a moment in her spinning-song, and, glancing out of her high window, saw a stout young fellow with glorious brown locks and big, speaking eyes; he was clad in a yellow-tanned leathern jacket and rather worn gray trunk-hose, while a dash of scarlet kerchief about his neck gave him a very jaunty appearance; still, Bianca could see at once that he was only a peasant from the hills, though a coxcomb. The fellow was just in the act of doffing his hat to the songstress as she looked down upon him, and Bianca saw no immediate way of recognizing his courtesy but by plucking a rose from the bush that grew in her window and tossing it to the gallant.

Then she felt a little ashamed, for she had not thrown it far enough, and it had fallen into the water, putting the brown-haired young man to a

great deal of trouble to get it out with his oar; and even then he failed to gain possession of the rose, for a very plain-appearing fellow who sat at the stern of the boat reached the token-flower, and would not give it up. A moment later, after this little episode of anxiety on Bianca's part lest the rose should not be rescued, and bold, even heroic exertion on the part of both the young men, in order that the flower should be preserved, the boat disappeared under a bridge, both men pressing their hands devotedly upon their hearts.

Well! Bianca's song was finished for that day. She sat as quiet as a mouse at her window, but looked out sometimes, pretty often, indeed, at the river that still wound on. She could, however, think of nothing but the young peasant from the hills, with the glorious brown locks and speaking eyes.

So the day passed; and the following morning, fresher and more maidenly, if possible, than when we first became acquainted with her, Bianca was sitting at her window again, singing as blithely as before, but a different song:—

“ Oh! so soon?”
Asked a flower of the sun;
I've not yet half begun
What I wished to have done
And 'tis noon!”

When she looked forth from her window there was a boat below and two men in it. She did not stay to learn who they were,— her breast heaved so violently that she turned away without even a smile; and when, half an hour afterward she returned to her distaff, there was no longer any boat there.

But several days passed, and each morning Bianca, growing bolder, saw and smiled at the young man from the hills. Every morning his hair seemed to shine more gloriously in the sunlight, and each morning his eyes spoke fuller, sweeter volumes than before. Sometimes Bianca threw a flower to her lover,— for such she now more than half recognized him to be,— but oftener he got only an unsubstantial kiss from the tips of her fingers; and, to tell the truth, he still oftener got nothing on which to feed his passion.

Meanwhile, Bianca had eyes for but one of

the occupants of the boat; the growing paleness of the other she did not notice, nor did it cause her uneasiness when he occasionally absented himself from the market-boat.

One night, about a week after she had first noticed the young men in the boat, she was awakened from the pleasantest of dreams by a divinely powerful voice from the river, singing, her heart immediately informed her, for her especial benefit. Her soul sprang forth to meet the soul that was voluptuously borne upward upon those deep, strong tones:—

“Like moonlight 'tis to me,
When, looking up, I see
Thy window, dear;
For, like the moon at night,
It shines with borrowed light,—
The sun is near!

“Oh! let the morning break,—
Then for the warm sun's sake
The flowers will bloom!
My heart hath wishes none
But that its sleeping sun
The dark illumine!”

All this sounded very pretty in the Italian, in the Florentine dialect, and in the tones of one whom she fully believed to be her own lover. She blushed with modest pleasure in the darkness, but could not gather courage to rise and go to her window. The serenader continued to strike chords upon the guitar with which he accompanied his song, as if about to sing again; but the cessation of the music, and the sound of dripping oars, soon after told the little maiden that, whoever this midnight songster might be, he had finally given over his solicitations for that night. So she returned to dreams more intimately sweetened by thoughts of him she loved.

It is not strange that, as night after night passed, and each night the unseen singer offered up more melodious serenades for the delectation of his sweetheart, that, little by little, the fair Florentine began to look forward to the time when she should again hear that sympathetic voice. The moment when the man's rich voice rose, trembling as it were, fresh from the water, seemed to Bianca the moment of the day most

full of unutterable joy and pathos. In the morning she saw the handsome face of her lover, the health glowing in his cheeks, his eyes forever vowing rapturous vows, and openly admiring her loveliness; but at night she heard his voice, speaking from his inmost soul, and offering upon her shrine, as to a goddess, the most irresistible incense. That was the most grateful tribute to her,—his being moved to speak to her so gently, yearningly, but, withal, so strongly and so manfully. She sometimes said to herself, “I would rather live in blindness, and hear his voice, and be with the soul that prompts the voice, than deaf, and see his form, and be without the discourse of his soul.” And sometimes in the morning, looking at her lover, the handsome coxcomb from the hills, she felt that something was wanted to complete his charms,—she failed to harmonize completely his face and his voice,—so that it was a relief to withdraw her eyes from his loving face, and rest it upon the homely face and self-containing eyes beside him; and it pleased her vanity a little, perhaps, that even there she saw admiration, and, it may be, even love for her. It never occurred to her, however, that this very plain, unpretentious person could have a voice, and she had no reason to believe that her lover had none,—that is, no musical voice, one that would come very conveniently into use if a serenade were to be given. This I say with the intention that the reader shall draw his own inferences.

It was not long that the nightly serenades had been going on, when Bianca had progressed so far in the art of being made love to, that she would sometimes trip down to the garden gate that opened upon the river, and, without, of course, unlocking it, conversed in the darkness with the serenader. He always wore a very wide-brimmed felt hat, which, even in the bright moonlight, wholly concealed his face; but she could hear his voice, and even allow her hand to be pressed, through the little iron grating that filled the upper part of the gate; that was enough for her and him. No, not for him, for one night— it was a very dark night— he came close up to the grating and whispered

very earnestly for a few moments. He wished her to fly with him on the next night, and he would have a priest, and then, ever after, their life would be happy. What comfortable reasoning! She agreed; there was just enough spice of romance in running away, to fill her bosom with delightfully conflicting emotions.

The next morning Bianca had a fine great bunch of white lilies for her handsome lover, when he should come along below in his boat. Of course he was duly grateful for the unusual present, and bestowed his sweetest smile upon her in return; and if his companion ground his teeth and turned away to hide his jealousy, poor Bianca could not help it, even if she did feel sorry for him.

The night came at last; and as Bianca stepped into her lover's boat, supported by his arm, she heaved a little sigh at what she was doing, that made her lover feel it necessary to comfort her; and he did so in singing to her the tenderest ditty in his repertory.

They found the priest prepared to make them one, in the darksome old church, illuminated by the candles of a single sconce. Modesty and maidenly reserve prevented little Bianca from looking into her lover's face until the ceremony was completed, and she must respond to the nuptial kiss. Alas! as she was about to do so, she fell fainting into her husband's arms, crying bitterly, but yet half joyfully, "A knavery!"

Her husband took her agitation very calmly, as if he had been prepared for it, merely remarking to the priest, "A knavery, yes; but a very honest one!" Then the two chuckled a little, as at a good joke; and soon after, the lady recovering from her swoon, the happy pair left the church, while the husband soothed his wife's agitation in the selfsame tones in which he had addressed her so many evenings at the garden gate.

The handsome lover received neither kiss, nor smile, nor flower, from the maiden at the window next morning; and his plain companion was hard-hearted enough to smile at his upward glance of expectation.

A shocking affair — the electric battery.

Louis Agassiz.

LOUIS AGASSIZ: His Life and Correspondence. Edited by Elizabeth Cary Agassiz. 2 vols. Houghton, Mifflin & Co. 1885.

This is a book which every student of science, and especially every student of natural history, should read. It is a beautifully simple account, such as befitted a man of such simple and natural character, of a very great naturalist, and a very great teacher; and it is, besides, a very inspiring story of success in a life of single-hearted devotion to high intellectual pursuits.

Agassiz was the son of the poor Swiss pastor of the little village of Motier, on the lake of Morat, in the canton of Fribourg. He was a born naturalist. "When a very little fellow he had, besides his collection of fishes, all sorts of pets,—birds, field-mice, hares, rabbits, guinea-pigs, etc., whose families he reared with the greatest care. Guided by his knowledge of the haunts and habits of fishes, he and his brother Auguste became the most adroit of young fishermen, using processes all their own, and quite independent of hook and line." It is common enough for boys to have pets, and to go a-fishing, but in the brain of this extraordinary boy the study of his pets was already laying the foundation for his career. "His pet animals suggested questions, to answer which was the task of his life; and his intimate study of the fresh-water fishes of Europe, later the subject of one of his important works, began with his first collection from the lake of Morat."

For the first ten years of his life he has no teachers save his thoughtful and judicious father and mother. Then he goes to a school at Bienne; from there to a college at Lausanne; then to a medical school at Zurich. Everywhere he distinguishes himself for his thirst for natural knowledge. His note-books "form a great pile of manuscript, . . . some of them containing from four to six hundred closely-covered pages. The subjects are physiological, pathological, and anatomical, with more or less of general natural history;" and a list that has been preserved of his wants as a schoolboy in the way of books, would make an ordinary school-boy stare.

From Zurich the help of friends and relatives enabled him to go to the University of Heidelberg, everywhere absorbing all the knowledge of all the instructors in natural science, but by no means confining his attention to these; listening, for instance, with intense interest to the philosophical lectures of Schelling. He is poor, and must earn his living, so he chooses the medical profession; but the love of science is too strong for him, and, braving poverty, he devotes himself to scientific research, and, in pursuit of that, finds his way to Paris. It is evidence of his genius that, reaching Paris a poor, unknown young student, his extraordinary abilities, and the remarkable character of the work he had already done, were at once recognized by the two greatest of European savants, Cuvier and Alexander Humboldt, and henceforth his way was clear. Appointed to a small professorship at Neuchâtel, his remarkable ability as a teacher appears. And there probably never was a greater teacher, whether he was addressing an assembly of learned scholars, or gathering about him a group of school-children. The charm of his exposition could draw liberal appropriations for his favorite object from the close-fisted farmers of a Massachusetts Legislature, when it would have been a hopeless task for any other man to attempt to extract a cent.

We have no space to follow Agassiz' career, or to describe the debt America owes him. The great Museum at Cambridge, founded by him, and since enlarged by the munificence of a son who has so worthily followed in the steps of his father, is their monument. Agassiz' amazing industry is as remarkable as his genius, and, indeed, genius without industry avails but little. His adopted country owes him even more as an educator than as a naturalist, for it was his example and instruction that gave such an impulse to the study of natural science, and set us upon right methods. His observations upon his own education and mental development, pp. 144-158 of Vol. I, are among the most noteworthy pages in the book.

Students at the Institute should take a leisure afternoon — if they ever have such a thing —

to visit the great Cambridge Museum, and they can hardly fail to be interested in this biography of a great scientific teacher.

W. P. A.

The American Society of Mechanical Engineers.

THE twelfth meeting of the American Society of Mechanical Engineers occurred in Boston, November 11th, 12th, and 13th, making the Institute of Technology its headquarters. The meetings were held in Room 14, New Building, and from their nature were interesting, especially to those who take Course II, as well as to the Electricals, and others. The students were cordially invited by the society to attend its meetings, and many availed themselves of the opportunity, the lectures and recitations of the Senior Mechanicals being suspended in order to enable them to do so.

Wednesday morning's session was devoted mainly to the reading of papers, and discussing the same. In the afternoon, the members took a trip down the harbor to Moon Island, to inspect the drainage-works, and at six o'clock were tendered a complimentary dinner, at the Parker House, by the city of Boston. While the members went on the excursion in the afternoon, the ladies were invited to lunch by Mrs. General Walker.

In the evening more papers were read, and an interesting discussion followed, on the subject of the rating of steam-boilers by horse-power. Half of Thursday morning's session was devoted to the consideration of interesting engineering topics, which was followed by the reading of more papers by various members, the same being continued in the afternoon.

The following papers were presented "The Frictional Resistance of Shafting," by S. Webber; "The Microscope in the Workshop," by Prof. W. A. Rogers; "The Unexpected which often Happens," by J. E. Sweet; "A New Calorimeter," by G. H. Barrus; "The Rating of Boilers by Horse-Power," by Profs. Trowbridge and Richards; "Improvements in Ferry-Boats," by William Cowles; "Twist Drills," by William

Thorpe; "Rapid Transit and Elevated Railroads," by F. E. Galloupe; "The Basic Bessemer Process," by T. Egleston; "The Crystallization of Iron," by William Hill; "Standards for Pipe Threads," by G. M. Bond; "Transmission of Power by Gearing," by W. Lewis; "The Course in Mechanical Engineering at the M. I. T.," by Prof. Lanza; "Steam-Engine Tests in the Laboratory of the M. I. T.," by Prof. Peabody; "Results of Certain Experiments on the Transmission of Power by Belting," by Prof. Lanza; "Experiments on the Strength of Shafting Subjected to Twisting and Bending Combined," by Prof. Lanza; "Notes on the Comparative Values of Metal Surfaces for Warming Air," by W. J. Baldwin.

An hour was spent on Thursday afternoon in the inspection of the Mechanical Engineering and Applied Mechanics' Laboratories of the Institute, at a time while a class was engaged in carrying on the regular engine, pump, and belting tests. On Thursday evening, a reception was given the society by the Art Club, and on Friday the members made an excursion to Lawrence.

Society of '87.

THE second regular meeting of the Society of '87 took place on the evening of the 6th inst. at Parker's. About thirty-five members attended, and the occasion was one of the most successful of the year. At the preliminary business meeting, congratulatory resolutions were ordered to be sent to Messrs. Kilburn and Haskell, members of the Society who have both been recently married, and Miss Helen Cooley, '87, was elected an honorary member of the Society, and voted a Society pin. The Executive Committee were instructed, by vote, to provide certificates of membership for members of the Society. It was voted to have occasional debates at meetings of the Society, and the first one was appointed for the next meeting. The Society was then entertained, after a brief refreshment, by humorous readings by Mr. Todd, a song by Mr. Shepard, an amusing paper, on his first impressions of America, by Mr.

Mirrlees, of Glasgow, Scotland, and some very skillful imitations of the sound of a cornet, trombone, banjo, and jig, and remarkable ventriloquistic feats by Mr. D. H. Prescott, whose original dialogue, in eight voices, was the hit of the evening. After giving the new cheer, invented by Mr. Kirkham, once or twice, by way of practice, in view of the foot-ball game next day, the meeting adjourned.

Foot-Ball.

TECHS VS. NEWTON.

Newtonville, Nov. 4.—The Techs were without the services of two of their men, their places being taken by substitutes. During the first of the game the ball was near their goal, but good rushing forced it to the other end of the field, where a touch-down was made, from which a goal was kicked, and Newton was compelled to make a safety. Two more touch-downs were made by the Techs, in the second half, and a goal was kicked from one of them. At the very last moment, Fowle, of the Newtons, made a very pretty run, and secured a touch-down. Time was called before a try for goal could be made. Score: Techs, 18; Newton, 4. Referee, Mr. C. H. Scudder, of Newton.

TECHS VS. WILLIAMS.

Union Grounds, Nov. 7.—The grounds were wet and the weather threatening; five minutes before the game closed it poured, but a large crowd was present. Great interest was manifested in the game, since it was one of the decisive games in the intercollegiate series. If Williams won, they won the championship; if they lost, we still had a chance.

Play was called at 2.45 o'clock, Williams having the kick-off. For a few minutes the ball was near our goal, but good kicking by our half-backs, and good work by our rush-line, carried it into Williams' end of the field, and there it stayed during the remainder of the game. Neither side scored in this inning, though the Techs would have done so once, but for an agreement that if the ball should touch the grand-stand, it should simply be considered as

kicked over. Sturges made a fair catch, and tried for a goal, but narrowly missed it, the distance being too great. Bigelow was disqualified for striking a Tech man, and Wentworth took his place.

In the second inning, the ball was at once forced to Williams' goal. For some time, however, neither side scored, though Holden barely missed kicking a goal from the field. Finally, however, Peters got the ball, and by a great run carried it close to the goal, when, being tackled by several Williams men, he passed it to Cooley, who made a touch-down. Holden failed in the try for a goal. Holden, by a long run, made the next touch-down. He punted the ball out, when, by shrewd playing, it was muffed, and then passed to Twombly, who made another touch-down; a goal was kicked from this. After the kick-off, one of the Williams half-backs secured the ball by a fair catch and kicked it over the fence, thus using up the remainder of the time. Peters, Vorce, Twombly, Sturges, and Holden did the best work for the Techs. The Williams men played with spirit, but were outplayed in every point, and would have been much worse beaten but for the fine catching of their half-backs. Score: Techs, 14; Williams, 0. Referee, Finney, of Princeton.

TECHS VS. TUFTS.

Union Grounds, Wednesday, Nov. 11.—The game (championship) was too one-sided to be interesting, except as to how large the Tech's score would be. It was 110 when time was called, which is the largest single score made by any team this season. Wadsworth played half-back instead of Sturges, who was hurt in the Williams game; the former, however, was injured in the middle of the first inning, and Sturges played throughout the remainder of the game.

The Techs had the kick-off. They immediately rushed the ball to Tufts' goal, and Fletcher made a touch-down. He punted the ball out to Vorce, who ran in and made a second touch-down. Holden made another soon after. The ball was now kicked into the middle of the field,

but Wadsworth got it, and, by a good run and clever dodging, made a touch-down, from which a goal was kicked. The Techs now lost the ball, and by their bad fumbling it was forced close to their goal. The ball was kicked over the line, and Holden, getting it, ran the whole length of the field and touched it down directly between the goal-posts. The ball was immediately punted out to Vorce and then to Herrick, who both made touch-downs, which were not, however, allowed by the referee, on the ground that he had called time. The first touch-down was allowed, and Holden kicked a goal. After the kick-off, Peters ran with the ball and touched it down just a few seconds too late, time having been called. Score—24 to 0.

In the second inning the ball was quickly rushed to Tufts' goal, and, during the remainder of the game, was kept mostly within their ten-yard line. The Techs made touch-down after touch-down in quick succession, not trying for goals. The Tufts' men played with spirit to the end, but were unable to gain anything against their opponents. The game was one of the roughest of the season, Ames being badly hurt in the second inning, and Galletly and Ladd being disqualified. Score—Techs, 110, Tufts, 0. Referee, Filmore, Harvard.

TECHS VS. AMHERST.

Union Grounds, Saturday, Nov. 14.—This was the last of the championship games in Boston. The weather was very favorable. The game was not very exciting—the Amherst being fatigued from the contest with Tufts, of the previous day, while the Techs were without the services of some of their best men. Sturges was still unable to play, on account of the injury received in the Williams game, his place being taken by Kirkham. Holden played in the first inning only; in the second, Fletcher took his place, and Taintor the former's in the rush-line. Hadley had his leg wrenched soon after, was obliged to retire, and Fletcher returned to the rush-line, Devens playing half-back during the remainder of the game.

The Techs had the kick-off, and at once rushed

the ball to Amherst's goal, and Fletcher made a touch-down. Holden failed to kick a goal. Twombly made another soon after, and then Holden made a third, from which a goal was successfully kicked. The Techs had been fumbling badly in the first of the inning, but now began to play in better form, and Fletcher and Twombly made two more touchdowns in quick succession. Holden tried for a goal from the field, and barely missed. Fletcher made the next touch-down, and kicked a goal.

In the second inning the Techs were much handicapped by the loss of both half-backs. The ball was now at one end of the field and now at the other. Herrick made a good rush and carried it close to Amherst's goal. Fletcher made a touchdown. No goal. Ladd made several good rushes but was well tackled by the Amherst men. Nourse, the Amherst captain, was several times hurt, and his pluck in continuing to play was loudly applauded. Score: Techs, 32; Amherst, 0. Referee, Brooks, of Harvard.

The standing in the Northern intercollegiate series is as follows: M. I. T., won 4, lost 1; Williams, won 4, lost 1; Tufts, won 2, lost 4; Amherst, won 0, lost 4. The Techs have made 178 points, in all, and 23 have been made against them. Williams has made 153, and lost 20. Tufts has completed its series. M. I. T. and Williams have each a game to play with Amherst. If both win they will be tied for first place, and an extra game will be necessary.

Wadsworth will be unable to play again this season.

The team has made great improvement in passing the ball. They tackle very strongly and kick excellently. Their weakest point is their excessive fumbling.

The effect of hard practice and honest training on the part of the foot-ball team is shown in the great improvement in recent games over those of the first of the season. The game with Yale was of great service to the men, and the formation of a freshman team has given them plenty of opponents to practice against.

Noticeable Articles.

The paper in the *Edinburgh Review* for October on Coleridge is not particularly good. It is singular that no good biography has yet been written of a man of whom Wordsworth said that "many men of his age had done wonderful things, but that Coleridge was the only wonderful *man* he had ever known," and of whom Mill said that "no Englishman, Bentham excepted, had left his impress so deeply in the opinions and mental tendencies of those among us who attempt to enlighten practice by philosophical meditations." Yet Coleridge, such were his terrible weaknesses of character, has left nothing but fragments behind him to show what great work he was capable of, if he had not been a slave to opium-eating. Mr. Traill's little book in "English Men of Letters," is thus far the best account of him.

Students who are interested in so abstract a subject as the Natural History of Religion, will read with interest the paper on the religion of the Persians, entitled, "The Faith of Iran;" while readers interested in Modern Political History will turn to the paper on the second series of the "Greville Journals," — books in which all the famous men of Queen Victoria's reign figure, and which contain not a little social and political gossip, set down by one who was a good deal behind the scenes.

Students of Literature will be sure to turn in the *Quarterly* to the able and interesting paper on the predecessors of Shakespeare, a review of a recent book on the subject by that scholarly and accomplished writer, Mr. John Addington Symonds, author of the great work on the "Renaissance in Italy," and of that delightful book, "Studies of the Greek Poets." The present work, however, if we can trust the reviewers, seems hardly up to its author's level. Students of English Dramatic Literature must fall back on Prof. Ward's elaborate work. The paper itself is very good, and in the course of it, Mr. Swinburne, as a critic, comes in for a well-deserved castigation.

And students who are not frightened at the dry parts of History (which are usually the most important parts) will brace up and read a paper on "Taxes and Taxation," a review of two books which certainly cannot be recommended as light reading. — Dowell's "History of Taxation and Taxes in England, from the earliest times to the present day," *four* volumes, and Hale's "History of the Customs Revenue of

England." But we must remember that the cause of our Revolution was a three-penny tax on tea.

The *Westminster Review* contains a paper on Industrial Co-operation, for the students of Political Economy: another on the very different subject of the dramas of Sophocles, and another on the growth of Colonial England, Australia, and New Zealand. The notices of contemporary literature which are to be found at the end of each number of the *Westminster* contain good notices of a great many of the new books of the previous three months. W. P. A.

The *Century* begins its thirty-first volume with the November number, in whose pages rather more room than usual has been given to fiction. Besides three short stories, there are parts of two serials, one of which, a mining story by Mrs. Mary Hallock Foote, entitled "John Bodewin's Testimony," has its opening chapters in the present number. Students of archæology will be interested in Edward L. Wilson's narrative of his daring journey to the decayed city of Petra, the article being illustrated from photographs taken by the author. A goodly space is devoted as usual to the war papers, among which the most prominent is an article by Gen. Grant, describing the battle of Chattanooga.

Outing for November is particularly interesting, both to the lovers of amateur sports and to general readers. Leading articles in this number are: "English Lawn-Tennis Players" by J. J. Ross; two delightful yachting articles, one of which, "A Winter Cruise," by J. T. Wheelwright, describes some yachting experiences in the Gulf of Mexico, and the other, entitled, "Cat-Boat Cruising on Long Island Sound," by Alfred Varian, being no less interesting; W. T. Gilder's "To the Pole on Sledges," illustrated by diagrams; and many others in the domain of poetry and fiction.

STOLEN. — Fifteen dollars reward will be paid to the person who will return the watch stolen from the Gymnasium, on Thursday P. M., or who will give evidence to convict the thief. Description: Gold, stem-winding, Waltham make; monogram P. R. F. on outside case; engraved also on inside case. Address,

P. R. F., Tech Office.

The Freshman Foot-Ball Association has voted to bear one fifth the expense of hiring the Union Grounds for practice afternoons.

TECHNICAL.

The railroad bridge recently completed over the St. John river, at St. John, N. B., has many points of interest to students of engineering. It is of the cantilever type, and is constructed entirely of steel. The span over the river is 477 feet. It differs from other bridges of this type in having the load supported by the lower chord, and was much more difficult to construct on this account. The bridge was tested by bringing four locomotives together at the middle, the locomotives being attached to two trains of loaded cars, which entirely covered the central span. The maximum deflection, under this load, was four inches. The time required for the erection of the iron-work was just three months, and the total cost of the bridge about \$550,000.

It is proposed to erect in Paris an iron tower more than 1,000 feet high, from the top of which an electric light, of immense power, will illuminate the city.

The casting of wrought-iron is the latest metallurgical phenomenon. Bessemer says this is a more valuable process even than his own. — *Manufacturers' Gazette*.

The Pennsylvania Railroad Company has been trying the experiment of lighting its cars by electricity. Swan incandescent lamps were used, and the electricity derived from Brush storage batteries of 45 volts electro-motive force, when charged. The batteries were recharged by means of a 16-light Brush machine, whenever the electro-motive force fell to 39. It is claimed that the cost of lighting by this system compares favorably with that of lighting by compressed gas. During a heavy storm, 48 cells of these batteries did the work on a telegraph line which 500 gravity cells failed to accomplish. — *Mechanical News*.

According to the *Technische Chemie*, a strong and durable artificial porphyry may be obtained from furnace slag under proper management. The most successful plan is to dig furrows in the slag-pit having the shape of a truncated

cone, and of such width as to receive the entire amount of slag produced in one or more furnaces at any one drawing off. The melted slag is emptied into this by means of suitable channels, and the cavity may be divided into partitions, so as to cast the mass either in one continuous block, or in a number of blocks, of any given shape. Care is taken to have the slag run under the thickened glassy covering which forms at the beginning of the operation, the advantage of such a coating being the retention of the heat; and it is even sometimes necessary to protect the mass against too rapid cooling by a covering of ashes, as the cooling should occupy several days, varying with the amount of the slag. The result of the operation is a dense, homogeneous block or blocks of the character of natural porphyry, and capable of withstanding a great pressure.

We are in receipt of a sample of sponge silk, which has been submitted for examination. This product is manufactured to fill a variety of useful domestic purposes. It is made of those portions of silk the fibers of which are not long enough for use in handkerchiefs and dress fabrics. These combed fibers are spun into thread, and the thread into the manufactured product. The fibers of the piece examined show the characteristic microscopical appearance of silk fibers. They can be recommended for the uses for which they are advertised.

Students receiving instruction in the technical schools in France, are henceforth to be required to take a course of hygiene. It is pointed out, in the instructions accompanying the new order, that an employer of labor, or a superintendent of any grade, ought to be capable of making his men aware of the dangers to which they are exposed, and of rendering them prompt and efficient service in case of accidents.

List of Publications, M. I. T.

LANZA, G. (Prof.). Experiments on Belting. Abstract. *Proc. Amer. Assoc.*, XXXIII., 265.

MINOT, CHAS. SEDGWICK ('72). Researches on Growth and Death. Abstract. *Proc. Amer. Assoc.*, XXXIII., 517.

——— Biological Problems. Abstract. *Id.*, XXXIII., 519.

——— *Vesiculae Seminales* of the Guinea-Pig. Abstract. *Id.*, XXXIII., 520.

——— On the Skin of Insects. Abstract. *Id.*, XXXIII., 521.

PEABODY, C. H. ('77). Steam Engine Tests. Abstract. *Proc. Amer. Assoc.*, XXXIII., 267.

PICKERING, W. H. ('79). Sensitiveness of Photographic Dry Plates. Abstract. *Proc. Amer. Assoc.*, XXXIII., 110.

——— Photography of the infra-red Region of the Solar Spectrum. *Proc. Amer. Acad.*, XX. (1885), 473-477. Abstract in *Proc. Amer. Assoc.*, XXXIII., 111.

——— An Attempt to Photograph the Corona. *Science*, VI. (1885), 362.

PRESCOTT, C. O. ('84). See *L. M. Norton*.

PIKE, W. A. ('71). Some Tests of the Strength of Materials. *Journ. Assoc. Eng. Societies*, IV. (1885), 363-367.

RICHARDS, ELLEN H. ('73). Note on the Determination of Carbon Monoxide. *Am. Chem. Journ.*, VII. (1885), 143.

——— Science in Common Schools. *Science*, VI. (1885), 289.

VOSE, G. L. (Prof.). A Sketch of the Life and Works of Loammi Baldwin, Civil Engineer. Pph., 8vo, pp. 28. Boston, 1885.

WHITE, A. C. ('82). Comparison of Alcohol Thermometers Baudin 8208 and 8209 with the Air Thermometer at low Temperatures. *Proc. Amer. Acad.*, XX. (1885), 45-49.

ARTHUR WINSLOW ('81). Color and other Associations. Note. *Science*, VI. (1885), 243.

WOODBIDGE, S. H. (Instr.) Some Practical Results in Heating and Ventilation as observed at the Mass. Institute of Technology. *The Sanitary Engineer*, XII. (1885), 310, 329. (Sept. 17th and 24th.)

WEAD, C. K. (Certif. '72). On the Intensity of Sound. Abstract. *Proc. Amer. Assoc.*, XXXIII., 133.

A barbarous custom — shaving.

A big gun — Canon Farrar.— *Yale Record*.



N.: Fred Merrill, Ph.D., '70, Professor of Chemistry and Physics, University of Vermont, Burlington, Vt.

Fred. H. Lane, '79, with Standard Oil Company, Cleveland, O.

David S. Bissell, '81, Secretary New York & Westmoreland Gas, Coal, and Coke Co., 17 Seventh Ave., Pittsburgh, Pa.

Edward R. Warren, '81, U. S. Deputy Mineral Surveyor of Cornwall & Warren, Surveyors and Assayers, Crested Butte, Gunnison Co., Colorado.

Charles M. Wilkes, '81, on Construction of Sewers, Boston. Engaged on Surveys, Massachusetts Drainage Commission, 5 Bulfinch Place, Boston, Mass.

Hugh MacRae, '85, investigating the mineral resources in Western North Carolina.

Edward Shove, '86, with Granite Mills, Fall River, Mass.

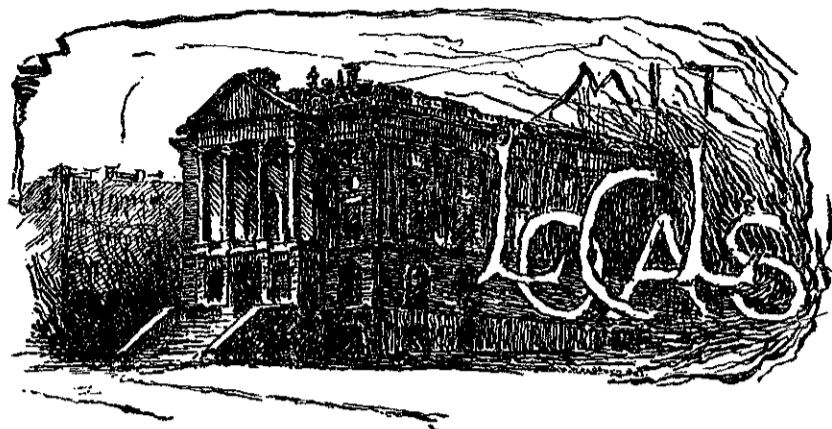
John W. Adams, '87, with G. S. Barnes & Co., Duluth, Minn.

Lyman Farwell, '87, with Clarence Johnson, Architect, St. Paul, Minn.

MARRIED. — In Worcester, Oct. 27th, J. Fred. Kilburn, '87, of Rutland, Vt., to Florence A. Forehand, of Worcester.

George L. Manning, '87, studying violin under M. de Seve, in Boston.

Charles H. Vinton, '87, with Graves & Vinton, Real Estate and Insurance Agents, St. Paul, Minn.



TECHS, 110; TUFTS, O.

Technology! Rah, Rah, R-a-h!!

Now is the time to subscribe.

Prof. Luquiens has a class in Spanish this year.

Technique goes to the printer this week. It will contain 175 pages.

Applied Mechanics—opening the door to the new building.

Wanted—telephonic communication between the mining and chemical laboratories.

The fourth-year miners have finished ore dressing and begun metallurgy.

A delegation from '89 enjoyed the opening night of the "Mikado," all on the *quiet*.

We hold the record in the large scores of the foot-ball season, gentlemen.

The Hammer and Tongs held a regular meeting at Young's, Saturday, November 14th.

The seniors have elected Hastings, class photographer.

The Society of '88 now contains nearly a hundred members. It will meet every month.

The seniors will hold a social meeting at Young's, the second Friday after Thanksgiving.

The Society of '88 held their first meeting at Parker's, on Friday evening, November 13th.

The new foot-ball cheer has completely vindicated its utility as a short and convenient "ye

A rail to remind impatient students to "line up" is needed in front of the check-room livery window.

How many of our professors observe the rule to close their lectures five minutes before the hour?

The gate-money taken at the Yale and Williams games amounted, in each case, to about fifty dollars.

Mr. du Pont, '88, received quite severe injuries in a header resulting from the turning of the handle-bar of his bicycle, last Thursday.

An impromptu collection of small cash was taken up for the eleven, during the progress of the game with Williams, and amounted to thirteen dollars.

The gymnasium is deserted, these days of foot-ball. We hope to find an addition to the apparatus when we settle down for the winter's practice.

Mr. W. L. Brainerd, '86, received first mention in the designs for a house and barn, his arrangements and rendering being especially good.

If the plans of the three Fraternities which have Chapters at the Institute are carried out, we will have a series of afternoon dances of the pleasantest kind, this winter.

Messrs. H. D. Sears, '87, Cameron, '87, Binney, '88, and J. S. G. B. Ray, '88, recently enjoyed the distinction of being initiated into the Hammer and Tongs.

CHEMISTRY RECITATION.—*Professor*: "What do we call a univalent radical?"

Student, (promptly): "A nomad."

Prof.: "Aren't you slightly wandering?"

The members of the Society of '87, in a spirit of benevolent theoretical investigation, will debate, at their next meeting, the question, *Resolved*: That marriage brings more happiness than suicide.

Much to the disgust of the juniors, third-year examinations in Heat and Integral Calculus have been postponed until the semis. Interference with other subjects, is the cause assigned for this new departure.

The "Whoop-la! Boom-yah! Rah, Rah! Tufts!" cheer has a very misleading sound, even the *Herald*, in its account of the Tufts-Amherst game, getting it "Bone-yard! Bone-yard! Rah, Rah, Tufts!"

Mr. H. A. Richardson, '87, has been elected secretary and treasurer of the orchestra, *vice* G. L. Manning, '87, who has left the Institute in order to study music; he will, however, continue to play with the orchestra for the present.

The officers of the Hammer and Tongs Society, this year, are: President, E. C. Lufkin; Vice-President, John Burgess; Secretary, Wm. L. Taylor; Treasurer, Theodore Stebbins; Chaplain, F. C. Todd.

The first afternoon party of the season has been postponed to the 21st inst. Tickets will be strictly limited to one hundred in number. The managers are F. L. Locke, '86, H. C. Spaulding, '87, L. A. Ferguson, '88, and J. P. B. Fiske, '89.

Messrs. Hoppin, Wakefield, Hiscox, and Kirkham received mentions, in the order named for their drawings of city fronts; while Messrs. Billings, Hiscox, Hoppin and Kimball were adjudged the most successful in the pen-and-ink sketches of dormers and wrought-iron work.

Mr. P. R. Fletcher was so unfortunate as to have his watch and pocket-book taken from the clothes he had left in the gymnasium while he was practicing foot-ball, last Thursday. It is getting to be unsafe to take off one's clothes there at night, thieving is of so common occurrence.

The first meeting of the Life Class of the Architects was held last Wednesday evening, under the instruction of Mr. Carlson. No life model being present, the class was occupied in drawing from a figure-cast. The Cast Class, under Prof. Letang, will be held on Friday evenings throughout the winter.

The senior and junior chemists have formed a society for mutual assistance in technical work. As there is an animated division of sentiment as to whether the society shall be partially secret or not, no name has yet been announced. The officers are: President, O. S. Doolittle, '86; Vice-President, J. B. Loewenthal, '87; Secretary, W. H. Low, '86; Treasurer, W. H. Gleason '87.

The cash offered for best design for the cover of *Technique* was well appreciated, for a number of excellent designs were handed in to the committee. There were two between which it was hard to choose. The good points of each were not matched by the other. It was finally decided to give the prize to Mr. F. E. Sanborn, '89. It was also decided to give another prize of \$5 to Mr. F. M. Wakefield, '87, for his design, which will be used for the title-page.

A SERIOUS DISASTER. — *Professor, to Freshman who enters recitation ten minutes behind time:* "Why are you so late, Mr. Puffy?"

Fresh.: "I was working in the laboratory, and was detained by an accident, sir."

Prof. (sympathetically): "Indeed! And what did you break?"

Fresh.: "A test-tube, sir."

WHAT WE SAW.

The Civil, with his clinking chains,
And pins bedecked with red;
The checkered Chemist, full of stains,
Ogling the fair "co-ed."

The Miner, with his brawny arms,
'Mid sweltering pans of ore,
Mechanic's slave, adown whose face
The oily sweat doth pour.

The Architect, with inky hands,
To scale and T-square wed;
The cruel Biological,
Who leaves poor froggy dead.

On the 3d inst. a special meeting of the class of '87 took action on the reports of committees on class colors, and the establishment of a co-operative society. From color samples submitted by the former, orange and dark blue were chosen as class colors, and the committee was instructed to obtain the necessary quantity, similar to samples. The committee on a co-operative society reported unfavorably to its formation; but, having found a number of tradesmen who were willing to allow Techs the same discount obtained by the Harvard men, were authorized, at their own request, to prepare a printed list of firms giving Institute discount, for circulation among the students.

THE COLLEGE WORLD.

HARVARD. — The report is current that James Russell Lowell is to be Vice-President of Harvard College next year, and that he will be in full charge during President Eliot's absence. — When the fund of the Harvard Annex, that now amounts to about \$90,000, reaches \$100,000, application will be made to the Harvard Corporation to have it incorporated as a part of the University. — The Harvard College President and Fellows have voted to establish a Peabody Professorship of American Archæology and Ethnology, and have elected Frederick Ward Bettoni, A.M., as professor in that department. — Foot-ball cost Harvard \$2,000 last year.

YALE. — President Porter of Yale has handed in his resignation to the Corporation of Yale College, to take effect at the next commencement. — The Yale Art School, the finest in the country, was originated in 1831. — It is said that a movement is being made among the alumni toward furnishing the college with a new gymnasium. — The Yale Alumni Association of the Northwest had its annual reunion and banquet at St. Paul, Minnesota, Nov. 11th.

CORNELL. — Cornell will send a team to the inter-collegiate sports this year, and will try to arrange base-ball games with Yale, Harvard, and Princeton. — Cornell has 610 students, 68 of whom are ladies. — The ladies of the Cornell freshman class, by a combination, succeeded in electing the vice-president and secretary from their number. This will add an interesting phase to the freshman class supper, where the sophomores have a custom of carrying off both the supper and the officers. *Princetonian.* — The present senior class are trying to raise a memorial fund of \$800, the interest of which is to be awarded each year for an oratorical prize to the juniors.

ELSEWHERE. — Considerable trouble seems to have arisen out of the election of class-day officers at Brown. Two elections have been held by different members of the senior class, and each has considered the other illegal. It is said

that the matter will be settled by the employment of legal advice by both parties. — Theodore Thomas has invited the Yale and Amherst Glee Clubs to accompany him through Europe. Amherst has already accepted. — Lehigh University to have a new Chapel, costing \$250,000. — Dr. S. W. Duncan, a graduate of the Boston University, is the successor of President Caldwell at Vassar. — Bowdoin is to have a new gymnasium, which will be completed by Christmas. — Vassar, Wellesley, Smith, and Bryn Mawr are the only colleges giving instruction to ladies alone; but there are, in the United States, over one hundred and fifty colleges for young men which also admit them. — President Carter of Williams has been voted an indefinite vacation, on account of his health. — Smith College is to have a new astronomical observatory, which will cost about twenty thousand dollars. — Cornell, Michigan, and Virginia Universities have made chapel attendance voluntary. — There are about fifteen hundred in attendance at the University of Michigan this year. — The Board of Regents of the Wisconsin State University, has adopted a resolution making it an act of disorder to petition the faculty for the removal of obnoxious or inefficient instructors. — Prof. Hitchcock, of Amherst, is at Geneva, N. Y., with a large force of men, digging for the bones of a mastodon. Fifty-four bones have been found, the tusk being eight feet long and two feet in circumference. Prof. Hitchcock expects to find all the bones, and mount them, and place them in position in the Amherst College museum. The skeleton, when completed, will be 25 feet long and 15 feet high.

Mike.—“Say, Pat, have you heard the news?”

Pat.—“No. What is it?”

Mike.—“Mrs. O’Flanigan’s got a baby.”

Pat.—“Has? What is it?”

Mike.—“Guess.”

Pat.—“A boy?”

Mike.—“No. Guess again.”

Pat.—“A girl?”

Mike.—(In tones of surprise) “Who told you?”



I DOUBT IT.

When a pair of red lips are upturned to your own,
With no one to gossip about it,
Do you pray for endurance to let them alone?
Well, may be you do — but I doubt it.

When a sly little hand you’re permitted to seize,
With a velvety softness about it,
Do you think you can drop it with never a squeeze?
Well, may be you do — but I doubt it.

When a tapering waist is in reach of your arm,
With a wonderful plumpness about it,
Do you argue the point ’twixt the good and the harm?
Well, may be you do — but I doubt it.

And if by these tricks you should capture a heart,
With womanly softness about it,
Will you guard it, and keep it, and act the good part?
Well, may be you will — but I doubt it. — *Yale Lit.*

FOR A MAN WITH A TOOTHACHE.—“To-day a king, to-morrow nothing.”— *Life.*

A lady’s fourth husband lay at the point of death, while she hung over him with tender and watchful care.

“We will m-meet again in h-heaven, dear,” he said, with difficulty.

“Ye-es,” she replied, hesitatingly; “but I am afraid it may be a little bit embarrassing, John.” — *Life.*

Fones: “I told Miss Brown what you said — that you had half a mind to leave town.”

Smith: “Yes? And what did she say?”

Fones: “That nobody ever believed more than half you said, including herself.”

Smith: “And what did she mean by that?”

Fones: “That’s what I asked her. She said she believed just half of your statement. The first half, that you had half a mind, she accepted implicitly; but as for your leaving town, she was obliged to doubt that altogether, — it was too good to be true.” — *Transcript.*



OUR ARTIST'S ATTEMPT TO DESIGN A COVER FOR "TECHNIQUE."

THE HUNT.

Over the fences, across the brown meads,
 The shout of the red-coated fox-hunter's borne;
 Over the fences and deep ditches speeds
 The hunter, braced up by the toot of the horn.
 "It's English, you know," and it's very fine fun;
 And when it is over, and weary each nag,
 It's funny to think of the distance they've run,
 And all on the scent of an anise-seed bag.

—Puck.

Young husband: "Now, love, which will you have — the chatelaine watch, the bracelets, or the necklace?"

Young wife: "We must avoid unnecessary expense, dear. I'm sure if you buy all three the man will give you a reduction on them. I'm your own saving, economical little wifey, ain't I?" — Puck.

"I was afraid that the new rule that baseball players should not receive more than \$2,000 salary, would have a depressing effect," remarked McSwilligan.

"What effect have you noticed?" asked Podsnap.

"Why, the President of Yale College has resigned." — *Pittsburg Chronicle*.

SCENE — A parlor — Subject of conversation, Literature: —

Brown (to belle of the evening): "By the way, Miss Brainlock, have you ever read any of Kant?"

Miss B —; "No, but I read 'Don't' when it first came out." — *Brunonian*.

A close race — the Hebrew.

WRAPS.

Blanket
Wraps.

English Shawls, Blanket and Flannel Wraps for Men, Women, and Children. For the Sick-Room or Bath, or those having occasion to be up nights will find them indispensable. \$3.75 to \$35, at Noyes Bros.'

FULL
EVENING
DRESS
SHIRTS.

Made in the most Thorough and Elegant manner for
**WEDDINGS,
Dinner Parties, Reception-
tions, or any occasion.**
Constantly on hand and to special measure at short notice, at Noyes Bros'.

NOYES BROS.

Washington & Summer Sts.,
BOSTON, U. S. A.

ENGLISH
DRESSING
JACKETS
and GOWNS

Smoking-Jackets, Long
Gowns, House and Office
Coats, Bath-Wraps, Rugs,
and Shawls.

PAJAMS
AND LONG
FLANNEL
NIGHT
SHIRTS.

For Steamer Wear, for
Sleeping-Cars and Home
Use. Indispensable for those
wishing a protection from colds.

Gentlemen will always find Full Evening Dress Shirts in proper Fashion, in Stock, ready for immediate use, at Noyes Bros.

ENGLISH UNDERWEAR and HOSIERY.
Medium Fall and Heavy Winter Weights
In Pure Wool, Silk and Balbriggan.
Medium and Finest Grades at lowest
prices.

Lambs-wool Abdominal Bands, a positive
cure of all bowel troubles, ladies' and men's,
at Noyes Bros.'

Ladies' and Gentlemen's English waterproof
coats and ulsters, with hoods or capes, in stock
and to special measure, at Noyes Bros.'

Martin's, and Brigg's, the two best London
makers, and the best American Silk Umbrellas
and Canes, from \$3 to \$45, at Noyes Bros.'

Full Evening Dress Shirts, Collars, Cuffs,
and Cravats, always in the late English fash-
ion, at Noyes Bros.'

English Neckwear just opened at Noyes
Bros., Washington and Summer Sts., Boston,
Mass., U. S. A.



Fine Pottery, Glass, and Lamps.

THE subscribers invite attention to their stock of the above branches, which we dare say is not excelled on this continent. One of our firm visits the Potteries of England, France, Germany, China, and Japan, seeking the best products from original sources. We have also specimens from the best home manufacturers, comprising desirable exhibits of useful and ornamental wares, to which we INVITE INSPECTION. Six floors, wholesale and retail.

JONES, McDUFFEE & STRATTON,
120 Franklin Street, corner Federal.

N. B.—From the old Wedgwood Pottery we have Plaques, Duplex Lamps, Plates, Mugs, Tiles, Jugs, Coffees, etc., decorated with Boston scenes (including cut of the Tech Institute), which may be found desirable as souvenirs.



RICHMOND STRAIGHT CUT

No. 1

CIGARETTES.

PERSONS who are willing to pay a little
more than the price charged for the ordi-
nary trade Cigarettes will find these Cigar-
ettes far superior to all others.

Beware of Imitations,

And observe that signature of undersigned
appears on every package.

ALLEN & GINTER,

MANUFACTURERS,
Richmond, Va.

Berkeley School,

Y. M. C. A.

CORNER OF BOYLSTON AND BERKELEY STREETS.

This School entered Ten Pupils at the Institute of Technology, June, 1885.

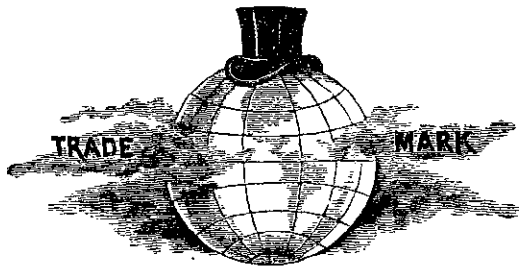
Daily Gymnastic Training, and all the advantages of
the Building.

REFERENCES:—Ex-Gov. RICE, Ex-Gov. GASTON, Judge McKIM, etc.

COLLINS & FAIRBANKS,

STYLES SPECIALLY ADAPTED TO YOUNG MEN.

*Opera Crush Hats,
English Hats,
Silk Hats,
Felt and Cloth Hats,*



*Leather Hat Boxes,
Umbrellas,
Fur Caps,
Walking Sticks.*

AGENTS FOR WHITE'S and LINCOLN BENNETT & CO.'S LONDON HATS.

407 Washington Street, Opposite Macullar, Parker & Co., Boston, Mass.

T. E. MOSELEY & CO.,

469 Washington Street.

BOOTS AND SHOES

Invite attention of the young gentlemen of "The Tech" to a Large Assortment in

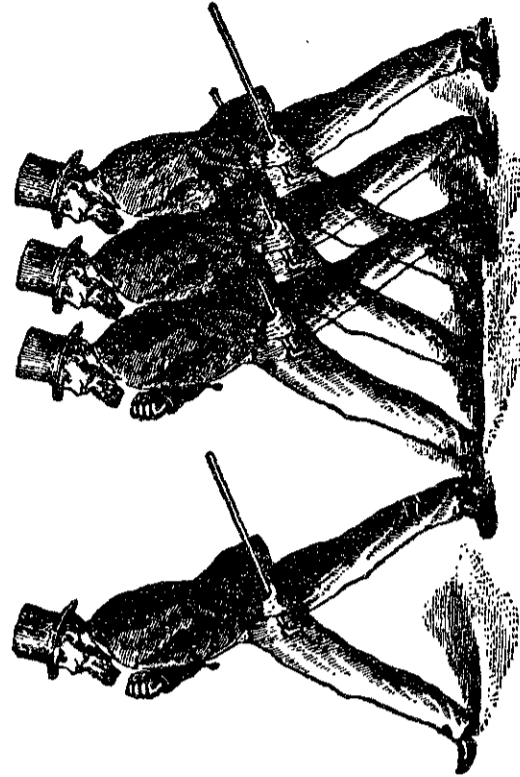
LACE, CONGRESS, and BUTTON,

FROM \$4.50 UPWARD.

Some SPECIALLY FINE ONES at \$5.00 and \$5.50.

Also, a Large Line of

HAND-SEWED GOODS at the LOW PRICE of \$6.50.



Original Importers of

Waukenphast's English Boots, Shoes, Etc.

TENNIS and GYMNASIUM SHOES

In Great Variety.

Special Inducements to members of "The Tech."

T. E. MOSELEY & CO.,

No. 469 Washington Street, Boston.

THE STYLOGRAPHIC PEN.



For Sale by JAMES C. DUFF, '86, Institute of Technology.

SPECIAL RATES TO STUDENTS.

BOSTON FOREIGN BOOK STORE.

CARL SCHOENHOF,

144 Tremont Street, Boston.

JAMES NOTMAN,

Photographer

— TO —

CLASS OF '85, INSTITUTE OF TECHNOLOGY,

— AND —

HARVARD '80, '81, and '85.

Boston Studio, 99 Boylston Street,

Opposite Public Garden.

Harvard Studio, 400 Harvard St., Cambridge.

Boston School of Languages

44 Boylston Street (Pelham Studio).

CORPS OF TEACHERS.

JULES A. HOBIGAND, A.M.

CARLO VENEZIANI, Ph.D. (Heidelberg).

C. B. FRYE, A.M.

PAUL CARUS, Ph.D. (Tubingen).
G. GOMEZ.

Special advantages offered at this school for learning to speak, write, and understand FRENCH, GERMAN, SPANISH AND ITALIAN. Classes will be formed for any hour, day or evening. Terms, 40 lessons for \$10.00.

Students conditioned in pure or applied mathematics and languages can obtain private instruction. 20 private lessons for \$20.00.

Application can also be made at the COLUMBUS SCHOOL OF LANGUAGES AND SCIENCES, 179 Tremont Street. (Take elevator.)

References by permission to well-known members of the Faculty.

W. B. CLARKE & CARRUTH,

Booksellers,

IMPORTERS AND STATIONERS,

340 Washington Street, Boston.

Engraving Wedding Invitations, Visiting Cards,
and CLASS-DAY INVITATIONS a specialty.

WALTER C. BROOKS & CO.

TAILORS

6 UNION STREET, - - - - BOSTON.

Stock selected Particularly for Young Men's Wear.

JACOB GERLACH,

(Successor to F. Herchenroder)

Ladies' and Gents' Hair Cutting.

54 TEMPLE PLACE,
BOSTON.

Manufacturer of Ventilating or
Gossamer wigs and toupees.

Ladies' Hair Work of every variety. Children's Hair cut in the neatest style.

BASE-BALL, Cricket, the Turf, Aquatic and Athletic performances, Billiards, Chess, etc.—in fact, all the latest and most reliable reports of events in the Outdoor and Indoor Sporting World, and Theatrical and General Show News, can be found in the

New York Clipper

Price, Ten Cents.

Published every Wednesday.

For sale by all Newsdealers.

The Frank Queen Publishing Co.

(LIMITED.)

DURING the past week the "Rat Charmer" has scored a merited success at the Bijou Theatre. Its success may be ascribed to the pleasing music and the excellent presentation given. It will be continued until further notice.

MR. M. B. CURTIS completes this week his engagement at the Boston Theatre in his well-known character "Sam'l of Posen, the Commercial Drummer." The piece retains its old attractiveness, and is exceedingly entertaining and amusing.

Mr. J. F. HARRIS

announces that he has opened the

HOWLAND CAFÉ.

He would especially solicit the patronage of Technology Students. A private room can be placed at the disposal of a club of ten. Meal and Lunch tickets are sold.

216 COLUMBUS AVENUE.

D. TOY,

* TAILOR *

—11—

Charles Street,

BOSTON.

NEAR BEACON STREET.

THE ASSOCIATION GYMNASIUM,

R. J. ROBERTS, Superintendent.

Corner Boylston and Berkeley Sts.

The Newest and Most Complete Gymnasium in regard to Apparatus and all other Appointments.

Terms, including Box, Measurements, Personal and Class Instruction, \$8.00 per year; for three months, \$5.00.

Young men purposing to join a Gymnasium are invited to inspect this Gymnasium thoroughly.

YOUNG'S HOTEL,

(EUROPEAN PLAN)

Opp. head of State St., Boston.

Ladies' entrance, Court Street, near Washington Street.

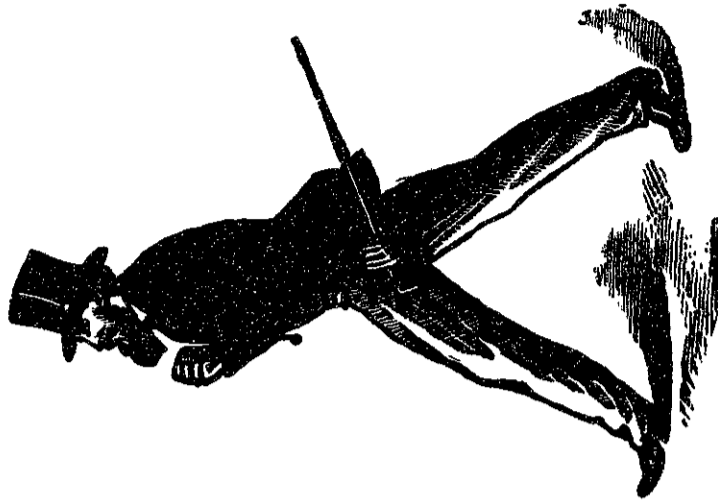
HALL & WHIPPLE, Proprietors.

ADAMS HOUSE,

(EUROPEAN PLAN)

Washington Street, - - Boston.

HALL & WHIPPLE, Proprietors.



TRADE-MARK

15 per cent Cash Discount, to all Students, from our Regular Prices.

We keep one of the Largest Stocks of

First-class Boots and Shoes

IN THE CITY.

Our prices are as low as any other house, and with the additional 15 per cent discount, less, than any house for the same quality goods.

FRENCH, ENGLISH, and AMERICAN GOODS

In all their varieties.

WE SELL A GOOD SHOE FOR \$5.00, ONE THAT CAN BE WARRANTED

SMALL BROTHERS,

371 Washington Street, - - - - Corner Bromfield Street.

THE
BRUNSWICK

BOSTON'S

Grandest Hotel

BARNES & DUNKLEE

Proprietors.



NEAR the Public Garden, Common, and Public Library, Museum of Fine Arts, New Old South, Trinity (Phillips Brooks's) Church, and opposite Institute of Technology.

Beacon, Dartmouth Street, and Huntington Avenue, and all Back Bay Cars, pass the Hotel for either up or down town, every three minutes.

WOODBURY'S CAFÉ,

—FOR—

LADIES AND GENTLEMEN,

196 Tremont Street,

Second door
South of Boylston Street,

Boston, Mass.

Open Sundays from 8 A. M. to 8 P. M.

HAMMON WOODBURY, Proprietor.

C. A. W. CROSBY,

DEALER IN

DIAMONDS AND WATCHES,

474 Washington Street,

COR. AVON STREET.

BOSTON.

STYLISH NECKWEAR,

COLLARS AND CUFFS FOR YOUNG MEN.

F. W. SEAVEY, - - - - 53 WEST STREET.

C. H. CODMAN & CO.

Manufacturers and Wholesale Dealers in every variety of

Photographers' Materials, Dry-Plate Amateur Outfits.

Sole Agents for the New Ortho-
panatic Lens.

34 Bromfield St., Boston, Mass.

The Original Barrett's Dye-House.

(ESTABLISHED 1804.)

Gentlemen's Garments DYED or CLEANSED, and PRESSED equal to New.
52 TEMPLE PLACE, BOSTON.

PREPARATION for the INSTITUTE of TECHNOLOGY.

PRIVATE SCHOOL,

18 Boylston Place, Boston.

ALBERT HALE.

Stylographic Pens.

Fashionable Engraving.

STUDENTS' SUPPLIES

Stationery.

Magazines.

ORDERS FILLED WITH PROMPTNESS.

U. E. RIDLER, Berkeley Street, cor. Boylston, BOSTON.

PRIVATE SCHOOL FOR BOYS,

23 Temple Place, Boston.

Preparation for College, INSTITUTE OF TECHNOLOGY, and
Business. Thorough instruction given in Elementary
English Studies.

Native French and German Teachers.

LEROY Z. COLLINS.



J. & R. LAMB,

52 Carmine Street. - - New York.

SILK BANNERS, HAND-BOOK No. 5
BY MAIL.

Artistic Stained Glass

New designs, etc. Hand-book No. 2 by mail.

502

TREMONT STREET is strictly a "SCHOOL" for
Dancing, where "ALL" dances known to society are
taught.

New Classes November 2 and 5.

Private Lessons given at any hours.

E. WOODWORTH MASTERS, Instructor.

(Member of National Association.)

Note Books and Students' Supplies,

At lowest possible prices.

FRED W. BARRY,

108 and 110 Washington Street, Boston.

Corner of Elm Street.

Frank Wood,

Printer,

352 Washington Street, Boston.

Hastings

INSTANTANEOUS PORTRAITS,

147 Tremont Street, cor. West Street.

ELEVATOR TO ATELIER.

Photographer to Class of '86.

Cabinet Photos only \$5.00 per doz.

JOSEPH GILLOTT'S STEEL PENS.

For Fine Writing, No. 1, 303, 170. For Broad Writing, 294, 389,
349. For General Writing, 332, 404, 390 & Falcon-878, 908.

Other Styles to suit all hands.

Sold by all Dealers throughout the World.



FROST & ADAMS,
IMPORTERS OF
Drawing Instruments

AND

Supplies for Students, Architects, and Engineers.

Designers' Colors a Specialty.

SEND FOR ILLUSTRATED CATALOGUE.

No. 37 Cornhill, - - - BOSTON.

J. C. LITTLEFIELD,

Chambers,

➤ FINE TAILORING ◀

2A Beacon St.

The Latest Novelties of the Season.

DRESS SUITS A SPECIALTY.

THE PATRONAGE
 OF
 THE STUDENTS OF
 "TECH"
 IS CORDIALLY
 INVITED.

Harrington's
Handsome

14 School Street.

Hats.

BEST ASSORTMENT
 OF
 WALKING-STICKS
 IN TOWN,
 IN GOLD, SILVER,
 AND
 HORN MOUNTS.

JOHN R. FARRELL,

➤ TAILOR ➤

No. 14 Boylston Hall, Boston, Mass.

Finest line of Foreign and Domestic Fabrics constantly on hand, to be made in the best styles, at reasonable prices.

MILITARY SCHOOL JACKETS and UNIFORMS.