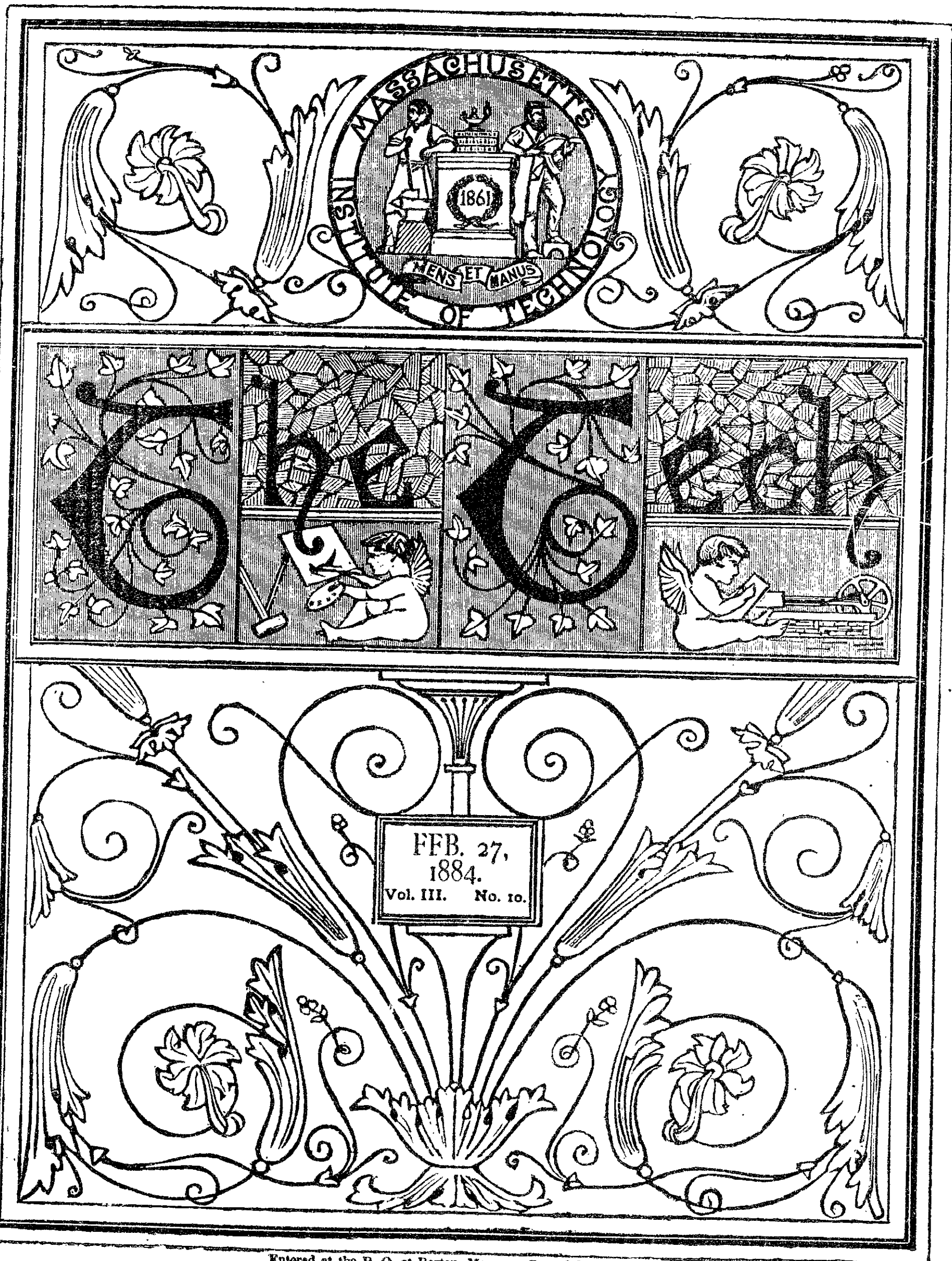




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The Tech.

VOL. III.

BOSTON, FEB. 27, 1884.

No. 10.

THE TECH.

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

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THE habit of reading the newspapers is a duty too often neglected in our busy American life, and the great educating influence thereby exercised is frequently undervalued. Possibly a valid reason for the indifference of parents to the impor-

tance of this matter may be found in the sensational nature of many of the daily papers, which appeal too much to the depraved tastes of the public in order to increase their circulation. By reading the papers, we do not refer to the flitting about from bit to bit of scandal, murder to murder, but to a more enlightened taste for knowledge in the affairs of other nations, among which matters of great moment are constantly transpiring; to a more thorough acquaintance with the affairs of our own country and continent, which will make us better citizens.

Properly read, the newspaper is not the least factor in the formation of a man's character; it broadens his own views, and makes him more

tolerant of the views of others. It is, as one of our professors has often and very truly quoted to us, the history of the world for one day, — a continuous history served in courses.

AS a result of the recent agitation of the subject of professionalism in college athletics, a committee, representing about twenty colleges, met in New York February 1, and drew up a set of resolutions, which are to be submitted to the several faculties for their approval. These resolutions recognize the prominent position occupied by athletics in the college world, and aim to secure their pursuit in future simply as recreations, not interfering with the regular duties of the students.

They require that no professional trainers shall be employed, either for instruction or practice, in preparation for any contest, but provide that any person selected to superintend the physical training of the students shall be appointed by the college authorities, and announced as such in the catalogue. It is also required that college organizations shall only compete with teams from similar institutions of learning, that they only play upon the home grounds of one of the competing teams, that no student shall be allowed to play for more than four years, and that no college shall engage in any games with another which does not enforce these rules.

They also require that there shall be one member of each college faculty adopting these resolutions, whose duty it shall be to supervise all contests in which students of their respective colleges may engage, and to approve all regulations under which these contests may be held. The length of all intercollegiate boat races must not be more than three miles.

The foregoing summary of these regulations has been given, both on account of their connection with college matters, and also because of

their bearing upon athletics at the Institute, since, in consequence of their probable adoption by Harvard, it may be necessary that some action shall be taken by our Faculty in order that we may be allowed to arrange games with that college in future.

The resolutions will probably be adopted by a sufficient number of colleges to put them in force, but whether they will be adopted by all or not is a question of doubt. Yale and Brown are generally thought to be opposed to them, while Princeton is said to be willing to adopt them if five other colleges of sufficient prominence do so.

FEW things can be more terrible to contemplate than the now subsiding Ohio floods; large towns, some known only by a few roofs standing above the water, others utterly demolished and swept away; thousands of human beings homeless, starving, shivering on the bare hills to which they have fled for refuge from the rising waters, — many drowned or crushed beneath the toppling buildings; great tracts of land deprived of fertility in the coming spring-time; wretchedness, cold, hunger, everywhere. And how is all this misery to be remedied, or rather prevented in the future? Prof. Egles-ton, of the Forestry department, has pointed out the close connection between the demolition of the forests and the overflowing of the rivers, but this is a warning to other men in other places; here, it seems a bitter taunt and mockery, — the forests cannot be grown again in a year. It has been suggested that great dams be constructed to keep back the waters until they can be utilized at need. This method may not be practicable, but at all events it behooves the government to consider how these great flood-gates may be closed in future.

WE should be glad to have the attention of the Faculty turned to what we think the inadequate course of surveying in the mining courses as they are now scheduled in the catalogue, with a view, if possible, of remedying the defect; and, with all modesty, we would suggest how this seems possible to us. Why cannot the time now occupied with physical

manipulation in the third year be given to surveying, which is certainly of more importance in the miner's education? At a recent meeting of the 2 G Society, it was shown that this was the weakest point in their education, and it was earnestly hoped that something would be done towards strengthening it. We pray that this request for more instruction in surveying may soon receive the attention of the Faculty.

THE custom of giving the Senior Ball is one which deserves the hearty support of all under-classmen. Coming at the end of his college course, it forms an object of pleasant remembrance for the Senior, who looks back upon it in after-years as the sole social occasion connected with the Institute for which he was not asked to subscribe. For the under-classmen it offers a very pleasant means of expressing their best wishes for the future of the Senior class. We hope that all will generously aid the committee by their financial support, and not force them to look forward, as has too often been the case, to a deficit which must come out of their own pockets.

THE snub which the United States has just received from Prince Bismarck in regard to the Lasker resolutions seems to us to have been richly merited, and should furnish a sound moral lesson to some of our "statesmen." The position of Herr Lasker seems to have been somewhat that of a Socialist; and there was about as much tact in sending resolutions of condolence to the government, against whose policy and institutions he was striving, as there would be in sending messages to the Czar of All the Russias, saying we were sorry that the man who had tried to take his life had just died here, and we thought he would be sorry to hear of it, etc. etc.

It was an unnecessary act of policy, for which we are placed in an undignified position. The sooner the United States learns to mind its own affairs, and keep its hand out of other people's, the better it will be for our own self-respect and the security of free institutions.

A Visit to Holyoke.

II.

UNTIL the beginning of this century, paper was almost entirely made by hand in separate sheets, the manufacture of continuous paper being almost unknown. Gradually, however, the paper-machine was introduced and developed, until now machines producing seven tons or more of paper a day are not uncommon.

We found the machine-room to be a long, low apartment, in which we could hardly hear ourselves speak. The machine itself extended nearly the whole length of the room, and for the first part consisted in its essential element of a broad, endless belt of wire gauze, upon which the pulp, previously thinned by the admixture of water, flows after passing through various screens and reservoirs. In order that the pulp may be deposited evenly, a constant shaking motion is imparted to the wire gauze as it moves along, and as the water drains from the pulp the fibres become locked together until finally the sheet obtains a considerable degree of consistency. It then passes over the perforated covers of two suction-boxes, in which a partial vacuum is maintained. Here the greater part of the water in the sheet is forced into the boxes by the atmospheric pressure, and the sheet has now sufficient strength to leave the gauze, and pass over the short space intervening before the press-rolls are reached. Laid papers, however, and those bearing a water-mark, receive a further treatment at the time of their passage over the suction-boxes. In such cases a small skeleton roller, made, for laid paper, of stout brass wires, having a short distance between them and connected by other wires, which encircle the roller, is placed between the suction-boxes, where the wires by pressing into the moist pulp cause variations in thickness, which produce the effect of lines upon the finished paper. The water-mark is produced in the same way, by arranging the wires upon the roller so that they form the proper design.

The press-rolls, to which the sheet next passes after leaving the wire gauze, are a system of metal rollers, between which the paper is carried by an endless belt of felt or blanket-cloth. The

pressure of the rolls serves to lock the fibres more closely together, thereby strengthening the paper which next meets the dryers as it still moves forward.

These are a number of large, hollow cylinders of iron, which are heated by steam admitted to the interior. The number of these dryers varies in different machines, there being sometimes on machines for making paper-board as many as twenty-one. By the time the paper reaches the last dryer, it is generally almost entirely free from moisture, and the broad sheet as it leaves the dryers is cut into two or three narrow ones by circular knives. In case it is merely a printing paper or a paper which has not been "animal sized," these narrow strips are wound upon reels, which are removed as soon as the proper quantity is upon them. In case it is to be writing paper, however, the band of paper after leaving the belt of blanket-cloth, and having been cut into narrower bands, is led through a bath of liquid glue prepared from scraps of hoofs and hides, which permeates the fibres, and renders the paper impervious to ink. After leaving the bath the superfluous glue is brushed off the paper, which is then cut into sheets by a series of revolving knives, and deposited in piles.

The sheets are then taken to the drying loft, and laid, two or three at a time, across long poles, in much the same way that clothes would be hung out to dry. An immense amount of time and money has been spent in endeavors to dry animal-sized papers directly and continuously upon the machine, in some such way as the engine-sized papers are dried, but so far all attempts have been in vain; the glue cracks badly if rapidly dried, and the paper is on other accounts found to be imperfectly sized. By the slow process of drying employed, in spite of its many disadvantages and the large amount of room it requires, the glue is mostly left near the surface of the paper, where it is most needed. If the paper is rapidly dried, the glue has a tendency to strike in toward the centre. After remaining for about three days in the drying-loft, at the end of which time the glue has become well dried throughout the sheet, the paper is removed to

the finishing-room, where it receives the final touches which fit it for the market. As the sheet comes from the drying-loft it has a rough lustreless surface, over which a pen would move with difficulty, if at all. The machine-dried book and printing papers before mentioned have the same rough surface as they come from the machine, and the main objects of the operations of the finishing-room are the smoothing down of these irregularities and the polishing of the paper. Both these ends are reached by means of machines known as calenders, and consisting in their main features of several rollers, alternately made of steel and pressed paper, and placed one above the other. The pressure of the rollers is regulated by screws, and the paper, after being fed in at the top of the calender, is carried by endless tapes between the rollers, and delivered at the lower part of the machine. The operation is then repeated a sufficient number of times to give the surface of the paper the desired smoothness and polish. Nearly all of the operatives in the finishing-rooms visited were women, and it was a noticeable fact that although their work was apparently comparatively light, their general appearance of health was much inferior to that of the women working in the foul atmosphere of the rag-room, and engaged in handling materials undoubtedly containing, in many cases, the germs of disease. It may not be out of place to say here that operatives, on first entering the rag-room, are taken down, after a day or two, with a mild fever, known as the "rag fever," and said to be caused by the action on the unaccustomed system of the immense quantity of lint and dust floating in the air. They soon recover, however, and are free from further attack so long as they work in the room, though it is said that the fever reappears when work in the rag-room is discontinued.

Besides the calenders mentioned, the finishing-room contains various ruling and cutting machines, as well as the dies for stamping the trade-mark upon the cheaper kinds of writing paper. Certain sorts of linen paper, in which a gloss is not desirable, are not calendered, but are finished by being subjected to pressure from

rollers while placed between zinc plates. The various operations of counting and packing the sheets are very deftly performed, and are interesting to the looker-on, but are not peculiar to the paper manufacture, and need not be mentioned here. A. D. L.

NOTE. — By a typographical error in the first article the beating-engines were spoken of as "heating engines," and their action upon the pulp improperly called "heating-action."

A Strange Delusion.

IN the fall of 1876, while travelling through Germany, I chanced to arrive one night at Heidelberg, after a day's tramp of about nineteen miles. My first thought was that there was nothing here especially to interest me beyond the old castle, which I proposed visiting the next morning, and the University, about which some old associations seemed to hover, though I could not explain why this was so. Just upon going to sleep, however, between two of Frau Höff's huge mattresses, the matter cleared itself in my mind, and I remembered that one of my boyhood's friends had come over here to Germany to study, and had been at this ancient University. His name was Sam Neville, and he was born on Mt. Vernon Street, in Boston, while I had made my entrance into this world on Pinckney Street. His family had of late removed to the newer Commonwealth Avenue; but my paternal, unable to tear himself away from the association of years, still lived, and would probably continue to live until the end, in the family mansion near Louisburg Square. The next morning I started out to find Neville, and after some inquiries at the University was directed to — Schlüsselgasse, whither I at once betook myself.

Having knocked on the door, I entered the room in answer to a loud "Herein," and found the friend of my youth, much changed by a thick, reddish beard, smoking a long Oxford pipe, and surrounded by books. We had not seen each other for more than twelve years, and the pleasure of meeting again was mutual.

Instead of spending a single night and day

there, as I had proposed to do, my stay was prolonged through several weeks, during which time we took many a delightful ramble, and talked of things in which we were each interested. It was on these walks that I first learned of the fascination in the study of "pure reason"; for Neville was then deep in the arguments and philosophy of Kant and others, and I could easily conceive of such a train of reasoning leading a man to any extreme of speculation. Naturally of an imaginative and earnest disposition, it became evident to me before long that his habits of life tended to produce a morbid state of mental activity. He smoked constantly, drank quantities of terribly strong coffee, and read or wrote for about eighteen hours out of the twenty-four. Such a course could only react injuriously on his brain, and soon enough I witnessed the effect. He complained frequently of wakeful nights, of forebodings of some impending catastrophe, and of sharp pains through his temples. I told him that he was using his brain too severely; that he had better work less, and take more out-door exercise. One morning at breakfast, he was drinking his coffee silently, but with a preoccupied expression, when he suddenly started up, and burst into tears. I sprang to his side, begging him to tell me what was the matter, and found that he was trembling violently. After a short time he became more calm, and I then learned the cause of this strange outburst. It seems that, on account of his speculations and assumptions in philosophy, he fancied himself to have been intrusted with the charge of the universe, and the movements of the planets, and that, unless he was exceedingly careful in his calculations for each day, several of these spheres would collide, and cause untold misery and involve him in eternal pains. This, he said, had been revealed to him in a dream one night, and if at any time he failed in his watchfulness or duty, this world would be surrounded by crashing planets, and the destruction of all material things would ensue. Last night sleep had overpowered him, and he had omitted to assign the paths as usual; and now what was to become of him?

His agitation was pitiable to behold, but I tried as best I might to assure him that all would come out right if he would only calm himself, and leave the spheres to take care of themselves. It was evident that his mind was in a state of great nervous tension, and that time, mental rest, and fresh air were the best antidotes. So I proposed that he should leave his studies and books for a while, and take a tramp with me through the Black Forest. At first he refused stoutly, but on my representing to him that we should have much better opportunities for watching the course of events out in the open air, he was finally persuaded to accompany me, and we started forth that very afternoon, having made the few necessary preparations therefor. The cool fresh air and the fatigue of walking insured for him that night a good sound sleep, and the next morning we set out again, and so on, from day to day, each succeeding morning finding him a little less anxious in regard to his charge. I meanwhile had endeavored to divert his mind from the subject, and when he would revert to it, had attempted to reason him out of his delusion, aided by the incontrovertible fact that we still existed. By degrees he became better, the worried look left his face, and he could rest solidly at night. We spent the greater part of a month in wandering about Germany, at the end of which time I had the satisfaction of seeing him quite restored to his right mind. I then suggested that he should return to America with me—it had been so long since he had seen any of his family.

Through his connections here, Neville was enabled to secure a professorship at one of our colleges not a thousand miles from Boston, where he still holds the chair.

We have often laughed since over the immense responsibility which he once had, but the lesson learned then has not been forgotten.

The Neville family insisted that they were under life-long obligations to me in that I had saved Sam's life, when it was really purely accidental, a mere act of friendship; but whether

it was this alone which induced Neville's lovely sister Lucretia to become my wife, I have never quite decided.

THADDEUS PELL.

Communication.

[The Editors do not hold themselves responsible for opinions expressed by correspondents.]

TO THE EDITOR OF THE TECH:—

The nineteenth annual catalogue of the M. I. T., just issued, contains, especially in its statistical columns, data of interest and satisfaction to every alumnus interested in the prosperity of the school. But there is one feature in its construction which, to a large number of graduates, is open to objection. It is the classification of the School of Mechanic Arts as a component part of the Institute of Technology.

As stated in the historical sketch, the original plan of the Institute included three integral parts, viz.: a Society of Arts, a Museum of Arts, and a School of Industrial Science.

It is well that this fact is so prominently stated. A perusal of the preceding summary of graduates and the succeeding pages of general information might puzzle the average searcher for the three co-ordinate and equal parts.

As the matter now stands, a young man possessed of ordinary common-school education can attend the workshops of the Institute, learn to saw wood in his first year, and to file iron in his second, at the same time pursuing such studies as are taught in our high schools, and, at the end of this extensive course, strike out into the world with "a certificate of proficiency from the Massachusetts Institute of Technology as a graduate of its School of Mechanic Arts."

Who shall say that, to the lay mind, this is not as exalted a title as "graduate of the School of Industrial Science"?

With this indorsement and the official classification in the catalogue, how can one dispute those worthy and honorable persons (for the Institute graduates no others) who, having attained their "certificate of proficiency," herald themselves as graduates of the Massachusetts Institute of Technology?

In its few years of existence, and with only eighteen graduates, the School of Mechanic Arts has produced such men. With more graduates and more time, these cases will grow more numerous; be it ever so little, some harm will be done to the name of the Institute and the general reputation of its graduates. What saving conditions can be advanced in favor of the present system? Is it philanthropy? Then let the school have a name of its own, and pursue its good work in its own peculiar sphere. Is it commercial profit? Then, again, let the enterprise stand on its own bottom. If, independent in name, it did not still hand over the same surplus to the Institute, the fact would be proven that the Institute sells its name with the "certificate of proficiency."

H. H. C.

STEELTON, PA., Feb. 11, 1884.

A Good Doctor.

(From the German.)

IN China there is a law that physicians shall hang as many lanterns before their house, as patients have died while under their care.

One day a sick man sent his servant for a physician, with the command, to take the one before whose house were the least number of lanterns. After a long search, the servant at last found a doctor whose house was adorned with only one. With this one he returned joyfully to his master.

"Sir," cried the happy servant, "I have brought with me a doctor whose house has only one lantern."

As the medical man was about to leave after the visit, the patient asked him how long he had practised as a physician.

"Since yesterday," was the answer. R.

The designs for the entrance to an art museum, which were handed in a few days ago, were said by Prof. Clarke to be the best set of drawings of their kind that has been made for some time. The Senior architects are now engaged on the plans and elevations for a small museum for the study of natural history.

Department Notes.

Mr. Woodbridge entertained the Sanitary Science Club, Feb. 14, in the physical laboratory by an address upon heating and ventilation. After stating general principles, he proceeded to explain their application to "The New Building," supplementing the lecture by a visit to the working apparatus in the basement and sub-basement. As the club has made a special study of sanitary science in all its departments, it thoroughly appreciated Mr. Woodbridge's admirably clear and scientific explanations, and a hearty and unanimous vote of thanks was tendered to the lecturer before the adjournment of the meeting.

A novel signal station has recently been placed at the Germantown Junction of the Pennsylvania Railroad. If the engineer of an approaching train should fail to see the signal displayed, the rails are automatically displaced, and the train is switched on to a side track. The mechanism is said to work effectively.

Telephonic communication between moving vessels has been successfully accomplished in France, *Engineering* tells us. As one vessel was towing the other the wire was carried along one of the hawsers, and the circuit was completed through the copper on the bottom of the ships and the water. Conversation was carried on distinctly.

A paragraph in a recent *Springfield Republican*, copied also by several other journals, purports to describe a wonderful chemical experiment, — the liquefaction of CO_2 at Amherst College. It is stated that this "difficult and dangerous undertaking" is attempted at Amherst only once in three years, and that it is prohibited by law, except in the United States. For the benefit of those of our readers who might otherwise be credulous, we would state that liquid CO_2 has been prepared since the time of Faraday; that it has been not infrequently used to produce intense cold in physical researches; and, further, that it is a commercial product, used in certain industries in Germany and other parts of Europe.

A tin ore, cassiterite, has recently been discovered at King's Mountain, in North Carolina. Seven analyses showed the ore to contain 43.46 per cent of tin. The discovery promises to be of great value.

During the recent cold weather, the *American Engineer* says that the New York East River Bridge was, by contraction of the metal, elevated three feet above its height in summer.

Platinum, heated in a forge in contact with charcoal, becomes fusible. Boussingault has shown that this is due to the formation of a silicide of platinum by means of the reduction of the silica of the carbon by the metal. Two German savans have produced the same phenomenon, by heating to white heat a slip of platinum in the centre of a thick layer of lamp-black free from silica.

The *Mechanical Engineer* of Feb. 23 is an unusually interesting number. There is a detailed account of a test of a Harris-Corliss condensing engine *vs.* a Harris-Corliss non-condensing engine, by Mr. J. W. Hill, which should interest our mechanical readers, and the boiler tests recorded will be a guide as to what may be done later in our own laboratory.

The lectures to the Architects on Decoration by Mr. Rotch, have proved exceedingly interesting. They are charmingly illustrated by water-color drawings of his own, and enlivened by descriptions of the examples he saw while in Europe and the East.

According to an announcement made by Prof. E. Stefan, at the last meeting of the Vienna Physical Society, Prof. S. von Wroblewski, of Krakow, has succeeded in solidifying hydrogen.

A thermometer has recently been introduced, more as an interesting demonstration, we imagine, than for its practical application, in which the mercury column sinks with the rise of temperature. The arrangement is based on the discovery of Kohlrausch that the coefficient of dilatation of ebonite is greater than that of mercury. With a rise of 20°C. , the mercury falls through 25 millimetres, from the fact that the reservoir is made of ebonite.

Noticeable Articles.

QUARTERLY REVIEW, January. — "The Constitution of the United States," — a very interesting and instructive article, and a rather surprising one to appear in the pages of the conservative Quarterly.

"Biographical Dictionaries" looks interesting.

EDINBURGH REVIEW, January. — "The Life and Times of Jesus the Messiah, by Alfred Edersheim, D. D." "This work is of an unusual character, both as to its contents and the peculiar qualifications of the author. Hebrew by birth and German by education, Dr. Edersheim imparts stores of Jewish learning in clear and often eloquent English, such as many practised writers of their mother-tongue may regard with admiration, and even with envy. It is true that there are passages in which the author's rhetorical fervor betrays him into an excessive luxuriance of language; and there are others in which dogmatic theology has beguiled him into positions where we do not profess to be able to follow him. But where these objections are eliminated, there remains an amount of archaeological information, of facts illustrating Jewish thought and feeling, of acute analysis of character, and of graphic delineation of civil and religious life at the beginning of the Christian era, which renders this a unique work."

WESTMINSTER REVIEW, January. — "Martin Luther; his Influence on the Material and Intellectual Welfare of Germany."

The Edinburgh and the Westminster both have articles on the interesting autobiography of Anthony Trollope; and the Quarterly and the Westminster have articles on the Dwellings of the Poor, a subject brought prominently to notice in England by the recent publication of a striking pamphlet on the frightful condition of the poor in London.

W. P. A.

In addition to the amount already acknowledged, the treasurer of the Rogers Memorial Committee has received seven dollars from the class of '82, which he has handed over to Mr. Bartlett, the sculptor.

THE Norfolk County *Gazette* for Feb. 1, in speaking of an entertainment given in Canton, at the Parish Hall recently, says: "Mr. Herman Gill's speech on the Earth in its Different Stages was a learned production, delivered in a brilliant style. Mr. Gill is a pupil of the Boston School of Technology." The classmates of Mr. Gill, '84, congratulate him upon the success of the undertaking, but think they should have been previously warned that they might have had a chance to give him their hearty support.

List of Publications, M. I. T.

Mass. Institute of Technology. — Nineteenth Annual Catalogue, 1883-84. Pph. 8vo, pp. 144. Boston, 1884.

□ — President's Report, Dec. 12, 1883. Pph. 8vo, pp. 31. Boston, 1884.

Class of '76. — A Letter from the Secretary of the Class Association to the Members of the Class. Dec., 1883. Pph. 8vo, pp. 15.

Crosby, W. O. ('76). — Chemical Geology (note). *Science*, III. (1884), 59.

Greene, Chas. E. ('68). — Foundations and Piers of the W. & L. E. R. R. Bridge across the Maumee River, at Toledo, Ohio. *Proc. Mich. Assoc. Surv. and Civ. Eng.*, Jan., 1882.

—— Water as a Source of Engineering Difficulty. *Id.*, Jan., 1883. Also in *The Amer. Engineer*, V. (1883), Jan. 26, Feb. 2, Feb. 9.

—— Draw-Span over Torch River, Mich. *The Amer. Engineer*, V. (1883), March 9.

Hunt, Alfred E. ('76). — About Some of the Properties of Steel. A paper read before the Engineers' Society of Western Pennsylvania.

Hyatt, Alpheus (Prof.). — The Business of the Naturalist. *Science*, III. (1884), 44-46.

—— The Evolution of the Cephalopoda. *Science*, III. (1884), 122-127, 145-149.

Jacques, W. W. ('76). — Underground Wires. *Pap. Sci. Monthly*, XXIV. (1884), 503-509.

Osborne, Geo. A. (Prof.). — Differentiation of Functions. Printed, not published. Pph. 8vo, pp. 40. [Boston, 1884.]

Otis, Charles P. (Prof.). — Outline of Middle High German Grammar. Printed, not published. Pph. 8vo, pp. 40. Boston, 1884.

—— Translation of "Les Voyages de Champlain." Publications of "The Prince Society," Boston, Vol. III.

Pickering, W. H. ('79). — The new Photographic Laboratory at the Mass. Institute of Technology. *Science*, III. (1884), 79.

Richards, R. H. ('68). — The Hot Blast in making Iron. *Science*, III. (1884), 72, 73.

Sedgwick, W. T. (Prof.). — Bacteria and the Germ Theory of Disease. [Review.] *Science*, III. (1884), 133-135.

Tenney, Frank ('83). — Experiments on the Estimation of Lead as Lead Dioxide by Means of the Electric Current. *Am. Chem. Journ.*, V. (1883), 413-415.

Young, Herbert A. ('81). — Catalogue of the Flora of Oak Island, Revere, Mass. *Bull. Essex Inst.*, 1883. Also, printed separately. Pph. 8vo, pp. 19. Salem, 1883.

WILFRED LEWIS ('75) recently read a paper before the Philadelphia Engineers' Club on the "Resilience of Steel," reviewing some of the means employed for the storage of energy, and showing the place of steel among them. He detailed various original experiments, which led him to consider hopeless the proposed use of steel springs as motors for street-cars.

The College World.

HARVARD. — Harvard students appreciate the absurdity of having recitations begin immediately after the mid-year examinations; we have a better plan, although it does restrict our vacation at the holidays — James Russell Lowell will represent Harvard at the tercentenary of the foundation of the University of Edinburgh. — The Annex has forty-eight undergraduates whose average scholarship is higher than that of the students taking the regular university curriculum. — In his estimate of student expenses at Harvard, President Eliot puts the item of subscriptions and society dues at \$50 per annum. *Ex.* — The question of the crews going out of training as soon as the new athletic regulations are officially announced is being seriously discussed.

YALE. — Dr. Livingston, who recently died, bequeathed his valuable scientific collections, together with \$3,000, to the Sheffield Scientific School. — The new illustrated paper will soon appear. — The oldest salutatory address in the library bears the date of 1717. The oldest valedictory in existence is that of Jonathan Edwards. — A concert by the Glee Club and a drama will be given for the benefit of the Navy. — The second Glee Club numbers thirteen members. — Seven Sheffield Freshmen are training for the nine. — Prof. Whitney will write the article on Philology for the Encyclopædia Britannica.

PRINCETON. — Princeton is having an unusually fine course of lectures on literature this year. Several of the best-known literary men of the country are to deliver courses on this subject. — Phillips-Exeter Academy will send more men to Princeton than ever before. — Thirty men are trying for the crew. — Prof. Guyot, the eminent geographer, died recently.

CORNELL. — It is proposed to make the studies of the general courses elective for the Junior and Senior years — Cornell has been invited to send a delegate to the tercentenary of the founding of the University of Edinburgh. — There is an unusually strong boating interest this year.

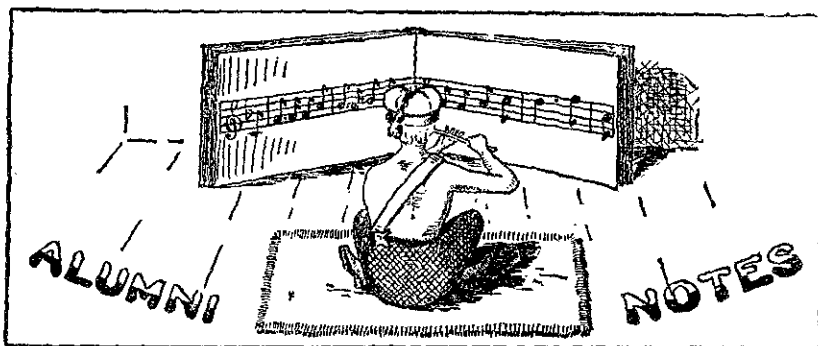
Crews have entered at Saratoga and for the Child's Cup. — Freshmen and Sophomores who have no taste for athletics are grumbling at compulsory gymnasium practice.

LEHIGH. — By the death of the late President Packer, of the Lehigh Valley Railroad, Lehigh receives \$2,000,000, \$500,000 of which is to be devoted to the library. After twenty-one years it will receive \$3,000,000 additional. President Packer is a son of the founder of the University.

The report comes to us that the Senior Class at Hamilton College have seceded, to give force to the expression of indignation at the action of the Faculty in expelling three members of the class, who it is stated absented themselves from recitation as a mark of respect to Ex-President North, who died a few days ago. This excuse for non-attendance the Faculty will not accept, however; and we are inclined to think there is some justice on their side, unless the men were relatives or intimate friends of the late ex-President.

NOTES. — There are 4,635 students at the University of Berlin this winter; 354 are foreigners, and of these 80 are Americans. — Dartmouth has received \$250,000 in bequests during the last six years. — Vassar has formed a Glee Club. *Ex.* — The race for the Child's Cup will this year be between Cornell, Princeton, and the University of Pennsylvania. — The ten German Universities matriculated 12,768 students for the winter semester of this year. — The girls at Lasell are having a series of lectures on law this winter. Some evil-minded persons have hinted that it is to familiarize them with the divorce laws, which knowledge may be useful some time hence. Vassar papers please copy.

The list of the colleges concerned in the matter of the new athletic regulations is as follows: Williams, Amherst, Dartmouth, Tufts, Harvard, Columbia, Trinity, Hobart, Lafayette, Rutgers, Union, Bowdoin, Princeton, College of the City of New York, Stevens Institute, Wesleyan University, Brown, Cornell, Lehigh, Johns Hopkins, University of Vermont, and the University of Pennsylvania.



Professor Charles A. Smith, late of Washington University, St. Louis, died at Newburyport on the 2d inst., at the age of thirty-eight. He was born in St. Louis, but was reared in Newburyport, and took his degree at the Massachusetts Institute of Technology, in the first class which graduated from that institution in 1868. As a civil engineer he constructed the St. Louis Chamber of Commerce and other important buildings, and built the St. Charles Water Works. He was a member of the American Society of Civil Engineers, and was for many years Secretary of the Engineers' Club of St. Louis. He was also a member of the American Association for the Advancement of Science, and associate member of the American Association of Master Mechanics.

The address of John Cabot, Secretary of '75, is Lawrence, Mass.

Secretary of the Class of '80, Wm. T. Miller, 611 Washington Street, Boston.

Secretary of the Class of '72 ?

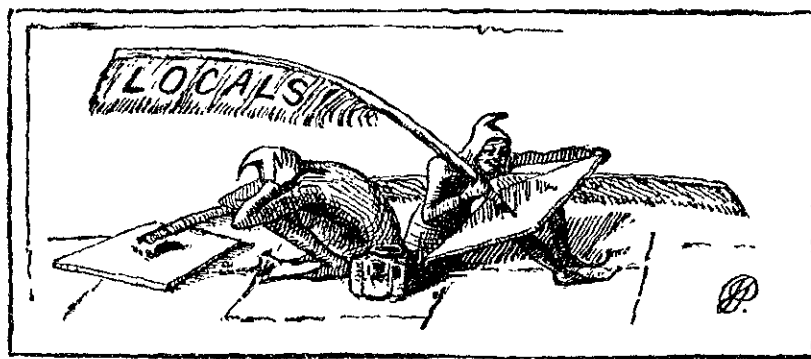
We are in receipt of the Class of '81 Directory. It would greatly facilitate matters connected with the alumni column, if more of the classes would tabulate their histories in the same compact form.

Wm. B. Fuller, '83, has been recently appointed engineer of the Bismarck Water Works Company, Dakota, lock box No. 1053.

Geo. W. Kittredge, '77, Eng. M. of W., Zanesville, Ohio.

We desire to acknowledge the receipt of the tasteful manual of the association of the Class of '76, M. I. T., from Mr. J. R. Freeman, secretary.

G. A. Smith, '83, Prof. Niles's assistant, Massachusetts Institute of Technology.



The first-year Architects are working up their first design.

Mr. Heywood Cochran, '85, was recently initiated into the Sigma Chi.

The Freshmen talk of forming a society similar to that of the Juniors.

The Life Class is very popular, a large majority of the Architects attending regularly.

Mr. Mullins, '84-'85 (?), of musty-ale fame, was in town Tuesday, inspecting the new laboratories.

Messrs. McKim, Morss, and Pratt have been appointed to act upon the Senior ball committee from '85.

The Senior ball committee from '86 is composed of Messrs. Wood, Bartlett, and Stebbins. '86 will give its class supper on March 7.

The class in Advanced German will read Faust this term. The second-year Miners, having finished crystallography, are very happy thereat.

Mr. T. W. Robinson narrowly escaped serious injury to one of his eyes while tapping at the blast-furnace in his recent run of copper matte.

The Glee Club will sing at the Dudley Street Baptist Church at the Highlands, on Thursday evening, the 28th of this month.

The jarring caused by the engine in the mechanical laboratory renders the new reading-room very unpleasant to sit in.

The winter meeting of the Athletic Club will be held Saturday, March 8, at 2 P. M. The tugs-of-war and sparring will probably be open.

A party of twelve Sophomores witnessed the performance of "Princess Ida," on the evening of Saturday, the 16th.

The letter-rack is rapidly filling up. Students who have not yet paid their subscriptions to the TECH can find the bills in the rack.

Why can't part of the time spent by the Freshmen on military drill be devoted to compulsory gymnasium practice?

The second exhibition drill will be held about the last of March, at which company drill will be the principal feature.

The incentive to industry offered by the five-cent pool in the laboratories has resulted in a remarkable number of determinations being put through last week.

The '85 class supper will be held at Young's, Friday evening, March 14. Committee of arrangements: Messrs. Barr, Cochrane, Litchfield, Morss, Richards, and Spring.

A visitor to the Architectural department, the other day, noticed the head of Michael Angelo's David, and said, "Ah! Mary Anderson," and passed on.

Mr. F. B. Richards, formerly of the class of '83, has returned from Northern Vermont, where he has been employed in a copper mine. He intends to graduate with the class of '84.

The Glee Club still feels the lack of first tenors. If there are any more in the Institute, it is to be hoped they will feel sufficient interest in the club to join it.

The second-year class in Mechanism have been presented by the Pratt & Whitney Company with copies of Prof. MacCord's treatise on the "Teeth of Spur Wheels."

The officers of the society which the Freshmen have formed are: President, Archer C. Corns; vice-president, Frank E. Shepard; secretary, John W. Adams; treasurer, Albert L. Cushing.

At a recent meeting of the class of '84, it was voted to have a class supper at Young's on Feb. 21. The meeting did not discuss the "liquor question," — an omission unprecedented in class annals at the Institute.

Seventy-two per cent of '84, fifty-nine per cent of '85, seventy-two per cent of '86, forty-nine per cent of '87, and forty-seven per cent of the specials subscribe to the TECH. Of the 443 students of the School of Industrial Science, but fifty-four per cent are subscribers.

Two of our Sophomores recently distinguished themselves by capturing a snatch-thief, just after he had seized a lady's pocket-book. The honor, however, became very barren when they had to take several days from their valuable time to testify in the police court. As the thief has appealed, they have several more engagements ahead.

Each day after the President has finished his lecture on Political Economy, the Freshmen show their appreciation by applauding. Although it is done in perfect good-will, we understand that it is displeasing to the President, and trust that it will hereafter be discontinued.

We are glad to note the appearance in the *Engineering and Mining Journal* for Feb. 9 of the results of some "Experiments on the Estimation of Lead as Dioxide by Means of the Electric Current," made by Frank Tenney, '83. The experiments show a careful consideration of all the factors entering into the problem.

The class of '84 was well represented at their annual dinner at Young's Hotel on the 21st inst. It was an occasion which will long be remembered by this class. The toasts to the Faculty and to the several departments were unusually good, and received the generous applause which they merited.

To the sentiment of the president, Mr. Rotch, that the class would again meet "long after '84 was a thing of the past," there was that hearty response which showed that the ties of '84 have become strengthened rather than weakened as the time draws near for its members to disperse.

The record of the Freshmen foot-ball team during the autumn of last year is as follows:—

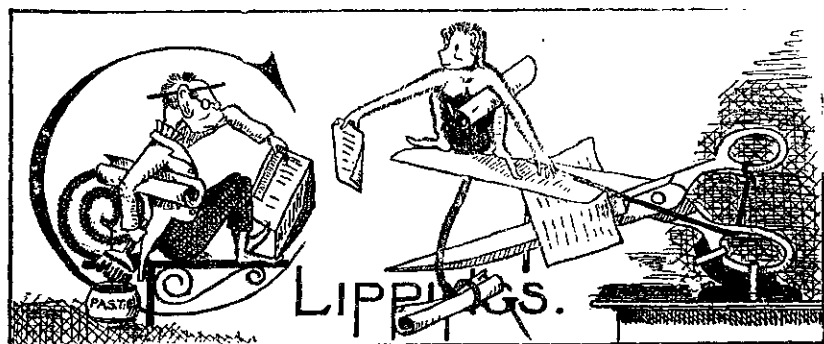
Exeter, Oct. 21. — Phillips-Exeter, 22; M. I. T., '87, 4.

Andover, Oct. 31. — Phillips-Andover, 30; M. I. T., '87, 0.

College Hill, Nov. 17. — Tufts, 6; M. I. T., '87, 6.

Quincy, Nov. 20. — Adams Academy, 0; M. I. T., '87, 2.

One game was forfeited by the Harvard Freshmen.



As whirling we go,
Sir Romeo,
To the music dreamy and sweet,
I think you might
Step a little more light
And less frequently on my feet. — *Puck*.

1st Lady. My husband, you know, is going to lecture in Newton to-night.

2d Lady. Oh, I'm so glad; I always hated those Newton folks.

We see that the *Trinity Tablet* has the true spirit of the bard about it. We give a sample:

Once I met a girl named Belle.
She was very swell,
And I loved her well.
Round my heart she weaved a spell,
And I could not quell
Love for her, Ma Belle.

Three other verses. — See *Tablet*, Vol. XVIII.

"Gaze upon yonder evening star, and swear to be true while its light shall shine! Swear, my love? Swear by Venus!" exclaimed a youth in impassioned accents to one of the Vassar girls. "How stupid you are!" she answered. "That is not Venus. The right ascension of Venus this month is 15h. 9m.; her declination is 17 degrees 25m. south, and her diameter is 10.2."

Knee plus ultra — the ballet girl's skirt.

The golden mean — a stingy millionaire.

A green peach — an Irish "Informer." — *Life*.

STOPPING THE DRAUGHT.

MOTHER. — "Where does all this smoke come from?"

BOY. — "Why, pop went up ter fix der chimbley, and I guess he's tumbled down."

MOTHER. — Well, I declare! He might stop smoking for a few minutes." — *Puck*.

FULL many a Soph. of purest brass serene
The dark, unfathomed caves of Fritz's bear;
Full many a Freshie's H₂S machine
Doth waste its fragrance on the winter air.

Acta Columbiana.

"Johnny," said the teacher, "a lie can be acted as well as told. Now, if your father were to put sand in his sugar and sell it, he would be acting a lie, and doing very wrong." "That's what mother told him," said Johnny, impetuously, "and he said he did n't care"

"Yes," said the old sexton, "the bell tolls the age of the departed." How different from the society belle, who has never told her age!

MR. DOUBLEDOLLAR (*triumphantly showing his new \$50,000 Meissonier to celebrated Art Critic*): You might not think it, but that picture is all hand-painted! Mr. Noddlebox guarantees it. — *Life*.

Senior — Do you know why our college is such a learned place? Freshman — Of course; the Freshmen always bring a little learning here, and the Seniors never take any away, so it naturally accumulates. — *Herald-Crimson*.

If you don't like to see people spooning at night,
Catching cold in the dense August dew,
Pray, don't trouble yourself about breaking them up:
Nobody's spooning you.

If you don't think we two ought to drive out alone,
With no third party in view,
It's not necessary for you to look shocked:
Nobody's driving you. *Lampoon.*

Miss-construction — Whalebone, cotton, and paint.

The Vassar girls' favorite Roman hero. — Marius.

A check-book — "Don't." — *Life*.

HUITAIN.

She told me she admired my lovely tie,
And wanted it (and here she blushed for shame)
"To keep it and remember me thereby."
I did not see her cunning little game,
But yielded it, and in my mind I came
From her, a victor. Oh, the wretched jilt!
She made six other fellows do the same,
And worked our ties into her "crazy quilt!"

Athenæum.

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Washington Street.

"What shall I write about?" asked a young reporter of the managing editor. "Oh, write about the first thing that comes to hand," was the brief order. The scribe drew pay that night for an article on door-knobs.

Stanley has discovered a river in Central Africa called *Kessme-longa*. It cannot be very far from Lake "Nyum-nyum." — *Williams Athenæum*.

FATHER (to small son): "I do not understand your great affection for this boy, Karl; he is the idlest and dullest scholar in the whole school."

SON: "That's just why I like him so much. Without him it would be I." — *Fliegende Blätter*.

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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 of all regular courses.

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

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

Graduates of colleges conferring degrees are presumed to have the necessary qualifications for entering the third-year class in any of the regular courses of the Institute, and will be so admitted provisionally, on the presentation of their diplomas.

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

Surveying instruments are provided for field work in civil and topographical engineering. Extensive shops have been fitted up for the use of both hand and machine tools; and a laboratory of steam engineering has been established as a part of the instruction in mechanical engineering. Several steam boilers and steam engines of various types are available for experiments and tests. The department of mining engineering and metallurgy has the use of laboratories in which the milling and smelting of lead, copper, silver, and other ores, in economic quantities, are regularly performed by the students themselves. The classes in architecture supplement the work of the drawing and designing rooms by the examination of structures completed or in course of erection, and by practical experiment in the laboratory of applied mechanics, testing the strength of materials and working out problems in construction. The Kidder Chemical Laboratories, just completed, contain desks for four hundred and twenty-six students, and afford the best modern facilities for the study of general, analytical, and organic chemistry. The Rogers Physical Laboratory has been greatly extended in every department during the past year, especially in respect to facilities for instruction and research in electrical science.

On the successful completion of any one of the four-year courses of the Institute, a degree of bachelor of science will be conferred. The Institute is also empowered to confer the degree of doctor of science. Special students are allowed to enter special divisions of any of the courses, on giving evidence that they are prepared to pursue with advantage the studies selected.

The Institute of Technology, as a recipient of a portion of the United States grant to colleges of agriculture and the mechanic arts, gives instruction in military tactics.

The fee for tuition of students taking the full course is \$200 a year. Besides this, \$25 or \$30 are needed for books and instruments. There are no separate laboratory fees. Only payment for articles broken is required.

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— *Exchange Paper.*

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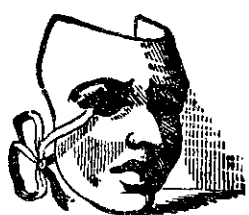
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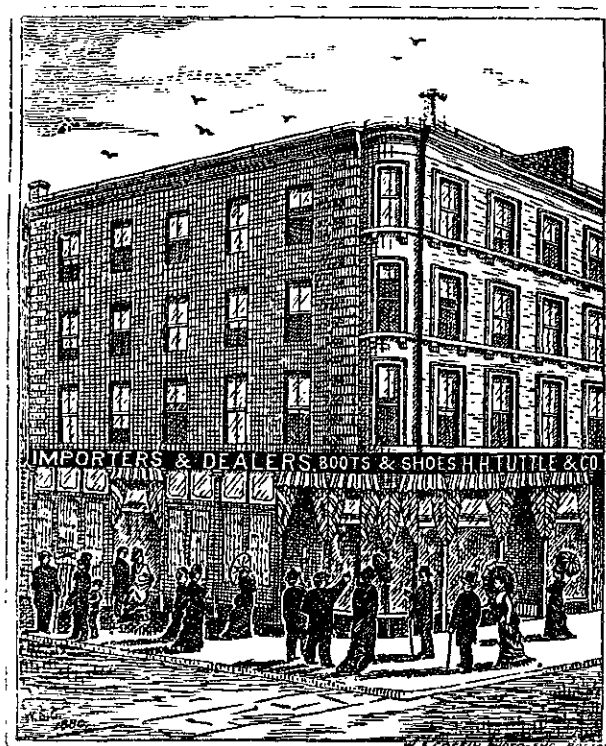


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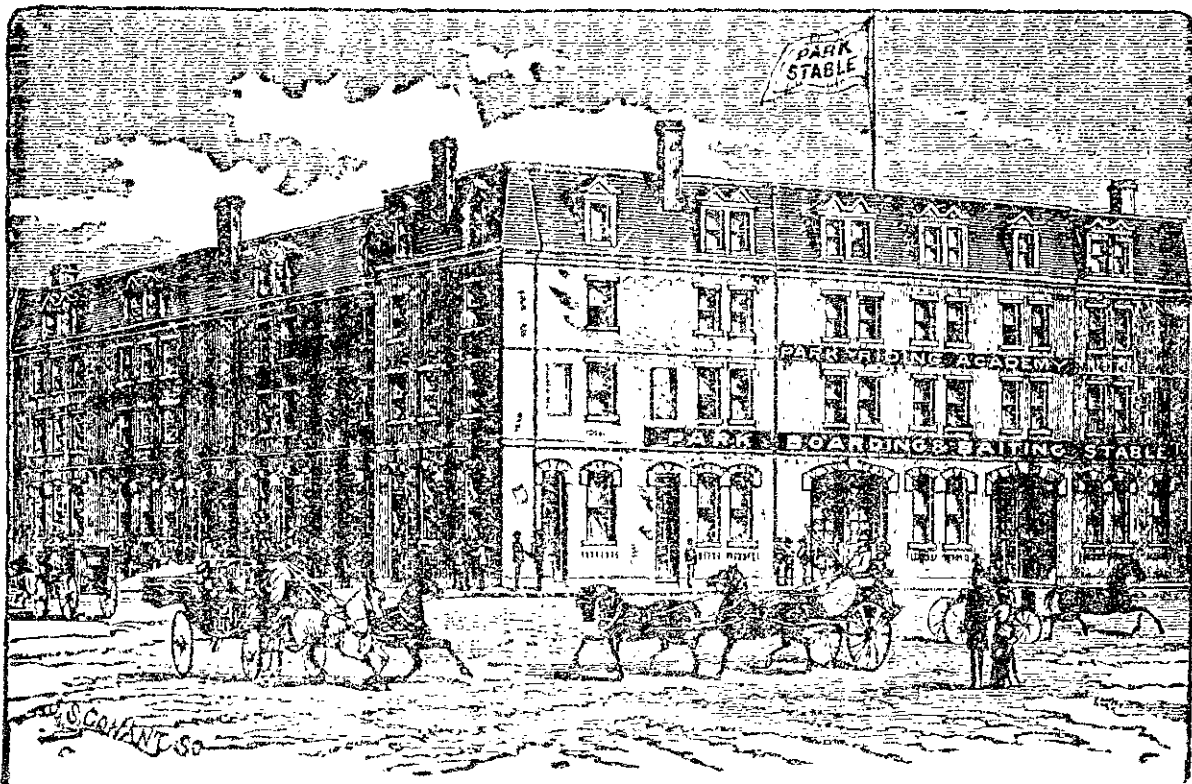
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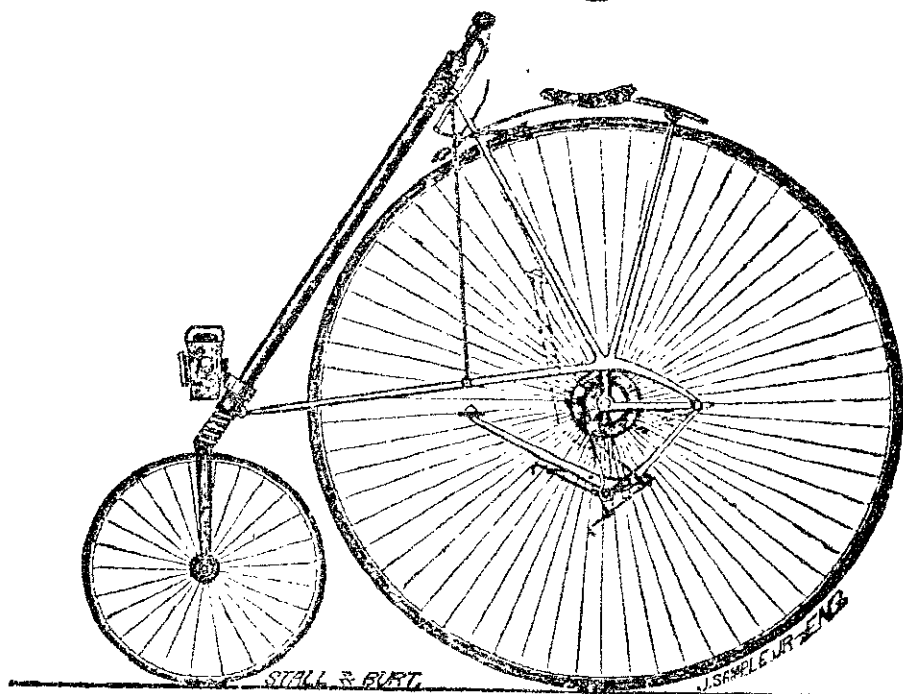
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