

# The Tech.

No. 15.

BOSTON, MAY 31, 1882.

VOL. I.

## THE TECH.

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

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TRULY time flies quickly: the school year is nearly over; the present number of THE TECH is the last of Volume I. And now, after having discussed many of the great issues of human life, the most important political questions, and some of the most abstruse theories of science, we propose to come down to a more prosaic subject, and talk about ourselves.

Our history thus far is a short one, and is familiar to most of our readers. We can well remember the first meeting in Room 4, the other meetings that followed, the organization of forces, and the appearance of the first number of the paper. And how we buttonholed for copy, and racked our poor brains for great ideas, — all these things will never be forgotten. But all are past, and as six months ago it was our lot to make our bow before the public, so now it is our duty to say farewell.

We have been looking over some clippings from our exchanges, and they tell us, what we knew before, that this paper has differed in some respects from its more pretentious contemporaries. Representing a school of science, conducted by men whose aim has been a knowledge of the sciences rather than literary attainments, the tone of the paper has naturally been scientific rather than literary. Reviewing our past work, we can discover no reason why the "new departure" is not perfectly legitimate and in good taste; we think it might even be called an improvement. Many college papers have long since lost all pretension to literary merit, and aim solely to amuse.

One of the aims of this year's management has been to build a foundation for the years to come, — a foundation worthy of the Institute, and one which should enable the paper to attain the greatest eminence in the future. Such has been our aim; and we rest assured that through the efforts of those who are to follow, THE TECH will establish for itself a name that shall not be forgotten.

No college paper ever closed a year's work with brighter prospects. The interest which has thus far been taken in the enterprise warrants its next year's success. The Institute itself is growing; it is but natural that THE TECH should grow with it. It is, then, with joy and not with sadness that we lay down our pens, say good-by to the school and to the paper, and wish all a pleasant vacation.

WE hope that before the next term opens some new arrangements will be made in regard to the so-called "Institute Dining Hall." Whether it be from an effort to furnish meals at a low price we do not know, but certain it is that the establishment has seen no improvement in the last year, and that the present state of

the concern is no credit to the institution whose name it bears. About half our students would be patrons of the restaurant if it could be kept in a first-class manner.

THE graduation exercises of the Class '82 will take place Tuesday, May 30, at 11 A. M. The programme is as follows: Introduction, President Walker; Reading of Abstracts and Presentation of Diplomas; Address, Prof. William B. Rogers.

Following are the subjects of theses: The Action of Vegetable Acids on Lead and Tin, Francis P. Hall; The Concentration of an Argenterous Galena from Colorado, Henry F. Ross; False Work used in the Construction of the Broadway Bridge, Frank C. Morrison; The Bill of the Common Fowl, Edward G. Gardiner; Melting Points and Densities of Hydrated Crystallized Chlorides, Carrie L. Rice; A Romanesque Church, Edward F. Ely;\* Report of an Engine and Boiler Test, Walter B. Snow;\* Quantitative Experiments on the Deoxidizing Power of Formic Acid, and the Oxidation of Certain Organic Acids, Howard V. Frost;\* On the Reduction of Vershire Copper Ore, James P. Monroe;\* A Comparison between the High and Low Speed Engine, Wm. T. Ripley; Study of the Alcohol Thermometer at Low Temperatures, Anthony C. White;\* The Glazes applicable to Biscuit Ware, John F. Low; Design for a Large Romanesque Church, Grenville Temple Snelling; Indicator Diagrams obtained in Practice, Harry G. Manning;\* Flax and its Manufactures, John H. Ross; Extraction of Gold from a New Hampshire Gold Ore, George W. Mansfield; Water Motors, Harry A. Foss; Charge and Products of a Blast Furnace, Chas. D. Jenkins; A Romanesque Church for a Large City, George L. Heins; Concentration of Calumet Sand, George Faunce, Jr.;;\* Carson's Machinery for the Transportation of Earth, James W. Johnson;\* The Extraction of Gold and Silver from Jewellers' Sweep, Charles A. French; The Lowell Pumping Engine, Thomas B. Carson; Chemical and Physical Analysis of Cotton Fibre, Clara P. Ames;\* Report on Mines, Charles O. Parsons of the Class of '73 in the course of Geology and Mining.

Those whose names are marked with a star will read abstracts on Graduation Day.

## Contributions.

### Stained Glass.

#### IV. — ITS MODERN ASPECT.

IN 1867 (and not 1857, as I erroneously stated in a previous article) the glass manufacture took a start in England, as did almost all the useful and decorative arts, due to the Exposition. A London lawyer, Charles Winston, Esq., who was of rather an artistic turn of mind, and who had given his attention especially to glass, came to the conclusion, after studying very carefully a good many ancient and modern examples, both English and Continental, that the modern glass lacked brilliancy, and had a dead, uninteresting appearance. He was a long time puzzled for a reason. The coloring matter used in the modern glass was without doubt the same as that used in the mediæval; the drawing of the windows was beyond question vastly better; and the selection and grouping of the colors themselves was done with as much care as formerly. Why it was, therefore, that the mediæval glass so far outdid the modern in effectiveness, seemed to be a perfectly insoluble problem. Mr. Winston, however, was not to be discouraged, and he still continued to think and to investigate. One day the thought struck him that the fault might not lie so much in the lack of skill of the modern manufacturers as in the very high state of perfection to which they carried their art; and this actually proved to be the case. The later glass was of a uniform thickness throughout, perfectly smooth on the surface, and free from bubbles and other like defects, and transmitted the light directly. In the older glass, on the contrary, from lack of skill on the artisans' part, there were all kinds of irregularities and eccentricities of manufacture. These divided and scattered the rays of light in every direction, like a cut gem, and plainly imparted a lustre to the window which no modern composition could pretend to rival. Following out this idea, Mr. Winston went to certain glass-makers, and with their

help had some glass made, which, while it was still soft, was put through a number of processes to render it as poor (from the manufacturer's point of view) as possible, and as good (from the artist's) as possible. They put some of this into a window, and found, to their great joy, that it fulfilled all their expectations. In this way what is now known as "antique glass" was invented. Mr. Winston and his manufacturers at first took out a patent on the process; but this has long since run out, and such glass now is made everywhere. There are various kinds of this antique glass, as machine rolled, hand-rolled, hammered, etc., according to the different ways of treatment used to get the irregularities.

This invention of the so-called antique glass is the principal feature of modern stained-glass manufacture: for it proved us able to compete with, if not excel, our ancestors in this beautiful art. About three years ago, Mr. John La Farge and Mr. Louis Tiffany both conceived the idea of introducing the manufacture of stained-glass windows into this country. To be sure, some church windows had been made in this country prior to 1879, but they were of no moment artistically, any of any value usually being imported. Mr. La Farge and Mr. Tiffany both make a kind of glass they call opalescent, which is streaked with white. Their methods are secret, or secured by patent; but it is reasonable to suppose that the white streaks are due to the presence of stannous oxide in the coloring matter. Of late, stained glass has come to be very extensively used in the decoration of private dwellings. One of Mr. La Farge's windows for this purpose — that for the house of Henry Marquand, Esq. — was a most gorgeous piece of coloring and excellent composition. The subject was a rose-tree blowing in the wind. The blending of the blue of the sky and the greens of the plant was most happy, while the spot of interest lent to the design by the light rose in the centre was a very effective piece of composition. No paint whatever that I could see was used, the shading being obtained

by an actual modelling of the flowers themselves, by moulding them. This window was on exhibition last fall at the Art Museum, and no doubt many of my readers saw it for themselves. In our own city, Mr. Frederic Crowninshield has been the pioneer in stained-glass work. His first work is a representation of St. Christopher crossing the stream with the child Jesus on his shoulder, and is placed in the Sunday-school room of the First Church. In this window he adopted throughout the Asiatic convention of flat tints without any modelling at all. From the point of brilliancy, it was a great success; yet it cannot be denied that there is a flatness about the whole composition which is a little disappointing. In his other window, in the same room, the subject of which is the youthful David, he has erred a little in the other direction, and put too much enamel on his figure of David. The great charm, however, of all Mr. Crowninshield's windows, is the excellence of the drawing. The rest of the glass in this building (that in the church itself) is of English manufacture, and all excellent; especially a gressaille, out of the centre of each pane of which a dab of the black enamel has been taken. This makes innumerable little bright spots all over the window, and the effect is highly pleasing.

One of the most famous of the English firms, at present, is Clayton & Bell. Any impression which might be gained from the work they have sent to this country, however, would be far from favorable. All the glass in the New Old South is from their shops. There is one little window, though, in the south transept of the First Church, which redeems their reputation. Its subject is the Prodigal Son. It is very small, not measuring more than two by three feet; but notwithstanding its diminutive size, it is almost entirely a mosaic window, and some of the leading exhibits beautiful workmanship.

Among the curiosities of modern glass work is the using of the stands of broken wine-glasses for bull's-eyes. Bull's-eyes were formerly the part of a piece of crown glass where

the *punte* or blowing tool was inserted. When, then, they gave up the manufacture of crown glass to a great extent, there were no more bull's-eyes to be had; so the window people hit upon the idea of getting all the old broken or defective wineglasses they could from their colaborers, the table-ware people, and utilizing them in their branch of the trade. A device which I believe is of purely American origin has come up of late. It is called "platings," and consists in placing one piece of glass behind another, and thus getting every variety of tint, on the same principle as mixing colors.

Having finished this brief and hasty sketch of one of the most beautiful of the decorative

arts, I feel it my duty to apologize for the many shortcomings of the foregoing papers. They were all of them written in great haste (usually on the evening before the manuscript went to the printer), and without any regard

whatsoever to logical sequence or niceties of diction. Hoping, therefore, that any incongruities will be pardoned, I shall be satisfied if I can feel that any of my readers have picked up any single fact which they did not know before.

G. T. S.

#### The Steam Engine Indicator and What it Indicates.

THE indicator diagrams shown in the preceding articles have all been taken from automatic cut-off engines. In this class of engine the governor controls the speed of the engine by automatically varying the point of cut-off. These engines, generally, and all of those from

which diagrams have been shown, have an admission or steam valve and an exhaust valve for each end of the cylinder, making four valves in all. Either of these valves can be changed without disturbing the action of the others. Fig. 1 is a diagram from a plain slide-valve engine, in which a single valve does both the admitting and exhausting for each end of the cylinder, and any change in one point changes all the others. In this class of engine the points of cut-off, release, and compression always occur at the same point in the stroke, whatever the number of revolutions of the engine or pressure of steam. In these two classes of engines the governor controls the speed of the engine

in an entirely different manner in each case. As we have said before, the point of cut-off in the automatic engine is varied by the governor; but in the slide-valve engine this point is always at the same point of the stroke, and

does not vary. The governor of a slide-valve engine controls the speed of the engine by opening or closing, more or less as circumstances require, a valve in the pipe which carries steam to the engine. The wider this valve is open, the less obstructed is the passage to the cylinder; and hence a higher steam pressure is obtained in the cylinder, and *vice versa*. In passing through this governing valve the steam is reduced in pressure on account of the obstructed passage, and still further reduced in passing through the ports, so that the steam line in Fig. 1 shows a continual falling of the pressure from admission to cut-off. This wire-drawn steam line is always seen on diagrams

Fig. 1.

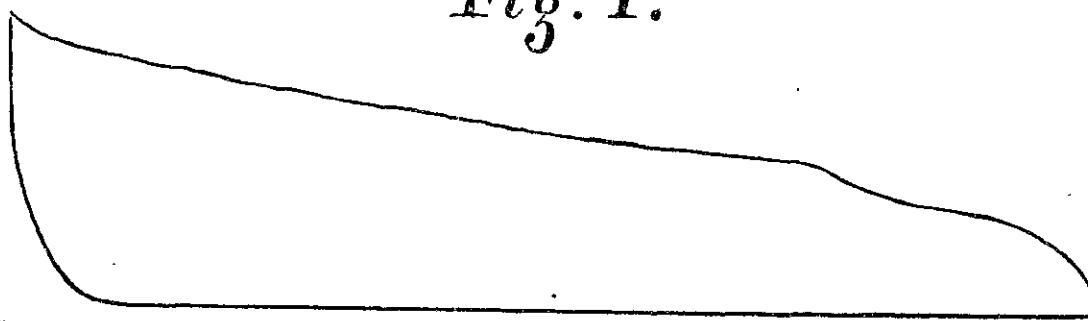
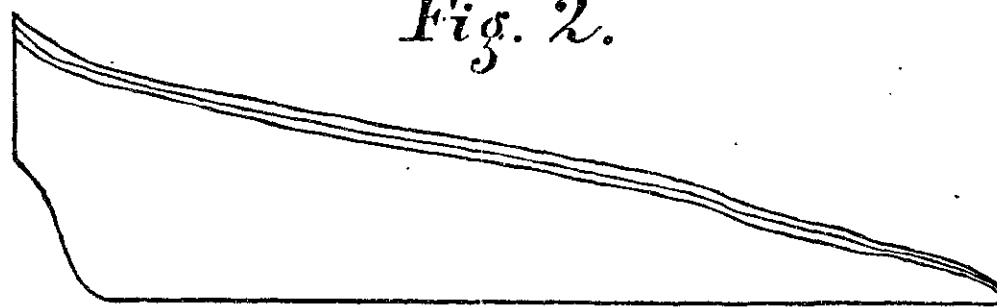


Fig. 2.



from slide-valve engines. Now, as we have seen, the governor controls the speed in this engine by increasing or diminishing the pressure, and we should expect to get diagrams of different heights in the same engine, as the pressure in the cylinder varies.

Fig. 2 shows the variation in the pressure in the cylinder during three revolutions, there being three distinct steam and expansion lines. It will also be noticed that the points of cut-off, release, and compression all occur at the same point in

the stroke. From this it will be seen that the same volume of steam is always admitted to the point of cut-off, and that the same degree of expansion takes place; but the pressure of the steam being varied by the governor, more or less work is performed as required. In

an automatic cut-off engine exactly the reverse of the above statement occurs, for the full boiler pressure is always admitted to the cylinder; but the volume of steam admitted before cut-off occurs, varies. In this way the point of cut-off occurs earlier or later in the stroke, as a small or large amount of work is called for. The steam may be admitted during the whole of the stroke if necessary; but in this case the benefits of expansion of the steam are not obtained. Cut-off occurs from about one fifth to one third

of the stroke, to obtain the most economical results. Fig. 3 is a diagram from an automatic cut off engine, and represents the variation taking place during three revolutions. We notice that the steam line is the same for each revolution, but that there are three distinct expansion curves. Because cut-off occurs later in the stroke, expansion does not commence until later, and therefore we have three different points of cut-off and three expansion curves corresponding.

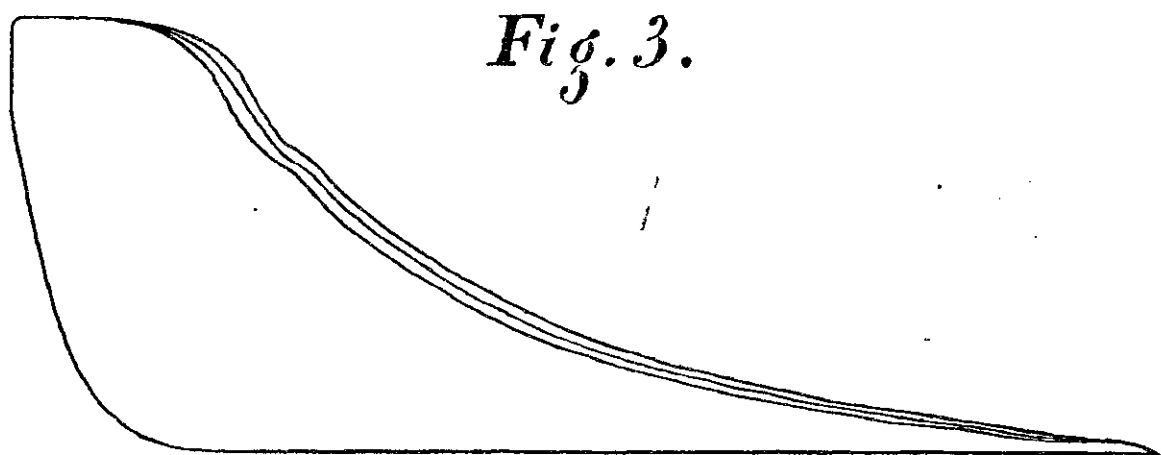


Fig. 3.

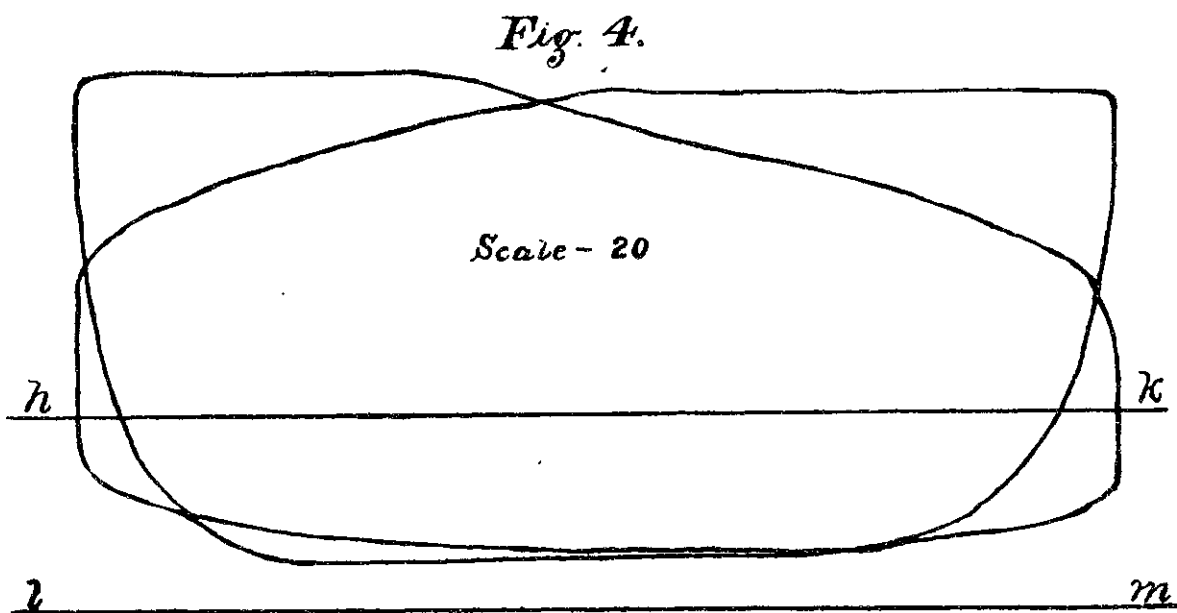


Fig. 4.

Scale - 20

All the preceding diagrams have been taken from engines which exhaust the steam directly into the atmosphere. On this account the atmospheric pressure of 14.7 lbs. per square inch opposes the movement of the piston, and we must overcome this back pressure before any effective work is performed.

To this atmospheric back pressure must be added the back pressure in the engine itself, caused by bends and cramped passages in the exhaust pipe. To get rid of this back pressure due to the atmosphere, the *condensing* engine is used, the preceding engines being called *non-condensing*. In the condensing engine, the steam, instead of being exhausted into the atmosphere is conducted into a tank called the condenser. A spray of water in the condenser mingles with the exhaust

steam, condensing it and forming a partial vacuum. It is probably understood that a perfect vacuum cannot be obtained in practice; but in satisfactorily working condensing engines about 13 lbs. per square inch of the atmospheric pressure is removed. The removal of the back pressure adds 13 lbs. per square inch to the pressure in the cylinder; but this is not all gained in effective work, for the water of condensation must be removed at every revolution of the engine. If this water was not removed, it would soon become so hot that the exhaust steam would not be condensed, and the engine would cease moving. A pump must be used to raise the water from the condenser, and the work performed in getting rid of the water diminishes the effective work done.

Fig. 4 represents diagrams from both ends of the cylinder of the condensing engine on the ferry-boat "City of Lynn," of the Boston, Revere Beach and Lynn Railroad. The atmospheric line  $h k$  is drawn, and also the vacuum line  $l m$ , the distance between them representing a pressure of 14.7 lbs. The only peculiarity in these diagrams is that at the end of the stroke, when the steam is exhausted, owing to the partial vacuum formed, the pencil of the indicator, moved by the pressure of the atmosphere on the indicator piston, drops below the atmospheric line. The partial vacuum in the condenser does not remain constant, but gradually increases until compression commences on each stroke. The cut-off occurs quite late in the stroke, and always at the same point on the same end of the cylinder. There is no governor, and if the pressure rises or falls the boat goes faster or slower.

H. G. M.

### Eighty-Two.

FOR the last time, we take up THE TECH'S quill, and with a strange commingling of joy and sorrow inscribe, for the benefit of all whom it may please to read, a brief sketch of '82.

From the moment of our first gathering on Sept. 30, 1878, down to the present day, with

wonderful pertinacity we have held together in perfect unison. This is the more to be wondered at when we consider our forced separation in courses, and our few class and social meetings; yet through it all, even down to the recent animated discussion on temperance at the class supper, perfect harmony and good feeling has existed.

How well we all remember that first eventful day when, by that queer little soul, the departed king of the Freshman drawing-room, our seats and desks were assigned; how, with hopes and fears, with varied surmises and forebodings, we sat perched on our high stools, with arms akimbo and legs dangling, watching that little body popping hither and thither until all our valiant thirty-six were provided for! Could we have but foretold our future troubles and obstacles, the reverse of such a merry, light-hearted picture would have been presented. We could not then look forward, but we can now look back: it is the privilege of venerable seniors to be retrospective.

Collect, then, your scattered memories. In the Fresh year, do you not remember the eagle glance of our cruel drill-master, with his peculiar nasal m-ai-r-r-ch; the shrill, mysterious shriek of the steam-radiator in the drawing-room; the thunderous thwack of drawing-boards as 4.30 P. M. drew nigh; that one grand, glorious hall-way "rush" which, like a Bay of Fundy tidal wave, carried all, all before it, even to one mighty Prof?

Again, with another tug at your memory, do you not remember those animated debates in "projections"; those quiet discussions of the "binominal theory," logarithms, and spherical trig.; those eloquent discourses in English lit.; those peaceful wanderings in chemistry; and, above all, the joyful hastening, as the year drew to a close, to

Room 12. General Chemistry. Nichols. 9 A. M.?

Well, somehow the year closed; and, after a four months' recreation, we were back again for another siege.

Counting noses, we found alas, "for all the

ills that student flesh is heir to," our numbers were reduced to twenty-nine. Amongst our losses we had to count our pale, flaxen-haired but mighty youth, who now doth reside at West Point; our Wisconsin giant, —

"Ful big he was of brawn and eek of bone";

our inquisitive friend, —

"Ful long were his legges and ful lene,  
All like a staff; ther was no calf y-sene";

and many others.

The Soph. year passed only too rapidly; likewise did the Junior. Quiet years they were, too, — saddened once by the departure of our literary prodigy, about whom we can only say, —

"'Tis known he could speak Greek  
As naturally as pigs squeak."

Throughout those two years we bent all our energy towards the attainment of that wretched — when missed — little word of six letters. A few, however, we must except, and especially one, — a most noble mechanical, who, through his superabundant caoutchouc properties, kept the athletic banner of the class waving high above all, and does now. All praise to him!

With the departure of these two years, we left behind us our physics, with its beautiful centimetre-gram-second system; our mining, with its kind chaudrons and plunger pumps; our architecture, with its contracts, specifications, and constructions; our logic, which, like the pre-historic trilobites, has ne'er since its day been seen; our chemical theories and Deutsch translations; our French; our German; our calculus; and last, with bitter pangs of regret, that which had been the salve for our lacerated hearts, we left, to its perpetual repetition, Gresham's law, Matthew Arnold's poetry, and McCarthy's history. Alas! alas! we ne'er more shall hear the beautiful words of our orator, which sparkled and foamed and in vapor were o'er; nor the learned phrases of our savant, which seemed to work themselves out from filtering recesses of thought and of lore. All, all are now but fleeting shadows of the past.

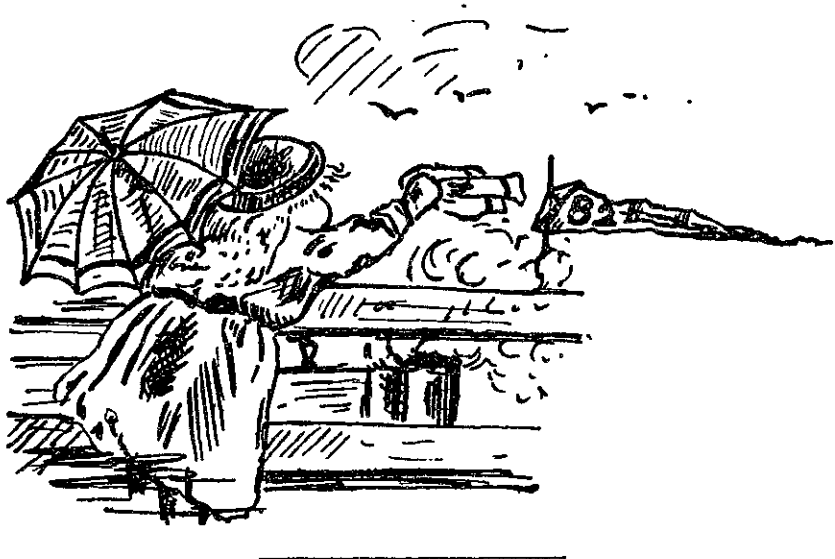
Mark the change. Though lessened in numbers to but twenty-four, with what alacrity and joy we prepared for the final struggle; with what restless energy we strode on, leaving month after month behind us, till at last, — yes, at last that 10th of May came, and with its going went the last wrestle with thesis paper. Now for exams., — few, but terrible, and soon consigned to their proper fate, leaving us free, but anxious. Don't mention it. Would that that fearful F had never been born!

Two important points can we claim precedence for in our Senior year, — the agitation and attention called to the school's defective fire apparatus and escapes, and the opposition shown towards the tendency of some of the younger classes to go off in a body to plays, whereby discredit might be brought upon the whole school.

The class as it stands to-day is in many respects peculiar. As a class of but twenty-four, with an average age of twenty-one years and ten months; an average height of five feet eight inches, with extremes six feet four inches and five feet two inches; with an average weight of one hundred and forty-three and one half pounds, and extremes two hundred pounds and one hundred and four pounds; with hats averaging in size No. 7; with no left-handedness; with but three cases of nearsightedness; with no prominent whiskers, but mustachios, — oh, my! from *petit* traces of down to immense possibilities; with but six users of tobacco; with eight total abstainers, and the rest practical temperance men; with but twelve dancers; with all holding religious views, the variations of which no pen could describe; with extreme individuality; and with but an average of one condition apiece for the four years, — we stand forth congratulating ourselves that, physically, morally, and intellectually, we are as well off as a class could well be.

Especially do we pride ourselves that two of our number are young ladies, — justly proud, too, for in this age of progression, when equality is rightly claimed, we have had conclusive proof of their equality, Miss Hardaker to the contrary.

Another important era in our lives has come : with that courage, industry, and attention to duty which has characterized us in the past, let us go forward to meet it; let us meet it with thanksgiving in our hearts for past successes; with no pomposity for our learning, but an earnest desire to learn more; and finally, with a deep, true, never-to-be-forgotten love for our dear old Alma Mater.



#### “Clearance” in the Wheelock Engine.

**M**R. EDITOR: Members of the  $\Sigma$  M. E. will remember that in a recent discussion of the Harris-Corliss and the Wheelock engines, there was a difference of opinion as to the loss due to the greater “clearance” of the Wheelock. In this engine, the clearance is increased during the expansion by the space between the cut-off and main valves; and when the exhaust takes place, steam is entrapped in this space and kept there till the beginning of the next stroke. It is claimed for this arrangement that there is no loss due to the space between the valves, because no steam is exhausted from it. Whether this view is correct or not can be easily shown; and as the principle involved is important and of general application, it may be worth while to illustrate it by an example.

Suppose we have an engine without any clearance, taking steam at 120 lbs. pressure during  $\frac{1}{6}$  of the stroke. Assuming Mariotte’s law, the pressure on the piston at the time of cut-off, or  $\frac{1}{6}$  full stroke, is 120 lbs. At  $\frac{2}{6}$  stroke, the steam has doubled its volume, and its pressure

is 60 lbs.; at  $\frac{3}{6}$  stroke it is 40 lbs; at  $\frac{4}{6}$  stroke, 30 lbs.; at  $\frac{5}{6}$  stroke, 24 lbs.; and at the end of the stroke, 20 lbs. By calculating the pressure at a sufficient number of intermediate points, and taking the average, the mean pressure for the whole stroke will be found to be in this case about 56 lbs.; and if we deduct 16 lbs. for back pressure, we have 40 lbs. as our mean effective pressure.

Now take a case where we have a clearance of say 1 per cent of our original cylinder capacity. That equals 6 per cent of the space through which the piston has advanced at  $\frac{1}{6}$  of its stroke; so at the instant of cut-off there is 6 per cent more steam behind the piston than there would be without this clearance. When this larger amount of steam has expanded to fill the cylinder, its pressure by Mariotte’s law would be about 21 lbs., or  $\frac{21}{120}$  of what it was at first; and the clearance space, which originally contained 6 per cent additional weight of steam, would now, owing to the reduced density, contain only  $\frac{21}{120}$  of that amount, or about 1 per cent. If this amount is entrapped between the valves until the next stroke, *à la* Wheelock, the net additional steam consumed on account of clearance is 5 per cent.

But if we calculate the mean effective pressure in this case in the same way as before, we find it to be  $41\frac{1}{8}$  lbs., a gain of 2.8 per cent over the 40 lbs. obtained without clearance. As any one can verify this result for himself, the arithmetical work is omitted for want of space. It is clear that to gain 2.8 per cent in power, we have had to expend 5 per cent more steam, showing a loss of over 2 per cent of steam for a clearance of 1 per cent between the valves of a Wheelock engine. G.

THE outdoor spring meeting of the Athletic Club will be held at Beacon Park, Saturday, May 27, at 2 p. m. The following officers will probably serve: Clerk of course, H. Ward Leonard, '83; scorer and measurer, Chapman, '85; referee, Wendell, H. A. C.; judges, Snelling, '82, Richards, '83.

## In General.

THE last TECH of the term. All prize squashes, premium plums, etc., to be noticed in the next issue, should be sent to the general advertising agent.

Senior class supper, May 30.

A base-ball nine, — qui-nine pills.

Only four unpaid subscriptions to THE TECH.

A German favor, — music from a street band.

Are degrees conferred on a legal holiday legal? Give it up.

The interest which the passers-by take in tennis is something phenomenal.

A type-writer has been added to the equipment of the secretary's office.

We understand that the Brunswick Exchange will remain closed until the Institute reopens.

Chauncy Hall had a prize drill on the 19th, in the Mechanics' Fair Building.

The Seniors have only one try at the annuals. No conditioning, — it's hit or miss.

Mr. John Duff, Jr., while melting some phosphorus in the laboratory the other day, was quite severely burned.

Jones says his chum is like the moon, — gets round to his last quarter about once a month.

The indications are that '86 will number between one hundred and forty and one hundred and seventy.

A Freshman has lost an umbrella, and has the guileless innocence to advertise for it on the bulletin board.

Mr. H. H. Cutler, '81, has recently applied to the laboratory engine a new governor of his own invention.

The Senior bills for breakage, etc., in the chemical and mining labs, vary from some eight to twenty-three dollars.

"He Has Dyed the Golden Hair," — the latest popular song, by the author of "She Has Climbed the Golden Stair."

The '82 miners and chemists recently spent a

very pleasant evening with Prof. Richards at his residence in Jamaica Plain.

Jones — "What did you think of my argument, Fogg?" Fogg — "It was sound, very sound [*Jones is delighted*]; nothing but sound, in fact." Jones reaches for a brick.

All South End young ladies desiring pictures of our former advertising agent may now obtain them for twenty-five cents each at Hardy's. The demand was so great that Mr. Munn was forced to adopt this plan.

Friday and Saturday mornings of last week were devoted by the Seniors to the reading of abstracts of theses in Huntington Hall. Pres. Walker and Professors Ordway, Niles, and Atkinson were present. Eight only of the class are to read on graduation day.

Owing to the very unfavorable weather of Saturday the 13th, there were but few spectators present at the exhibition drill of the C. C. M. I. T. The drill itself, however, was none the less excellent on that account, and reflected great credit on all concerned. The artillery drill, which has been one of the most interesting features of our former exhibition drills, was for some reason omitted.

From the *Woman's Journal* we learn that an Illinois man has four daughters. Two are physicians of repute and large practice; one is an acting minister; while the other is a dentist, practising in Chicago. It may not be long before there will be assayers, chemists, surveyors, superintendents, etc., distributed throughout that free and go-as-you-please land, all young lady graduates of the M. I. T.

It is reported that our clerical friend, Mr. Alfred Butler, '82 sp., who is now at Lawrence, has renounced his intention of becoming a Unitarian minister. He has expressed his belief in Catholicism, and passed under the shadow of the Pope's umbrella. Having had an intimate acquaintance with that gentleman, we can safely predict that it won't be long ere the umbra of the aforesaid umbrella will virtually extend over the entire solar universe.

## Exchanges.

IN the time-honored words of the ex-editor, preparing for his last issue for the year, we take up our pen for the final struggle, and gaze for the last time on the familiar faces of our exchanges, in whose company we have spent the happiest of the few happy hours which are granted during editorial life. Having regulated our feelings with due regard for editorial custom, we incline toward the pathetic, and are indeed sorrowful, as we remember that we shall no longer be privileged to have the first laugh over *Lampy's* wit and satire, or first enjoy the illustrated pages of the *Argo* and *Spectator*, or weep over affecting lines with (or for) the poet of the *Crimson*, or with humble admiration learn how great is the *University Magazine* and how inferior are all other earthly things in comparison. Blended with these indispensable emotions comes a feeling of relief that our paper's first year of existence is over. How successful it has been is to be judged by others; but we think all will acknowledge that we have advanced some steps toward the goal of a successful representative paper, which it was the ambition of our editors to achieve.

Our exchange list for the year, besides including many of the finest scientific journals of the country, has embraced a majority of the best college papers, which oftentimes have cheered our labors with some encouraging word. We allow, however, that at other times, especially during the first month of our existence, the notices which our appearance called forth have *not* been particularly cheering; and on such occasions our feelings toward some of our brothers of the pen have not partaken of the fraternal affection which should characterize colaborers.

But this is our last issue: we must keep to custom, and magnanimously forgive all who have gently or forcibly attempted to "sit" on our unprotected infancy, and who have, perhaps to our advantage, shown up in a strong

light many of our faults and foibles. Our thanks are many; our only regret is that we have not always been able to "sit" back, and are now obliged to have recourse to the coals-of-fire act, and can only send to all our best wishes for their future good fortune and success.

The *Chronicle* reports a new feature at Ann Arbor, being the introduction of the "university system," approaching closely to that of the German university. "Students working on this system will not be held to the completion of a fixed number of courses, though they must take an amount of work approved by the Faculty, and will be held subject to all rules relating to attendance and to examination, unless excused by proper authority. Before they can be recommended for a degree, however, they must have completed all the courses prescribed for the degree sought."

The receipt of a circular from the Faculty of Williams College by parents of several Sophomores, severely censuring the students because of their objection, in writing, to the Latin professor's manner of recitation, has caused some little excitement among the students. — *Ex.*

A circular has been sent to a Cornell paper by a New York photo-engraver, who advises that, "when caricatures of professors are wanted, photographs be sent with sketch, and I will guarantee a true likeness." — *Ex.*

Grace in dining-room. Prof.: "To-morrow there will be no recitations. For these and all his mercies, God's most holy name be praised." Slight sensation. — *Ex.*

An optional in taxidermy is the latest thing at Dartmouth. — *Ex.*

A series of tennis tournaments is to be held at Yale. — *Ex.*

The volume of sketches republished from past *Lampoons* is now on sale at Harvard.

At Illinois College those students who reach a certain standard in daily recitations are excused from examinations. The plan gives general satisfaction. — *Ex.*

# The Tech Supplement.

BOSTON, MAY 31, 1882.

## Clippings.

THE popular gym. janitor came very near losing his ear the other day at the hands of a murderous assassin.

It is requested that all articles belonging to the base-ball club, in possession of members of the club or others, be returned to the captain immediately.

A new floor will be laid in the mechanicals' drawing-room this vacation; possibly in the civils' drawing-room also.

Further Evidence of the Value of our Fire Apparatus. — An enterprising Senior wanted a piece of brass tube the other day, and an instructor, in all seriousness, suggested the nozzle of a fire extinguisher. The Senior acted upon the idea; but the nozzle didn't fit, and the little scheme had to be given up.

It has been stated by competent authority that unless the city votes at once to take the Trinity Square lot owned by the Institute, a building of some sort will be built by fall. If the city takes the land, the corporation is undecided whether to build on the lot on which the Institute now stands or to build on other land. More adequate room will be had by fall.

We were standing on the stairs one morning of last week. The Freshies were congregated about the doors of the room in which the examination in chemistry was to be had. Through some peculiar mistake, a momentary quiet reigned. Hark! what was that? What caused that sickening quiver of those ponderous walls? Anxious eyes and pallid faces were to be seen on all sides. Solemn stillness prevailed. Suddenly from amongst the fearful crowd a voice piped forth, "By Jimmini! feel the thump of the Freshies' hearts."

## Locals.

COLUMBIA Freshmen are enterprising enough to compile a volume of class songs all their own.— *Ex.*

Student pausing before picture in friend's room: "What dam is that?" No response, until finally the repetition of the question draws forth the answer, "Niagara Falls."— *Vassar Misc.*

In one lot three or four calves, and in another two young men with their hair parted in the middle. How many calves in all? — *News.*

We stood at the bars as the sun went down  
Behind the hills on a summer day,  
Her eyes were tender and big and brown,  
Her breath as sweet as the new-mown hay.

Far from the west the faint sunshine  
Glanced sparkling off her golden hair;  
Those calm, deep eyes were turned toward mine,  
And a look of contentment rested there.

I see her bathed in the sunlight flood,  
I see her standing peacefully now;  
Peacefully standing and chewing her cud,  
As I stroked her ears, — that Jersey cow. — *Ex.*

We hear that a petition of the Cornell students was lately sent to the Faculty requesting the establishment of a course in phonography. We wonder this has not been tried at Harvard. — *Ex.*

All this year's graduates of the Lowell School of Design have obtained situations.

The longest '82 thesis, 201 pages, was written by a mechanical; the shortest, 17 pages, by a civil.

'85.

Put away his little rattle,  
Take his little dresses off,  
For he never more will need them,  
He has now become a Soph.

## Mechanical Engineering.

**R**EGULAR or special mechanicals desiring places for work during the summer have been invited to apply to Prof. Whitaker.

Some of our last year civils now in the West are doing especially well, having already received desirable positions, due in great part to the experience gained through summers' work on railroad engineering.

Mr. Beeching has returned, having nearly recovered from his recent illness.

There has been exhibited at New York a bar of steel ore taken from a mountain of that material in Liberia. It had not been smelted, but was as resonant when struck as the finest manufactured steel.

To find the capacity of a circular tank, multiply the square of the diameter in feet or decimals of a foot by 5.874; the product will be the capacity in gallons for each foot in depth.

Prof. Barff, of England, announces that by the use of boro-glyceride, a new compound formed of boracic acid and glycerine, he is enabled to preserve food for an indefinite period unimpaired as to its qualities. The *Mechanical Engineer* asserts that this is not new: railway restaurant men in this country and elsewhere discovered this process long ago without boro-glyceride.

At the recent cotton manufacturers' meeting, the association presented to the department of mechanical engineering of the Institute of Technology a set of models of the arrangement of belts and pulleys for certain difficult problems in the transmission of power. These problems formed the subject of a paper by Nathaniel Hill, C. E., before this association at the November meeting, and were of such importance that the association had this duplicate set of models made, to be used for purposes of instruction in the institution which has hospitably given them the use of their hall at their semi-annual meetings for many years. — *Machinist*.

## Department of Architecture.

**V**ERY few of the special students have come to the examinations, most of them having already secured good places in offices. As no degree depended on their attendance, they thought it best to go to the different positions awaiting them.

Prof. Longfellow signified to the Juniors the other morning, after their examination in design, his intention of resigning.

The petition asking the Faculty for a continuance of Mr. Cummings's lectures, unfortunately could not be granted, owing to the press of business on Mr. Cummings's hands, at present obliging him to postpone the remaining lectures of the course until next fall.

Mr. Shepley, Mr. Hale, and Mr. Jones have already gone out to Mr. Richardson's office in Brookline, and they will be followed later by Mr. Heins.

At the meeting of the A. A. M. I. T. last Wednesday evening, the question of the reconstruction of the Association was again discussed. The authorities of the Art Museum having granted the Association the use of a room in their building next winter, it is proposed to reorganize upon a broader basis under the name of the "Architectural Association of Boston," and to ask the Boston Society of Architects to cooperate by occupying the same room; while some of its members will deliver courses of lectures from time to time throughout the winter. Among the various motions of the evening was one to pass around the hat, in order to collect sufficient funds with which to furnish the new quarters. This was unanimously adopted, and some thirty dollars collected on the spot. Mr. Andrews also read a favorable report from the committee appointed at the dinner last fall to look into the matter of establishing an Association Sketch Book. This was unanimously adopted, after which the meeting adjourned.

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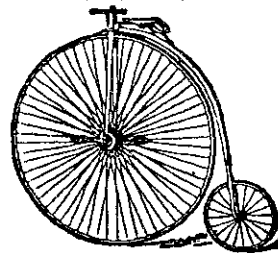
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