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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.

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# The Tech.

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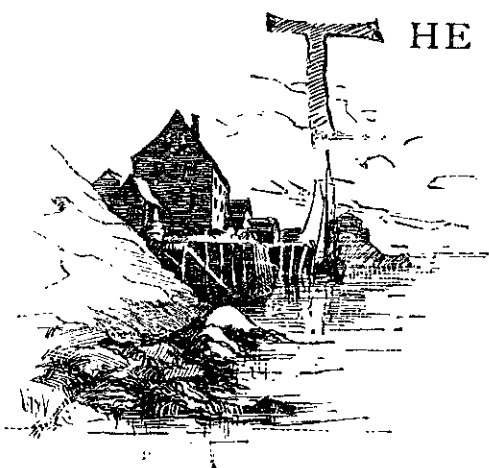
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THE class of '85 last year established a custom which it is earnestly hoped will be kept up and enlarged upon, if possible, as each succeeding class graduates. We refer to the innovation known as "Seniors' Evening," for it most assuredly *was* an innovation in the prosaic, and, to outsiders at least, rather uninteresting ceremonies previously attending the conferring of degrees.

It seems eminently fitting that, aside from the regular exercises of graduation, some popular and appropriate social observances after the manner of "Class Day" at other colleges, be enjoyed by the Seniors and their friends. '85 has taken a step in the right direction, as was shown by the success of the first "Seniors' Evening" last June, in Huntington Hall. If '86 can improve upon it, so much the better. It would seem as if a committee ought to be appointed as early as possible to discuss and

arrange the matter, so as to allow time for ample preparation.

At Harvard the Seniors have already elected the officers for "Class Day," and it has always been the custom there to do so soon after the beginning of the college year. While from the nature of our courses here at the Institute life during the fourth year is so full of thesis work and perpetual "grind" that no very elaborate class-day exercises could be gotten up, yet whatever is done should be decided on at once, so that those who take part may have sufficient time for whatever preparation is necessary.

At least, let there be as enjoyable an event attending the departure of '86 from its *Alma Mater* as was participated in by last year's graduates and their friends, and we have no doubt that '87, with its usual enterprise, will come to the front next year, and do its part in perpetuating such an excellent custom.

A WRITER on education describes the departments of common school, college, and university under the similitude of the root, trunk, and fruit-bearing branches of the educational-tree. The college, he says, aims solely at culture, for culture's sake, while the university utilizes the high preparation thus obtained, to fit the student for a high place in the world of activity. This sharp distinction between the college and university ought ever to be observed, as indeed it is, in the systems of England and Germany. But with us, the terms have almost entirely lost their significance.

The traditional American college is modeled on the English system, but the ideal of reform is, and should be, the German university.

The true university is a collection of high professional schools, which have for their object, not culture for its own sake, but as a prepara-



tion for a career of activity in fields of high attainment and investigation.

With such an understanding of the university, the first step for the Institute to take toward a realization of that high ideal, would seem to be an elevation of the preparation for admission.

If, instead of devoting a year in acquiring the rudiments of chemistry, French, and in work in algebra and trigonometry, a thorough preparation in all this were required in every person coming to the Institute, he would thus be enabled to enter directly upon the work of his profession, and would thereby have at the end of his course an additional year for higher investigation in his chosen work.

This, of course, is not a new idea to those who have given the subject any thought.

It is not a result which could be attained in a moment, but by its adoption, it seems to us, we should be making a long stride in the right direction.

ONE of the most peculiar things about our strange and mysterious marking system is, the anomaly whereby a man may have "passed" an examination, according to an official report from the Secretary, and yet, in reality, has not. An examination-paper is marked "passed," if it receives more than sixty per cent and less than seventy-five. But what does the mark signify? The man receiving it is not conditioned, and yet, if he goes along with the happy feeling that he is all right, when about to graduate he is apt to find it all wrong, upon being informed that a long list of credits in all professional subjects is needed for him to obtain his degree.

We do not complain that the standard is kept so high, nor do we wish the marking-grade of "pass" abolished; only we think that the credit requirement should be explicitly stated in the catalogue, as it is in the case of the examinations at the end of the first year.

The matter is hardly worth the mention, and is generally understood among upper-class men; nevertheless, we think it would be well to have it clearly made known in the first place.

THE statement was made in the last number of THE TECH, upon reliable information, as we thought, that the decrease in the size of the Freshman class, this year, was due to the fact that the standard of admission had been raised. Since then, we have been informed by the Secretary that our statement was erroneous, and, lest a wrong impression be conveyed, we take this occasion to correct it.

The decrease, in all probability, is due to the hard times, although, unlike the other colleges, the Institute has not hitherto felt them, as our freshman classes, for the preceding three years, have showed marked increases. This view is borne out by the small proportion of special students in the entering class.

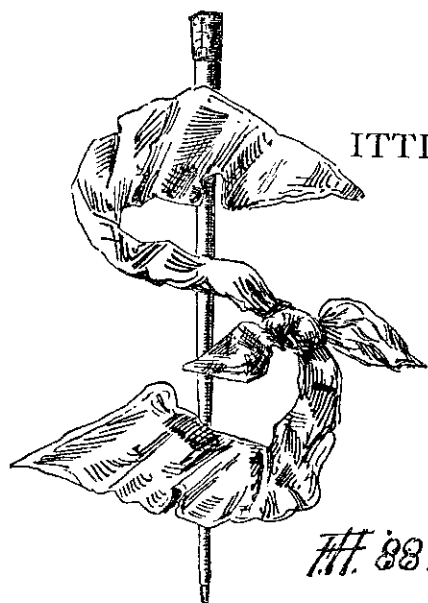
WE have to repeat our call for literary contributions. THE TECH is published by and for the students of the Institute, and it is not alone to the editorial board, but to them, also, that the success of the paper must be due. Contributions of any sort will receive a respectful consideration, and if at all suitable will be published. Items of local interest, alumni notes, and college news, are especially solicited. Articles should be written on one side of the paper only, and should always be accompanied by the author's name, though not necessarily for publication. Contributions intended for any number of THE TECH must be in the box before the Wednesday night preceding publication.

HEREAFTER many of our college exchanges will be placed in the reading-room, for the benefit of the students. We trust this will be appreciated, as it gives all an opportunity to see what is going on at other colleges, and may serve to while away occasional spare moments. It is hoped that the papers will be carefully handled, and neither torn nor otherwise mutilated.

NOTICE.—Copies of No. 3, Vol. II, and No. 1, Vol. III., of THE TECH will be bought at this office at the regular price.

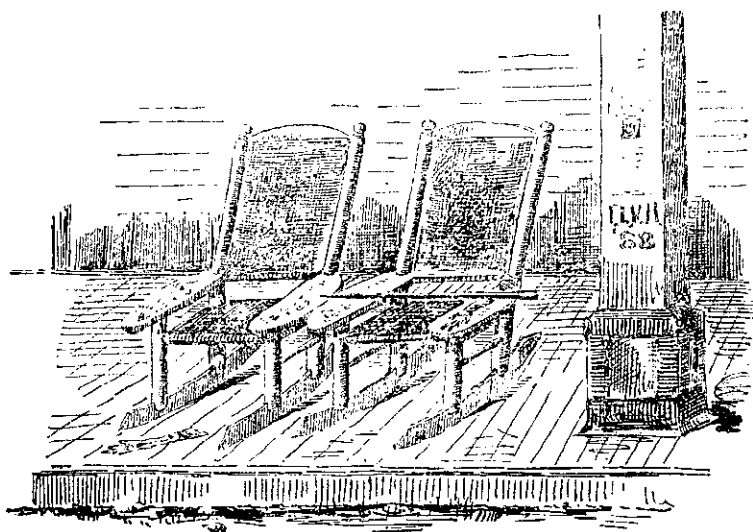
## Revery.

"Oh, call back yesterday; let time return."—*Shakespeare.*



ITTING in my study,  
Smoking silently alone,  
The thought comes steal-  
ing o'er me  
How quickly time has  
flown;  
How summer dreams and  
pleasures,  
Alas! have passed away,  
And I am back once more  
To work's reality.

I wonder what *she's* doing,  
*She's* not a "summer's dream."  
Will she be the same as ever,  
And always on me beam?  
How beautiful her hair,  
In coils of jet black coal;  
How glorious her eyes,  
Which stirred my very soul!  
Does she remember all the scenes  
That rise before me here?  
The mem'ry of those arm-chairs,  
Pushed together near,  
In which *we* sat, and by the moon's  
Fair brightness, I confessed  
My love to her, she blushing,  
I my answer guessed.  
And when the morning's sun awoke,  
Free from all earthly cares,  
It saw alone, just as they were,  
Those spacious old arm-chairs.



## Student Life in Heidelberg.

A GERMAN student, when first entering the University here, is, in the full sense of the word, a "fresh youth," having, hitherto, been kept in the "Gymnasium," where he has little or no time when he is not under the eye of his teachers. He arrives at the University, and, as a general rule, has no inclination for study; so, for the first year or two, devotes his time to the amusements which the place affords. He goes through no examination, but, having a certificate from his former school, fills out a list of the lectures which he may wish to attend, and is registered as a student of the University. These lectures he pays for, so much a course, each course having a definite fixed price; he goes to a lecture, perhaps, if nothing else turns up, but for the first year or two does very little work. He very soon gets acquainted with other students, and is soon initiated into their habits. The first thing which occupies his mind is a mania for dueling, and, if he has plenty of money, and the inclination, he joins a corps; if not, generally some private dueling society. The corps are five in number, being distinguished by the color of the caps which are worn; these are white, green, yellow, blue, and red; those belonging to the first two must have at least 6,000 marks (about \$1,500) a year, and are generally of noble blood.

Each corps has a house of its own, where the students meet, evenings, and hold their "Kneipen;" these consist of beer-drinking, smoking, and singing; but the singing may better be called howling, and for those living opposite, the midnight hours are made more hideous than by cat-concerts. The greater part of the night is spent in this way, they getting to bed in the neighborhood of three or four o'clock in the morning. This is, of course, not a regular occurrence, but happens about twice a week.

When a student enters a corps, all that he does is to pay his fee and buy his cap. When he pays his fee, however, he takes upon himself a great many tasks; he is obliged to be a regular servant of the other students who are higher in rank than himself, taking care that they are

provided with the most comfortable chairs in a "Kneip," and other things of this kind, and, besides, he is *obliged* to fight duels. He has a certain time given him, I think from two to four months, in which to take lessons—at least one a day.

The members of different corps never recognize each other during the time while the term is in progress, but those at the head of each corps meet and arrange the duels, and the members fight as they decide. This fighting takes place every Tuesday and Friday, from 9 A. M. till 3 P. M.; and, as a result, the students who have been fighting soon appear with their faces done up in cotton and carbolic acid. In these duels it is impossible for any one to be killed, for the combatants wear about the neck and body thick leather pads, and thick glasses before the eyes, so that the only place where they are cut is on the face. The students are very proud of these cuts, and in case they see that the scar will not be very noticeable, it is often a fact that they tear it open and pour wine into it. After a student has fought a certain fixed number of duels (some ten or twelve), he receives a band of ribbon, which he wears across his breast, under his coat; upon receipt of his first band he is free from all fighting unless he desires it, but it is a rare case that a student stops with one band, but often fights till he gains four or five. Although this fighting is against the law, the police take little or no notice of it, and it goes on undisturbed.

That the student is a favored individual, may be illustrated by the fact that there is a separate prison for him, in case he overreaches the law; if this happens, and a policeman attempts to arrest him, he is immediately released upon stating that he is a student. The officer then asks for his card, and upon receiving it, nothing more is said at the time, but in course of a few days he receives a notice asking him, at his convenience, to appear at the Students' Prison, and let himself be locked up for three or four days. If he does not put into appearance there within two or three weeks, he receives another notice to the same effect. When it suits him he

goes to the prison a day or two before he is to take up his quarters there, and chooses his room; then he has necessary articles moved in, such as bed, chairs, etc., and invites all his friends to call in and see him during the evenings, while he is there. But as to being locked up, the prison is only a place where he sleeps, he being at liberty all day; he goes out in the morning in time for the first lecture at the University, which is at seven o'clock, and is reminded to be in by nine o'clock in the evening. He can spend his time as he likes, although he is expected to be devoting it to his studies. In the evening he returns, and fills up the room with his companions; they send for beer, and the beer-maid appears with a tray full, and is not allowed to depart till she drinks with them, which of course she gladly does, although making it appear much against her will. These proceedings are carried on during most of the night, and at early dawn the weary students wend their ways to their lodgings, to indulge in restless sleep. This continues during the remaining nights of the imprisonment. Almost every student makes it a point to be in this prison at least once, if for nothing else than to carve his name on every vacant space he can find, which is often a difficult thing to do. The walls and ceiling are carved and painted with every one's name who has ever been there, and the poetry composed for the occasion is so witty that it is deemed worthy of publication in book form. Among the names which appear on the walls is that of Bismarck, who is said to have had an extensive record in dueling. The room called "Solitude" is one mass of students' pictures, which they have left there nailed to the wall, with their name underneath.

At the end of the University year the corps students have a torchlight procession, when they are dressed in full corps uniform, carrying their foils with them. But as to carrying a torch, that they will not do, so they hire boys to walk beside them and carry it for them. They march over the principal streets to the house where the duels are fought, and there hold a grand "Kneip" together, lasting all night, after which the students of the different corps may associate



together as they may wish. The condition of the students the day after this "Kneip" is very amusing; they appear about the middle of the afternoon in carriages with their dogs, but the dogs are the only sober ones in the crowd, and very often the street-urchins may be seen climbing up on the backs of the carriages, and having fun with the sleepy occupants.

This kind of life is by no means carried on all the time, but, as I said before, it lasts for the first year or two, and it is a hard thing to find a student who has not spent some time in this way.

It would be well to explain here, that it is not necessary, in the German university, to attend *one* all the time, but the student may change about as often as he likes without injuring his course of study. He is obliged to take no examination until he thinks he is ready to begin his profession; then he passes in his certificates from the different universities which he has attended, giving the number of terms that he has been a member in each, and if the number meets the requirements, he is allowed to take the examination for his degree. So, after the student has made up his mind that he must at last settle down and do some work, he generally leaves the university, to get away from his old associates, and goes to another, and begins work in earnest. This is the reason why a German student is so much older than the student in this country — the average age of those taking courses which are taken up during the second and third years at the Institute being twenty-three or twenty-four.

The facilities for work are very poor, the buildings and apparatus being old, and, as a rule, cheap. The Chemical Laboratory at Heidelberg will accommodate only sixty students, and is a mass of inconveniences, so that it takes a student there as long to get ready for an analysis as it does here, to finish it. Notwithstanding the inconveniences which have to be contended with, a man obtaining his degree there commands a better position than one obtaining it here.

W. H. G.

A hard smoker — the chimney.

### A Soph's Lament.

Why is it that we feel so queer,  
And oftentimes so sad,  
When we have reason to rejoice  
And feel exceeding glad?  
While Sophomores we ought not grieve,  
As we have done of late,  
Because we miss the good old times  
We've had as '88.

Alas! we mourn the happy hours  
We used to while away,  
In marching up and down the "gym"  
On every other day.  
And how our tender bosoms swelled —  
With manly pride, no doubt —  
When on those days, in uniform,  
We Freshmen all turned out.

And oh! that we might once again  
Use zinc and HCL,  
And now and then make H<sub>2</sub>S,  
Because we like the smell.  
And how we wish we could once more  
Our microcrits revive,  
And still as Freshmen take our seats  
In Kidder 35.

The privilege we grieve for most —  
It's ours, we all maintain —  
Has been transferred to '89,  
And so we weep in vain.  
What is this boon for which we crave?  
What dear right can this be?  
It's climbing up five flights of stairs  
To Rogers 53.

This year we have to live on links,  
On dynes and poundals, too;  
And now "ils sont" becomes "sie sind";  
That's why we feel so blue.  
But we must reconcile ourselves  
To this, our adverse fate,  
For never can we have such fun,  
Though still we're '88.

M. E. C. H.

### Count Rumford.

TO what man of science that this country has produced, has less honor been done, here, than to Rumford? The contemporary of Franklin, and second only to him in his scientific attainments, he is now all but forgotten in his native country. Benjamin Franklin and Benjamin Thompson were born within twelve miles of

each other, but, in all probability, never saw each other. Brought up under like circumstances of frugality and small means, both rose to fill high places in the affairs of nations, and gained distinction in fields of science. Both are remarkable for the eminently practical character of their investigations, and in many other respects their careers are parallel; but Rumford's work, unlike Franklin's, was done in the service of foreign countries.

Benjamin Thompson was born in the town of Woburn, Mass., in the year 1753. To the public school of the town he was sent as soon as he was old enough, and there, even at this early age, was distinguished for the quickness of his perception and the energy of his character. When thirteen years old he was taken from school and bound as apprentice to a merchant in Salem. He did not, however, neglect his studies while here, and his leisure time was employed with experiments in physics and mechanics. At length, having been thrown out of employment, he returned to Woburn, where he resumed his studies in earnest. At about this time the annual course of lectures in experimental physics, at Harvard, was to be delivered. Thompson, together with his friend Baldwin, afterward the eminent engineer, although not matriculated students, obtained permission to attend. The two used to walk to Cambridge and back every day, and repeat, at home, after each lecture, to the best of their ability, the experiments which they had seen performed. Thompson's zeal for the acquirement of knowledge had now begun to attract attention, and he was called to take charge of the Academy at Concord, N. H.

In Concord he met Mrs. Rolfe, a widowed lady of culture and refinement, and, falling in love with her, after a short courtship married her. His marriage raised him into the first circle of society, and placed him in possession of ample means.

Once, when on a visit to Portsmouth, then the capital of New Hampshire, he was presented to Gov. Wentworth. The latter was most favorably impressed by the young man, and soon

after offered him the vacant position of Major in the New Hampshire militia. Thompson accepted, and the jealousy of the lower officers, at having a new man placed over them, was the indirect cause which forced him to leave this country.

It was now on the eve of the Revolution. Thompson refrained from taking an active part in the agitation, and from the favor in which he was held by the royal governor of New Hampshire, came to be pointed out as a disaffected one. Forced to leave Concord by the popular feeling, he went to Woburn, and then to Charlestown, where he was received with much friendship and hospitality by the British officers. Having inquired from his friends whether it would be safe to return, and having been assured that it would, he went back to his mother's house in Woburn. His friends were mistaken, however, for no sooner back, than a mob was about to attack him, from which he was saved only by his friend, Col. Baldwin.

The name Tory now having been indelibly stamped upon him, he became convinced that there was no security for him except within the British lines. Soon after, he petitioned the Committee of Safety, of Woburn, for an investigation of his record. Nothing of importance could be charged against him, and he was not condemned, although not given a full acquittal. Consequently he sought refuge from civic prosecution in the camp, where he was protected by military discipline, and endeavored, unsuccessfully, to obtain a commission. His position was now becoming irksome, and even dangerous. He had done all in his power to obtain an opportunity to fight on the side of his country, and not even being granted protection there, at length sought refuge within the British lines.

After having been a short time with the British troops, he was sent to England, the bearer of some important dispatches. Arrived there, his ability was at once recognized, and he was appointed to a position in the department of State, where he soon won great influence. With better facilities at hand, Thompson now resumed his scientific studies. In 1777 he conducted a

series of experiments on the strength of solid bodies, and the next year on gunpowder and the velocity of explosives — a subject in which he had previously made some investigations. At about this time he was made a Fellow of the Royal Society. Thompson had always clung to his title of major, having a liking for the military, and now, at his own solicitation, received an appointment of lieutenant-colonel in the English army. He went to America, and fought against his countrymen for awhile, but soon returned to England.

The war with America being over, Thompson started upon a tour through Europe, with the half intention of joining the army of some nation then at war. In Germany he made the acquaintance of Prince Maximilian of Bavaria, who was much pleased with him, and introduced him to his uncle, the Elector. Having been invited to enter the Bavarian service, Thompson returned to England to ask permission of the king of that country, which was granted, and in addition he received the honor of knighthood.

It was in the service of Bavaria that Rumford's greatest work was done, and it is in that country that his memory is most honored. The Bavarian army was then in a state of complete disorganization, and Rumford's first work was to reform this. The country was at that time afflicted with the exactions of hordes of beggars; Rumford removed them in an incredibly short time. These are only a few of the blessings which he worked for Bavaria. It is needless to say that he was heaped with high honors. He was made a Privy Counsellor and a Count of the Holy Roman Empire, and was appointed to many high places in the government.

Toward the close of the century, Rumford returned to England, in order to carry out some of his improvements in the heating and ventilation of houses. He also, at this time, founded the Royal Institution, which was the first institute of technology in existence.

Rumford was shortly after appointed Ambassador from Bavaria to England, but was refused by the latter government, on the ground that he had been born an English subject. His

friend, the Elector of Bavaria, dying soon after, Rumford never returned to that country, but spent the remainder of his life in retirement at Auteuil, in France, where he conducted his great experiments on heat and light. He died in 1814.

Rumford has been harshly judged for leaving his country as he did, but it seems as though there were extenuating circumstances. He did not forget the land of his birth, however, and in his later years evinced a desire to return, although he was prevented from doing so by various causes. Nevertheless, he took occasion to show his interest in the scientific institutions of this country by endowing a professorship at Harvard, and by the donation of a liberal amount to the American Academy of Arts and Sciences, to be used in the purchase of medals for the one who, in each two years, should have made the most important discovery in heat or light. These medals are known as the Rumford medals.

A. C. R.

#### Society of '88.

A MEETING of the members of the class of '88 was held Monday, Oct. 19th, to consider the project of forming a society of '88. It was decided to form such a society, and a committee, consisting of Messrs. H. C. Moore, G. C. Dempsey, and G. E. Claflin, was appointed to draw up a Constitution and By-laws. On Thursday, Oct. 29th, a meeting was held for the adoption of the Constitution and election of officers, at which the Constitution and By-laws were submitted by the committee, and adopted as drawn up. The officers elected were as follows: —

President, George C. Dempsey; Vice-President, Harry C. Moore; Secretary, George N. G. Holman; Treasurer, Henry J. Horn, Jr.; Entertainment Committee, Lorenzo B. Newell, Ellison C. Means, and Howard G. Hodgkins.

The above form the Executive Committee of the Society, which holds its first social meeting Friday, Nov. 13th.

Gentlemen of leisure — tramps.

### Lowell Free Courses.

**F**OLLOWING are the subjects of the Lowell Free Courses of Lectures this year:—

I. *Physiology of the Circulation*.—Twelve lectures and laboratory exercises by Associate Prof. Sedgwick, on Mondays and Fridays, at 7.30 P. M., beginning Nov. 6th.

II. *The Acoustic and Electrical Principles Underlying the Art of Telephony*.—Twelve lectures by Professor Cross, on Mondays and Wednesdays, at 7.30 P. M., beginning Nov. 9th.

III. *Elementary Organic Chemistry*.—Twelve lectures by Associate Professor Norton, on Mondays and Wednesdays, at 7.30 P. M., beginning Nov. 9th.

IV. *Theory and Solution of Higher Equations*.—Twelve lectures by Associate Professor Wells, on Mondays and Wednesdays, at 7.30 P. M., beginning Nov. 11th.

V. *Crystallography*.—Twelve lectures by Assistant Professor Crosby, on Tuesdays and Thursdays, at 7.30 P. M., beginning Nov. 12th.

VI. *Side Valve and Link Motion*.—Twelve lectures by Assistant Professor Peabody, on Wednesdays and Thursdays, at 7.30 P. M., beginning Dec. 2d.

VII. *Middle High German*.—Twelve lectures by Professor Otis, on Tuesdays and Fridays, at 7.30 P. M., beginning Jan. 5th.

VIII. *Elementary Electrical Measurements*.—Ten laboratory exercises by Associate Professor Holman (with assistants), on Fridays, at 7.30 P. M., beginning Jan. 8th.

Clarence M. Boutelle, who was at the Institute in 1872-74, is now teaching at Decorah, Iowa. He was recently elected to an important and responsible position in the State Normal School at Oswego, N. Y. He expected to take the work in mathematics, including methods of teaching the same—a line of work which he performed with great efficiency and success for a number of years in the State Normal School at Winona, Minn. The School Board of Decorah would not, however, consent to release him from his engagement to them.

### ATHLETICS.

#### The Fall Games.

The regular fall games were given up this year, on account of the small number of entries. A record-breaking meeting, in which special medals were to be given to all who should break Institute records, was substituted. This meeting was held on the Union Grounds, just before the Yale foot-ball game. The track was in an abominable condition, and consequently no fast times were made.

The first event was the 100-yards dash—Won by J. M. Howes, '88, in  $10\frac{7}{8}$  sec.; F. R. Young, '86, second.

2-mile bicycle—Won by W. J. Banes, '87, in 8 m.  $7\frac{1}{2}$  sec.

220-yard dash—Won by L. R. Cobb, '86, in 26 m 1-5 sec.

One mile run—Won by F. R. Young, '86, in 5 m., 33 sec.

Quarter-mile run—Won by L. R. Cobb, '86, in 59 sec.

The 220-yard dash was the only event in which the record was broken.

#### Foot-Ball.

**T**HE foot-ball eleven have been playing as follows: Rushers—Herrick, Vorce, Ladd, Fletcher, Peters, Taintor, and Cooley (Captain); quarter-back—Twombly; half-backs—Holden and Sturges; full-back—Ray.

#### TECHS VS. WILLIAMS.

Williamstown, Oct. 24.—This was the first game of our eleven in the intercollegiate series. Play was called at 2.05 P. M., the Techs having the kick-off. The Techs at once rushed the ball to within a few feet of Williams' goal; but by the clever rushing of the latter, and the poor tackling of our team, the ball was forced down to the other end of the field, and Bigelow made a touchdown, from which, however, no goal was kicked. A second touchdown was soon made, and another failure in the try for a goal. Wells, soon after, kicked a goal from the field, and things now looked very discouraging for the

Techs. They now, however, braced up a little; but again, owing to poor tackling, Williams scored another touchdown, from which a goal was kicked. By fine playing of our half-backs. Holden and Sturges, and by a pretty run, together, of Twombly and Cooley, the ball was rushed to Williams' goal, when time was called.

The second half opened with even playing, until Holden made a good run and secured a touchdown, from which he kicked a goal.

Throughout the remainder of the game our men forced Williams almost continually, and outplayed them,—our rushers doing good work, Vorce and Taintor especially, by their fine tackling, while the half-backs did splendidly. Game was called at four o'clock. The score—19 to 6, against us. Referee, Phillips, of Harvard.

#### TECHS VS. TUFTS

Union Grounds, Wednesday, Oct. 28th.—The weather was unpleasant, but large delegations of both Tufts and Tech men were present, and were rewarded by seeing a finely-played game of foot-ball. The Techs had the kick-off, but Tufts at once rushed the ball to their goal, and scored a touch-down, failing, however, in the attempt for a goal. A good run by Vorce carried the ball near to Tufts' goal, but the advantage was immediately lost by the fumbling of Techs. Poor play of one of the Tufts' half-backs, and good blocking by the Techs, prevented the former from scoring again. Tufts was several times warned for off-side play. Ray was disabled early in the inning, and was replaced by Taintor, Shortall taking Ray's place as full-back. The inning closed with the ball near the Tech's goal.

The Techs had been playing nervously in the first inning, but in the second their weight and staying-power began to tell, and not once was the ball kept in their part of the field. Herrick got the ball, and, admirably supported by our rushers, they all broke through the Tufts line, and touched the ball down directly between the posts. Holden kicked the goal. Peters and Ladd next got through the Tufts line, and the latter scored the second touchdown, from which

Holden kicked another goal. Sturges, by a brilliant run of half the length of the field, made another touchdown. Holden punted the ball out, but failed in the try for a goal. Time was called with the score: Techs, 16; Tufts, 4. Referee, Peabody, of Harvard.

The Techs played an admirable game. Holden and Sturges distinguished themselves by their fine running and kicking, and the rush-line all played a strong game—especially Ladd and Peters.

#### TECHS VS. YALE.

UNION GROUNDS, Sat., Oct. 31st.—Following the athletic games, the Techs played an exhibition game of foot-ball with Yale. It would be impossible to describe the game in detail. The ball was for the most part kept in the Tech's side of the field, though occasionally our men had the ball for a short time near Yale's goal. Yale made three touch-downs, from each of which a goal was kicked, in the first ten minutes of the game. After that the Techs imitated the Yale method of playing, and several times gained ground on them, playing a fine block-game throughout the rest of the inning. Score; Yale, 18, Techs, 0.

The boys did not do quite so well in the second inning, and Yale increased their score considerably. At the end of the game it was Yale, 51; Techs, 0. Referee, H. B. Twombly.

The fine playing of the Yale half-backs and quarter-back called forth much applause.

Sturges, Holden, Twombly, Ladd, and Shortall, did the best work for the Techs. The team derived much benefit from the game, and showed from its work that its chance of winning the Northern intercollegiate championship was good.

On the 31st ult. about forty freshmen met in Room 15, Mr. A. W. LaRose in the chair, and took measures for the formation of an '89 foot-ball team. A collector of funds was appointed for every two sections of the class, and the following officers elected: secretary and treasurer, A. H. Badger; manager, A. S. Ewen.



## Noticeable Articles.

The *North American Review* for November contains an interesting paper on the "Progress of Democracy in Europe," by one of the foremost of Spanish Liberal orators and statesmen, Emilio Castelar, written, I presume, in English, by Señor Castelar himself. The same number contains recollections of General Grant, by Admiral Ammen; and a paper, very interesting at the present moment, on United Bulgaria, by Eugene Schuyler, author of "Turkestan," whose personal acquaintance with Eastern affairs gives his words special authority.

His paper may be read along with an entertaining one in the *Fortnightly Review* for October, on "Men and Manners in Constantinople," by a writer who signs himself Philo-Turk, and is evidently well acquainted with Constantinople society. Here may be found sketches of the Sultan and his chief ministers, and of the different representatives of the great powers at the Sultan's Court.

Readers interested in the subject can continue their studies by turning to an article in the *Contemporary* for October, entitled, "Contemporary Life and Thought in Turkey, by an Old Resident." No subject in European politics is more interesting at the present moment, or gives rise to greater differences of opinion, than the condition and prospects of the "sick man" of Europe.

Students of political science can read with profit an article in the *Fortnightly* for October, on "Carlyle as a Political Teacher," by Standish O'Grady. There is a pleasant account of Mr. Gladstone in Norway, by Lady Brassey, on whose steam-yacht (a vessel in which that enterprising lady has visited most parts of the known world) the great English statesman made the excursion.

The *Century* for October has an account, with a portrait, of that remarkable newspaper editor, Samuel Bowles, whose skill raised the *Springfield Republican* to such importance, and who did so much to elevate newspaper editing into a distinct profession. The illustrated articles in this beautiful periodical are as good as usual, which is saying much. They are on the great river of Alaska, the Yukon, by Lieut. Schwatka, the explorer; the summer haunts of American artists, with interiors of various luxurious studios; charming illustrations of a paper on Tuscan cities, by Howells; Riverside Park, in New York, and an illustrated paper on the last days of General Grant, containing several early portraits of the great soldier.

W. P. A.

## List of Publications, M. I. T.

ALLEN, A. W. (Stud.). See *Norton, L. M.*

BLODGETT, GEO. W. ('73). The Boynton Train Indicator. *Proc. Soc. Arts, M. I. T.*, 1884-'85, 122. [This was credited in our last issue to *Austin* ('73).]

CROSS, CHAS. R. ('68). Notes on Acoustics: 1. Quality of sound as related to change of phase. 2. Remarks on a point in Helmholtz's Theory of Consonance and Dissonance. 3. Intensity of sound as related to amplitude of vibration. 4. On a musical application of the Principle of Fatigue. Abstract in *Proc. Amer. Assoc. Adv. Sci.*, XXXIII. (Phila. Meeting), 111.

——— On a proposed method for ascertaining the least number of vibrations necessary to determine Pitch. *Id.*, XXXIII. (Phila. Meeting), 112.

——— Hartleben's Library of Electrical Technology (Elektrotechnische Bibliothek). Review. *Science*, V. (1885), 220.

——— Electric measuring apparatus. *Electrical World*, Oct. 17, 1885.

GARDINER, EWD. G. ('82). Beiträge zur Kenntniss des Epitrichiums und der Bildung des Vogel-schnabëls. *Archiv f. mikroskopische Anatomie*, XXIV. (1884.)

GREENE, CHAS. E. ('68). The Washington National Monument. *Science*, V. (1885), 146.

HOWE, HENRY M. ('71). The Clapp-Griffiths Bessemer Plant. *Science*, VI. (1885), 342-344.

HYATT, A. (Prof.). Structure of the Siphon in the Endoceratidae. Abstract. *Proc. Amer. Assoc.*, XXXIII., 490.

——— Larval Theory of the Origin of Tissue. Abstract. *Id.*, XXXIII., 491.

——— Structure and Affinities of Beatricea. Abstract. *Id.*, XXXIII., 492.

——— Objections to some commonly accepted Views of Heredity. Abstract. *Id.*, XXXIII., 509.

NORTON, L. M. (Certif. '75), with C. O. Prescott. Continuous Etherification. *Proc. Amer. Assoc.*, XXXIII., 164.

——— with A. W. Allen. Ueber die Einwirkung der verdünnten Salpetersäure auf die Anilide. *Ber. d. deutsch. chem. Gesellschaft*. XVIII. (1885), 1995-1999.



S. M. Felton, Jr., '73, recently elected Vice-President of New York, Lake Erie & Western Railroad.

W. S. Allen, '79, Clerk of Massachusetts State Gas Commission, Boston, Mass.

John W. Cabot, '79, Superintendent of Bessemer Steel Process, Bellaire, O.

Ira Abbot, '81, Vice-President and Assistant Engineer, Dominion Bridge Co., No. 2 Winsor Hotel, Montreal, Canada.

William A. Hammet, '81, Manager and Mechanical Engineer of New York Safety Power Co., 64 and 66 South Canal Street, Chicago, Ill.

T. N. Hastings, '81, Capitalist; President Boston Bijou Theater Co.; President Boston Tobacco Co.; Bijou Theater, Boston, Mass.

Theodore Parker, '81, Engineer on Western Division, C. B. and Q. Railroad, P. O. Box 754, Creston, Iowa.

William R. Snead, '81, General Superintendent and Director of the Snead & Co. Iron Works, Louisville, Ky., 318 Chestnut Street, Louisville, Ky.

Walter H. Bunce, '84, with Pueblo Mining and Smelting Co., Pueblo, Col.

John P. Harding, '84, Secretary, and on Board of Directors of the Springfield Word-working Co., Springfield, Mass.

Arthur H. Brown, '86, Expert at Thompson-Houston Electric Light Works, Lynn, Mass.

William B. Douglas, '87, Wesleyan University, Middletown, Conn.

#### Class and Society Organizations, 1885-86.

'86. — President, Frank L. Locke; Vice-President, H. E. H. Clifford; Secretary, H. P. Merriam; Treasurer, T. R. Foster.

'87. — President, Frederic C. Todd; Vice-Presidents, H. C. Spaulding and S. Sturges; Secretary, Geo. F. Curtiss; Treasurer, Geo. O. Draper.

'88. — President, Arthur T. Bradlee; Vice-President, L. A. Ferguson; Secretary, Geo. E. Clafin; Assistant Secretary, E. W. Heath; Sergeant-at-Arms, Russell M. Clement.

'89. — Temporary Officers: President, Hollis French; Vice-President, J. P. B. Fiske; Secretary, H. G. Young; Sergeant-at-Arms, J. S. Hyde.

ATHLETIC CULB. — President, Chas. Wood, '86; Vice-President, T. D. Brainerd, '87; Secretary, Theodore Stebbins, '86; Treasurer, P. R. Fletcher, '87.

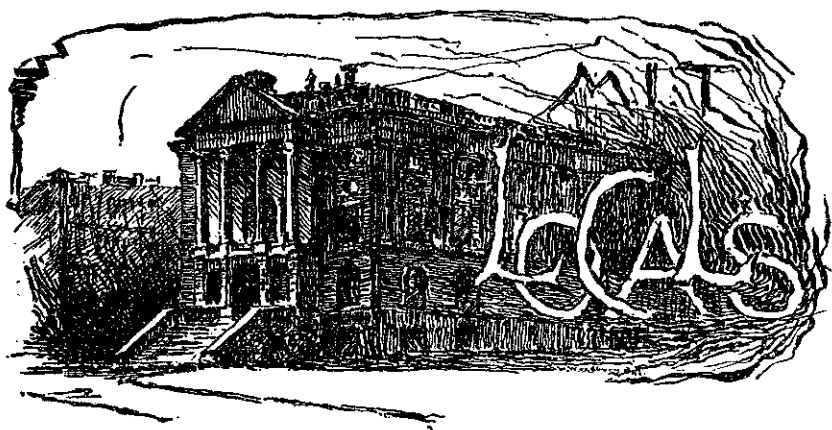
FOOT-BALL ASSOCIATION. — President, P. R. Fletcher, '87; Secretary and Treasurer, H. D. Sears, '87; Manager, W. L. Dearborn, '88; Executive Committee, P. R. Fletcher (Chairman), J. M. Smith, Jr., '86, S. W. Bowles, '87, W. L. Dearborn, '88, and R. Morgan, '89.

CYCLE CLUB. — President, W. J. Banes, '87; Vice-President, F. H. Adams, '88; Secretary and Treasurer, E. W. Heath, '88; Captain, F. J. Wood, '88; 1st Lieutenant, E. O. Goss, '87; 2d Lieutenant, Montgomery Rollins, '89.

GLEE CLUB. — President, N. Q. Stewart, '87, Vice-President, F. E. Shepard, '87; Secretary and Treasurer, John L. Shortall, '87. These with T. W. Sprague, '87, constitute the Executive Committee.

ORCHESTRA. — Manager, E. G. Thomas, '87; Secretary and Treasurer, G. L. Manning, '88; Director, D. P. Goodrich, '89.

SOCIETY OF '87. — President, F. E. Shepard; Vice-President, F. C. Todd; Secretary, T. W. Sprague; Treasurer, Guy Kirkham; Directors, J. H. Mirrlees, H. D. Sears, and Solomon Sturges.



The Glee Club is to be continued this year.

The Bicycle Club now numbers fifty-five men.

The Portfolio Club of the Architects will be reorganized.

The 2 G held its regular meeting at Young's Hotel last Wednesday.

Competition for the prize offered for the best design for a cover for *Technique* closes Nov. 9th.

Mr. W. D. Windom, of the last class in architecture, is married, and living in Washington.

The first afternoon dance of the season is announced to take place in the gymnasium on the 14th inst.

Mr. H. Ward Leonard, '83, the first president of THE TECH, was a recent visitor at the Institute.

The Cycle Club did not have their usual run on Saturday last, on account of the Yale-M. I. T. foot-ball game.

A new machine for testing the torsion and bending of shafts has been added to the laboratory of applied mechanics.

Mr. Emil Carlson has taken the place of Mr. Ross Turner as teacher of water-color in the architectural department.

The senior mechanicals will take up boiler-designing, under Professor Schwamb, when the plates, that they are now working on, are finished.

Proof-sheets of the list of students for the catalogue have been posted. The publication of the volume may now be expected before the semi-annuals.

The fourth-year electricals, together with their instructors, have formed a technical society

similar to the one existing in the biological department.

The life and cast classes of the Architects will begin soon. A rearrangement of the lights in the room is found to be necessary.

The average weight of the rush-line of the foot-ball eleven is 177 pounds. The average weight of the whole team is only a few pounds less.

QUERY.—Is it strictly true to say that the man who has just been chipping, and has mistaken his hand for the chisel, is having a bang-up time?

At the beginning of the year a programme for a house and barn was sent to the Architects by a gentleman, with a prize of \$50 for the best drawing.

A small premium has been offered to the fourth-year architects for the best design of a public drinking-fountain, to be built, probably, in the Public Garden.

The newly-formed orchestra, which now numbers nearly a score of members, held its first rehearsal last week. The director is Mr. D. P. Goodrich, '89, who conducted the English High School orchestra last year.

Third-year chemists are now industriously studying ancient methods of analysis, as given in the earlier volumes of *Fres. Zeitschrift*. After a ten-page article has been laboriously read through, the translator is frequently calmly informed that the method is now obsolete.

The Freshmen have a base-ball nine, consisting of the following men: Clements, Bates, Seavy, Ewen, Ayer, Kendrick, Russell, Marcy, and Thomas. They have played two games, being defeated by the Cantons, 12 to 9, and defeating the Hyde Parks, 18 to 4.

A BIT OF FRESHMAN PHILOSOPHY.—A Freshman, preparing hydrogen (by passing steam over red-hot iron), burned the corks in the end of the tube, and, as hydrogen was not given off, concluded that it must have united with the burned corks — forming *carbonic acid* gas.

## THE COLLEGE WORLD.

HARVARD. — Ex-Minister Lowell has presented the library with a collection of 688 volumes of Spanish, Italian, and English works picked up by him while abroad — The *Crimson* enters upon its eighth volume. — The Harvard College Co-operative Society is to continue its work the coming year. The expenses of this Society are met by an annual fee of \$2.50 from each member, and a profit of from 5 to 10 per cent on goods sold. Eight hundred and thirty-seven men are already enrolled as members. — The first issue of the new Harvard literary monthly appeared Wednesday. It is modeled after the *Yale Lit.*, and the *Nassau Lit.* of Princeton. — The Harvard Law School entering class numbers 52 against a class of nearly 80 a year ago. All but three of the members are college graduates.

YALE — The report of the Yale navy, recently published, shows that the total indebtedness has been reduced \$983.16 during the past year. There is still a debt of \$1,131.31 to be paid. *Ex.*

CORNELL. — President Adams will be inaugurated on November 17th, which day will consequently be a holiday for the entire college. — Cornell University is to have a course of study in the Malayan language. Professorships of Maori, Congo, and Zulu have yet to be established. *Ex.* — The faculty of Cornell have awarded nine scholarships of \$200 a year each, and good for four years. They were contested for by over sixty candidates.

IN GENERAL. — Dartmouth Juniors have refused support to the College foot-ball team because the manager was not chosen, as is customary, from their number. — The Williams College faculty have abolished "annuals" and substituted semi-annual examinations at Christmas and Commencement time. — Columbia College recently received from Prof. Tyndall a gift of \$10,000. — Wesleyan has been presented with a collection of 1,500 Græco-Roman coins. Harvard is the only other American college that has a similar collection.



The Editor feels lone and miserable,  
When he can find no joke that's scissorable.

—Puck.

In olden days the hunter used to "wind his horn," as he pursued his game up hill and down dale. Now he only unwinds the top of it. — *Ex.*

"Father," asked Mrs. Homespun, looking up from the newspaper, "what is all this trouble about the Carolines?" "About the Carolinas?" replied Mr. Homespun. "Nothing unusual, I reckon. The confounded things allers do rot before they're half eaten up. I'd give more for a good old Irish pertater than for a hull bushel of 'em." — *Transcript.*

## NOVEMBER.

The summer days are dead, and nature grieves;  
The rust has come again on all the leaves;  
In golden ruin and crimson-flushed decay  
The forest verdure falls and fades away.

— "Outing" for November.

Doctor: "I am going to give you three pills, one of which you are to take before each meal."

Patient: "How much?"

Doctor: "One dollar, ma'am."

Patient: Patient: "If I were to take a double quantity, two before each meal, would they come any cheaper?" — *Transcript.*

Now the farmer in the autumn  
Garners in his crops of grain,  
'Gainst the time when cold nor'-easters  
Scream along the wintry main.

And the largest squash and pumpkins,  
Ears of corn and apples rare,  
He lays aside — with careful pride —  
To take them to the Fair.

So the Junior in new raiment  
Dresses with laborious care,  
And with all his charms embellished,  
Like the farmer, seeks the "fair." — *Bowdoin Orient.*





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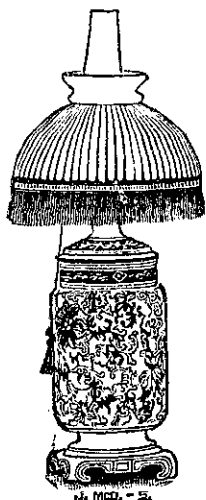
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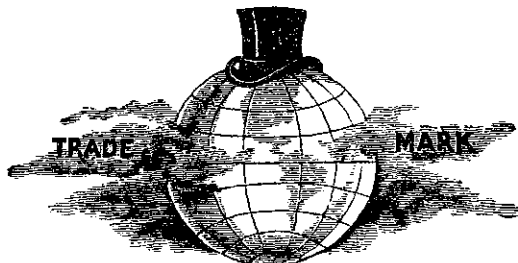
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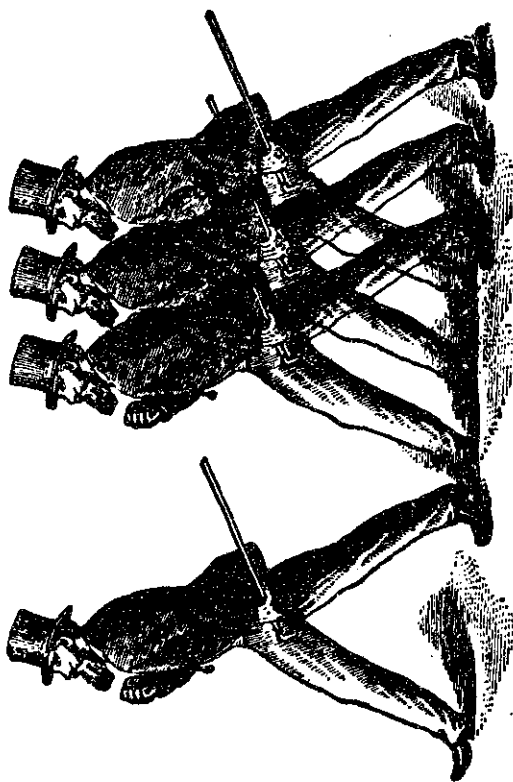
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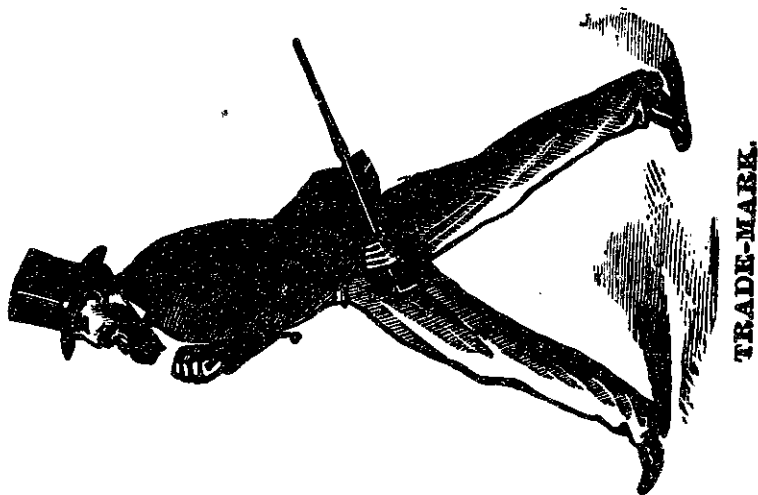
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