<table>
<thead>
<tr>
<th>CONTENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Editorials</td>
<td>41</td>
</tr>
<tr>
<td>Thesis Drawings</td>
<td>43</td>
</tr>
<tr>
<td>Foot-Ball Games</td>
<td>44</td>
</tr>
<tr>
<td>From St. Paul to St. Louis on the Mississippi River</td>
<td>47</td>
</tr>
<tr>
<td>The Old Surveyor Objects</td>
<td>50</td>
</tr>
<tr>
<td>My Experience in Athletics</td>
<td>52</td>
</tr>
<tr>
<td>Scientific Notes</td>
<td>54</td>
</tr>
<tr>
<td>College News</td>
<td>55</td>
</tr>
<tr>
<td>Exchanges</td>
<td>57</td>
</tr>
<tr>
<td>Personals</td>
<td>58</td>
</tr>
<tr>
<td>Technicalities</td>
<td>59</td>
</tr>
</tbody>
</table>

W. A. ENGLAND, Wholesale and Retail Dealer in
Watches, Diamonds, Jewelry, Clocks, Bronzes, Silverware.

AND-

Optical Goods, &c.

Fine Goods at Reasonable Prices.

Repairing in all branches done promptly.

Please give us a call.

394 MAIN STREET,

WORCESTER, MASS.

W. P. ROWELL,

MEN'S FURNISHINGS,

Hats, Etc.


Headquarters for Trunks.

Agent Troy Laundry.

183 MAIN STREET, Cor. THOMAS,

WORCESTER.

FRANK H. RICE'S

Photographic Studio,

311 MAIN STREET.

Makes a specialty of Photographic Work of all kinds and sizes.

Having received the generous patronage of former students, I respectfully solicit the same in future from the Institute this sheet represents.

Special rates to clubs if desired.
C. A. BOYDEN,
Picture Frame Manufacturer,
AND DEALER IN
ENGRAVINGS, ETCHINGS, PHOTOGRAPHS AND PHOTOGRAPHIC GOODS.
Blair Cameras of all kinds constantly in stock, also Lenses, Paper, Plates, Cards, Mounts, Etc.
Sole Agent in Worcester for Eastman's New Detective Camera "THE KODAK."
100 pictures can be taken without changing or opening the camera. Call and See it.

C. E. NEALE,
DEALER IN
Drawing Instruments and Machinists' Tools.
SPECIAL PRICES TO W. P. I. STUDENTS.
171 Main Street, - WORCESTER.
N. B.—ALTENEDER, and KEUFFELL & ESSER Instruments a specialty.

THAYER & CO.,
ONLY MANUFACTURERS OF THE GENUINE
UNXLD
CUSTOM & SHIRTS,
COLLARS AND CUFFS.
Any Style made on Special Order.
OFFICE AND FACTORY,
342 MAIN ST., - WORCESTER, MASS.

PUTNAM, DAVIS & CO.,
FINE STATIONERY, VISITING CARDS,
NOTE BOOKS AND SCHOOL SUPPLIES.
389 MAIN STREET, - - - WORCESTER.

CHAS. HAMILTON,
BOOK, JOB, CARD, POSTER AND NEWSPAPER PRINTER,
NO. 311 MAIN STREET, - - - WORCESTER, MASS.
385 MAIN STREET,

Opposite "TELEGRAM" Office.

HATTERS & OUTFITTERS

TO THE W. P. I.

ATHLETIC GOODS AND UNIFORMS.

SPECIAL DISCOUNT TO TEAMS.

THE DEANE

Steam

Pumps.

Pumping

Machinery,

FOR EVERY DUTY.

The DEANE STEAM PUMP CO.,

New York, Boston, Chicago, Philadelphia, St. Louis.

Send for Catalogue.

BUY YOUR CLOTHING OF THE

Ware Pratt Co.

The 'One Price' Clothiers,

408 & 412 Main Street,

FIRST NATIONAL BANK BLOCK, WORCESTER, MASS.

The Largest, Finest and Most Complete Assortment of MEN'S, BOYS' and CHILDREN'S

CLOTHING: AND: FURNISHING: GOODS

TO BE FOUND IN THE CITY.
THE WPI.
Published on the 15th of each Month, during the School Year, and devoted to the interests of the Worcester Polytechnic Institute.

BOARD OF EDITORS.
EDWIN G. PENNIMAN, '88, Editor-in-Chief.
A. P. ALLEN, '89.
L. N. FARNUM, '90.
E. H. ROCKWELL, '90.
A. L. SMITH, '90.
SOLON BARTLETT, '91.

Terms: One Year, $1.00. Single Copies, 15 Cents.

Remittances should be made to the Business Manager. Exchanges should be addressed to the Exchange Editor, L. N. Farnum, 16 Home St. Communications with regard to all other matters should be directed to the Editor-in-Chief.

Entered at the Post-Office at Worcester, Mass., as second-class matter.

CHAS. HAMILTON, PRINTER, 311 MAIN ST., WORCESTER, MASS.

THE world's a sea; my flesh a ship that's mann'd With lab'ring thoughts, and stirred by reason's hand; My heart's the seaman's card, whereby she sails: My loose affections are the greater sails; The topsail is my fancy, and the gusts, That fill these wanton sails, are worldly lusts.

—Francis Quarles.

W E beg to call the attention of the students to an article in the exchange column of this month, referring to the manner in which the school paper is related to the school which it represents. We hope that this article will prompt some of the scholars to find a pleasure in contributing to the columns of the W PI. Please don't think that the editors wish to shirk any part of their work for they are sure to find plenty to do should the scholars be ever so liberal with their contributions. It may also be well to remind the students that men to fill vacancies occurring in the board of editors are selected by the editors in charge and that these have no means of judging the capabilities of the candidates unless they have seen specimens of their work. Our course here is so strictly technical that students naturally fail to be sufficiently interested in literary work, but we believe there is ability enough in the school to make the WPI a model college paper. Don't wait to be drummed up personally but do your best on any interesting subject and your efforts shall be given due consideration.

THE foot-ball season has come and gone, and we very naturally ask, now: Has it been a successful one for the W. P. I.?

To very many persons outside of the Institute, and, we believe, even to some of the students the fact that we have lost more games than we have won is a sufficient proof that our eleven has not been a success. To such people a victory at foot-ball is of about equal importance whether it be won over the eleven of some small preparatory school, or over a strong college team.

Four of the games played this Fall it was never expected that our eleven would win. But these games were by no means all a loss to our players. On the
contrary, the benefits derived from them have showed in the playing of the team, and will show even more next year than they have this. Of the other four games, three were won, our eleven scoring 81 points to their opponents 8. These 8 points were made by the Trinity team, which has not been beaten, in fact, not scored against by any college this season, except the W. P. I.

Looking at the games in this way, and remembering the relative strength of the teams played against, we think we are justified in claiming a successful season for our team.

Having thus glanced over the results of the past season, let us see in a moment what the prospects are for next year. No reason appears to us why it will not be possible to have a better team next Fall than ever before. It is true that several good players will go out with '89, but enough old men will be left to make a good, strong nucleus about which to gather new material.

A determined effort should be made from the start next Fall to get in better team work. Every player should not only attempt to shield the man with the ball, but should also be on hand to help him when he is tackled. The tricks of play should be more carefully worked up, and the number of them increased, for, when well executed, they are bound to gain ground. All of the backs should practice a great deal in kicking. In this we have been very weak this Fall, and we have always suffered when our opponents have played a kicking game. But no practice of individuals, nor of eleven men playing with no one against them, can make a good team, and, by going out to play against the eleven, the members of the school can show their interest, and their desire to make the foot-ball team of '89 a rattling success.

It is an interesting fact that many narrow-minded people will ridicule and discourage certain things if called by scientific, or, to them, "high flown" names, while at the same time they may be constantly employing the very same things under other names, or, more likely, under no names at all. Thus we often meet men, whose education evidently ceased with their departure from some small country district school, who seem to have a supreme contempt for a college education, and who ask, with the confidence which ignorance always gives, "what good does it do you to be studyin' algebry and such stuff? You oughter be to work." It is useless to argue with such people, for their brains are usually so contracted by disuse that there is no room for enlightenment; and yet we wish they might be made to see how simple and practical much of the "algebry," and even higher mathematics, is. Let us illustrate:

We will suppose that one of the above-mentioned gentlemen has a charming daughter of seventeen, who has been invited by a friend to participate in a sleigh-ride. The father insists upon her having a chaperon, and why? Because he recognizes, though unconsciously, the fundamental law of mechanics, that "a couple left to itself cannot maintain a state of equilibrium, unless the length of arm is 0."
Again, let us suppose that the daughter has wandered down to the gate some pleasant evening to see the moon rise. Soon her father calls her, but she says, pleadingly, “Just a moment, papa,” and he, out of his kind heart, consents, not knowing, as any Tech graduate would, that in such cases a moment equalled “the weight of a body into an arm” or, what is the same thing, “the weight of a body into half the length of two arms.”

Perhaps this idea of the application of mathematical definitions and principles to the regulation of domestic affairs is too advanced for the present state of civilization. If so, we trust to our readers’ forgiveness. But being, as we are, technical students, we naturally believe in the ultimate triumph of Science over all its rivals; and if, in our endeavors to advance the cause of pure mathematics, we appear to go too far, let it be considered simply as the result of over zeal in our work.

THESIS DRAWINGS.

The exceptional importance attached to the thesis drawings at the W. P. I., is doubtless the principal reason why the students spend so much time in deciding what to take as a subject, or rather in finding a suitable drawing to copy.

The seniors frequently ask those who have been before them,—and so acquired a little experience regarding different kinds of work and its results;—“What shall I take for a thesis drawing, and how shall I treat it?” The answer has been substantially the same in the majority of cases. “First, find a good looking drawing that will conveniently fill the specified sheet, allowing proper space for neat, but not fancy lettering. Make the drawing bold, by using plenty of jet black ink, and making shade lines as heavy as the nature of the work will admit. If there is any danger that the drawing may appear crowded and possibly obscure in spots, and in other places the lines be few and far between; humor,—within limits of reason,—the exact scale and design. You are not making a working design, but a picture which will never be used practically. Hence use full artistic license to produce an artistic result.”

That this is substantially the course followed, is proved by even a casual examination of the thesis drawings at the Institute.

The impression produced by these drawings on different classes of visitors was well illustrated one commencement day, when a graduate pointed out his drawing to his father, mother, and sisters. The mother and sisters could not find enough adjectives to fully express their admiration. But the young man heard not a word of their sincere praise, his eyes were riveted on his father’s impressive face, and he was anxiously awaiting the judgment of the active manager of a large manufacturing establishment. After a thoughtful examination, his father turned and asked, “How long did it take you to make that copy?” The young man made an evasive answer and led them to the shop to see the Corliss engine his class had built. At the shop, his name was seen on some drawings which at once drew his father’s critical attention, and
elicited favorable comments. The work,—though much of it might be called crude,—clearly exhibited the general qualities of the draughtsman. The work was neatly arranged on the sheet. There were no more lines than necessary. All dimensions were written distinctly, and so placed as not to mar the clearness of the drawing. All dimensions started from prominent finished surfaces. It was evident that cost of pattern work, moulding,—including shrinkage strains,—and labor in machine room had not been overlooked. All these and many more points were obvious from inspection of the work.

Now to come back to your first question, “What shall I take for a thesis drawing?” We would in reply ask you a few questions; Can you not without in the least sacrificing neatness of pen work, make a drawing that shall more or less embody your own personality; something that shall not be a forgery, to which it is little less than forgery to sign your name, excepting you put it under that of the original draughtsman? Are there not many ways in which you can work up a general drawing, without spending undue time? For example: from specifications, from sketches and measurements, or from detail drawings. Or might you not make a neat and instructive drawing by amplifying prominent details of some general drawing?

But whatever style of drawing it may please your fancy to undertake, avoid any possibility of wasting time and ink, by first having your plans approved.

Foot-Ball Games.

TECH. 6—TRINITY 0.

NOV. 10 the second game with Trinity was played, and resulted in a victory, though no walkover, for our team. The day was no exception to the rule for Saturdays this fall; rain fell in torrents, the mud and water were ankle deep all over the field, and consequently few spectators were present to enjoy the game, which was very close and interesting. The Trinity men were a little late in appearing, but at 3.10 all were ready and the teams faced each other as follows:—

W. P. I.—Rice, Follett, Churchill, Allen, '90, Gilbert, Bartlett and Dawson, rushers; White, quarter; Patterson and Lake, halves; Hadley, full-back.

TRINITY.—French, Green, Harrington, Shannon, Dingwall, Hubbard and E. McCook, rushers; Lynch, quarter; Graves and Bulkeley, halves; J. McCook, full-back.

Trinity had the kick-off, but the few yards gained at the first were soon lost through fumbling, then regained again by punting. Patterson tried to rush, but slipped and lost the ball; a Trinity man then did the same thing, and Follett picked up the ball, while running, and, guarded by Rice, carried it half the length of the field and secured the first and only touchdown in about five minutes from the start. The try for goal failed.

When the play was resumed at the 25-yard line, Trinity gained a little, but good rushes by Lake, Patterson, and Bartlett drove them back until they
were at last forced to a safety, which ended the scoring for the game. The rest of the game was very desperately fought, our team playing a rushing and Trinity a kicking game, with the ball in Trinity's territory most of the time, and within three yards of their goal at the finish. Owing to the very slippery condition of the ball and ground many slips and fumbles were made by both sides. Patterson played a very good aggressive game and made some fine tackles; Hadley also did very well considering it was his first game; and in fact all the men played in good shape. Camp, '88, was referee and Morgan, of Trinity, umpire.

BOSTON TECH. 24—W. P. I. 0.

Nov. 17th the eleven went to Boston and received a bad beating at the hands of the Boston Techs. It was decidedly an "off day" for our team, and their playing was so much below their usual standard that, although they were squarely beaten, we cannot think that the score of this game shows the relative strength of the Boston and Worcester teams at their best. We felt a good deal the same in regard to the result of our first game with Trinity, and in that instance we had the pleasure of proving the truth of our convictions.

At a late hour it was found that Patterson could not play and perhaps this tended to discourage the team; at any rate it weakened it very much, and the team did seem to lack confidence, and consequently played rather loosely. They did not hold well, tackled high, and did not move as quickly as they should. Nevertheless, Boston had no walk-over and it was twenty-five minutes before they scored at all.

At 3.07 the teams lined up as follows, Worcester having the ball:

W. P. I.—Rice, Follett, Churchill, Allen, Gilbert, Bartlett, and Dawson, rushers; White, quarter; Hadley and Crane, halves; Lake, full-back.

M. I. T.—Kales, Sutton, Roberts, Rice, Highlands, Hamilton, and Dame, rushers; Godchaux, quarter; Germer and Pierce, halves; Durfee, full-back.

The first part of the game was very well contested. Lake started the game by a fine rush of about fifteen yards, but some of this was soon lost and Boston got the ball, only to lose it at once. In this way the play continued near the middle of the field, until White made a long, high pass over Hadley's head, thus losing over twenty-five yards. After this Boston worked slowly down the field until Godchaux made a break and obtained the first touchdown. Our eleven now went to pieces and during the remainder of the half two more touchdowns were scored against them.

In the second half Boston started with a rush and in four minutes secured another touchdown and goal. In the following start off White took the ball, but dropped it and Boston carried it well up the field. After this the play was wholly in Worcester's territory although our men braced very well once or twice, and drove Boston back a little. But the die was cast when Lake had to retire, Mills taking his place, and before the game was over Boston got another touchdown and forced us to a safety, owing to Mills' fumble in trying to punt.
WESLEYAN 24—TECH. 4.

Permission having been granted by the faculty, the foot-ball team took the whole day, Nov. 24, and went to Middletown to play Wesleyan. It was a cold day, and Rice, '90, got left. This was rather discouraging to the team, but an eleven was made up before Middletown was reached, which was very different from any that had been put in the field this fall.

Capt. White decided to play Lake as full-back, and Bartlett and Fish as half-backs. Fish had not played with the eleven at all, and Bartlett had never played back of the rush line.

After dinner as the men were strolling along the main street of Middletown, Rice, the missing man, showed up, and was given a cordial welcome.

Shortly after 2 o'clock a barge took the players to the grounds, which were rough, hard and slippery.

In the few minutes of practice before the game not one of the Techs seemed able to kick, pass, or catch the ball, and in their poor appearance the Wesleyan men saw a prospect of a large score for their eleven, but those men, who were so sure of beating our eleven by a score of at least 70 to 0, were, we dare say, somewhat surprised and disappointed at the end of the game.

Mr. George, of Harvard, was referee, and Mr. Landon, of Wesleyan, umpire. At about 2.30 the teams faced each other, being made up as follows:

**WESLEYAN.**—Floy, Glenn, Heath, Gardiner, Eaton (Capt.), Gibson and Crane, rushers; Eggleston, quarter; Clarke and McDonald, halves; Slayback, full-back.

**W. P. I.**—Dawson, Churchill, Gilbert, Allen, Crosby, Follett and Rice, rushers; White, quarter; Fish and Bartlett, halves; Lake, full-back.

Wesleyan had the ball, and after five minutes' play McDonald made a touch-down from which goal was kicked. The ball was again started from the middle of the field, and for a few minutes it was kept in Wesleyan's territory, but it was gradually forced back toward the Tech goal, until Eggleston made a long run and touch-down, which gave another goal.

The Techs during the rest of the half played with a dash and determination which prevented Wesleyan from raising the score except by a safety.

In the second half, after Slayback had made one touch-down, the Techs began to play as they had never done before. Yard by yard they forced their heavy opponents back until Bartlett was over the line with the ball. It was a touch-down earned by the good, hard work of the whole team.

For the remainder of the game the ball was in Tech territory, most of the time, and was once downed by Wesleyan behind the goal line, which made the final score 24 to 4.

The tackling of our eleven was by far the best they have done this year. The rush line held well, and the whole eleven played together. Bartlett, Lake, White and Fish did the best work.

For Wesleyan, Eggleston, Slayback and McDonald made the most brilliant plays, the rushing of McDonald being especially fine.
FROM ST. PAUL TO ST. LOUIS ON THE MISSISSIPPI RIVER.

ON a clear cool morning in the early part of June, Ned Walters and myself stepped on board the steamboat Pittsburg at St. Paul for a seven hundred mile trip down the river to St. Louis. We had been roaming over the prairies during the previous summer, and after spending the winter in St. Paul, decided to visit old Massachusetts again and to travel by as interesting a route as possible.

The scene at the wharf was a busy and interesting one. Lines of negroes were running to and fro piling the freight on the steam elevator which carried it up an inclined plane into the store-house, where it was received by another gang and assorted under direction of the mates.

The noise of loading and unloading continued late into the night, until (thanks to the elevator’s breaking down) we were allowed to go to sleep, but for no great length of time, as the noise commenced again at an early hour, so we gave up trying to sleep and turned out. It was nearly noon before the freight was loaded and the ropes cast off. The morning had dawned bright and clear, but I found the precaution of putting on heavy clothing had been opportune.

The Mississippi steamboats are famous for their swiftness and elegant accommodations. Some of them are over three hundred feet long and have three decks, the lower one is for freight, the middle one for passengers, and the “Hurricane deck” contains the pilot-house and officers’ quarters. The grand cabin is on the second deck and runs nearly the entire length of the boat; it is elegantly furnished, especially the forward part or ladies’ cabin.

The scenery for the first twenty-five miles was uninteresting, but after passing Hastings, the shore line began to assume a more picturesque appearance, being broken into bold bluffs with edgings of bare rock of such sharp outline as to remind one of ruined fortresses.

Passing Red Wing we entered Lake Pepin, formed by a widening of the river to about three miles. Here the scenery was magnificent, the river being walled in by high bluffs crowned with shubbery. High above the rest rose the bare front of “Maiden’s Rock.” There is a sad and romantic tradition concerning it, of which I will give the Captain’s version.

“Winona, a beautiful girl of Wapasha’s tribe, loved a young hunter, and promised to become his bride. Her parents had promised her to a distinguished young warrior, who had fought manfully the hostile Chippewas. The maiden refused the hand of the brave and clung to the fortunes of the hunter, who had been driven to the wilderness by menaces of death. The indignant father declared his determination to wed her to the warrior that very day. Starting like a frightened fawn at the cruel announcement, she swiftly climbed to the summit of the cliff, and there with bitter words, reproached her friends for their cruelty to the hunter and her own heart. She then commenced singing her dirge. The relenting parents seeing the peril of their
child, besought her to come down and take her hunter-lover for a husband. But the maiden too well knew the treachery that was hidden in their promises, and when her dirge was ended, she leaped from the lofty pinnacle, and fell among the rocks and shrubbery at its base, a martyr to true affection."

The wind had freshened up and broke the surface of the lake into quite sizable waves. Ned began to feel the want of heavy clothing and we retired to the cabin to make the acquaintance of a stove, the same that he but an hour before "could not see the use of." Meanwhile I had been taking a survey of the passengers; our near neighbors consisted of a delegate to the Democratic National Convention about to convene at St. Louis and his wife, a man with a numerous family from Florida and a gentleman with two young ladies who like ourselves were taking this circuitous route east. The latter party was of course, of most interest to us, and after forming their acquaintance we found them to be most pleasant and agreeable, but with a decided tendency on the part of the ladies to make fun of the young men on board who appeared in white collars and stiff hats. While I inwardly congratulated myself upon having donned a woollen shirt and soft hat, I kept quiet about the silk hat stowed away in my trunk. The gentleman was interested in politics and quite ready to resign the care of his fair companions to me. Of course this was rather embarrassing to a young man of such bachelor proclivities as myself, but I braced up and did the best I could without the help of Ned, who with a combination of bashfulness and sea sickness had retired to the state-room.

We arrived at Alma at sunset, a beautiful little place, consisting of a few houses nestling at the foot of an abrupt bluff rising four hundred feet, with a space of only three or four hundred feet between the river and the foot of the bluff. Both above and below here at a height of three hundred feet above the river, there projects from the surface a wall of lime-stone, showing from twenty to fifty feet of its perpendicular face and abruptly terminating at each end of the bluffs in ragged overhanging projections. At Minneiska is the highest bluff on the river, being six hundred feet above the water. The next morning found us at De Soto.

At Guttenberg one of the ladies indicated her desire to be taught how to row. Nothing loath to display my knowledge of the art I agreed, and we embarked in a scow found at the wharf. The lady rowed down stream first, as it went "easier," but when we turned to go back, she wished me to row. I took three or four dignified strokes, but noticed we did not gain much, so took off my coat and increased the rate of stroke but, alas for my reputation, by doing my utmost I could gain but slowly on the heavy current. Ned was an amused observer from the deck and encouraged us by frequent calls that the steamer was waiting for us. By the time we reached the wharf I was in somewhat the same condition the Tech. football eleven were in after the Boston game, and after this I was always busy
when rowing was proposed, while Ned was likewise discreet.

Saturday evening we arrived at Dubuque, the so-called business place of Iowa, but owing to the darkness, we could get but little idea of the city or its surroundings. After depositing our mail we returned to the boat and gathering around the piano, made the cabin ring with college songs.

Sunday morning we awoke at Sabula and already the banks had changed from bluffs to low land, while the towns began to assume a more business-like appearance. At La Clare a pilot came on board to take us through the rapids, which extend from here to Davenport. The current increased perceptibly and the surface of the water was broken into a seething mass by the hidden rocks. At midday we came in sight of Rock Island and Davenport, situated on opposite banks of the river. At Rock Island is situated the U. S. Arsenal with its five acres of well kept grounds, dotted here and there by cannon; and garrisoned by two companies of infantry. At Davenport we boarded a horse car and rode up through the residence portion of the city, and found many handsome residences, with large well kept lawns and venerable shade trees. The car-driver observing our rough travelling dress in comparison with the Sunday dress of our fellow passengers, evidently considered us as rural visitors, and gave us minute directions as to the amount of fare and where to deposit it, which we duly appreciated and the passengers enjoyed. Returning from our ride, we were furnished amusement by watching the negroes unload a large number of barrels of vinegar; as the incline was steep, when a heavy barrel of the liquid got the start of a darkey there was trouble for the hands ahead, one poor chap being knocked into the river. This fellow took it coolly. But I won't repeat what the mate said, when a barrel knocked his feet from under him. The darkeys were the most ragged set of men I ever saw and every stop for unloading added fresh rents. They have to be held down with a heavy hand in order to get work out of them and keep them from quarrelling. One of our men was from the famous Voodoo tribe of negroes, and having bulldozed all of the other negroes, he attempted to interfere with the mate, who promptly shot him through the arm. Of all the howls and yells! A more completely subdued bully I never saw. One cannot but pity the poor fellows for they are kept on a steady trot while loading and unloading with loads of sometimes two hundred pounds, and the sleep they get is caught in the short interval between stations. We had thirty negroes on board, who were supposed to be divided into two crews, but the usual order was "Turn out all hands." At Keokuk we found at the wharf the Mary Morton of the same line, and here the real nature of the two crews of negroes came out, for there was a steady stream of jokes between them. Seeing one of our boys throw over a bucket for a drink one of the other crew sung out in derision "Hi dar you nigger. We uns have ice watah to drink on dis boat." Our poor fellow turned almost white with wrath, but placed the bucket to his lips and swallowed the mud.
The crew was composed wholly of young fellows and the majority of them had bad coughs. They are a short-lived class, for after getting heated up at their work, they stay in the wind until chilled, then crawl under the boilers to sleep. When not at work or asleep, they get out the dice and gamble away their small earnings. They are paid thirty dollars a month; but seldom do you find a fellow on the same boat twice. As soon as they end the round trip and receive their pay, they leave and usually dispose of it in one or two days dissipation,—then ship themselves on another boat. Instead of buying serviceable clothing and shoes they go to a pawn shop and buy for a small amount, articles that will last them only through one trip by frequent lacing with rope. In their eating they are like animals, going to the kettle and taking out meat with their fingers and devouring it in large quantities. At Quincy we got a quartette to sing for us, and seldom have I heard a richer bass voice than “Old Tom” had. While up in the pilot-house sketching its interior and proprietor, he announced that we were coming to Nauvoo, the old site of Mormonism. The site of the little old place was well chosen on a high projecting point of land which gives a magnificent view of the river in both directions.

Going on shore I found an old warehouse, built of the stones taken from the Mormon temple, which had been torn down; the stone was a light colored granite with well finished surface. I knocked off a few pieces to take east, but after running the gauntlet of the lady passengers, there was poor show for eastern friends. The next morning we passed the mouth of the Missouri river and its turbid waters could be distinguished for some miles before it assimilated with the Mississippi. We came in sight of the great city of St. Louis in the afternoon, and steaming under the stately bridge, were soon at the wharf, well pleased with our five days trip. A telegram decided us to complete our trip by rail, so bidding our friends a sorrowful farewell, we stepped ashore in time to witness the great democratic parade.

THE OLD SURVEYOR OBJECTS.

TWAS in Squire Leatherlapham's store one evening in the fall, A group of influential men, who should have hired a hall In which to ventilate their views on economic themes, Were giving Leatherlapham's store the prestige of their dreams. There was Justice Hill of Thunderville, who always had his say, And talked about the tariff in an awe-inspiring way; There were stanch old Farmer Stebbins and placid Doctor Grim, Jim Brown of story-telling fame, and Ebenezer Slim, And a goodly bunch of others, all men of some renown For their never-falling presence of an evening up town. Of course the foremost subject to occupy their mind Was the rapid retrogression of modernized mankind; And it came before the meeting for the thousandth time or more, Just where adjournment left it the evening before. No room for warm discussion here, no champion so bold To pull the young idea from his place out in the cold;
They worked with one accord as if a preconcerted plan
Was laid along the line to rake the wicked modern man.
And even Hill and Stebbins whose valor in debate
Had made the Great Rebellion last till eighteen-sixty-eight,
Who loved in contradictory terms each other to assail,
To find a ground for difference looked here without avail.
"When I was in my boyhood," the Justice loudly bawls,
"There was n't no corruption in our legislative halls,
Our members out in Congress did n't use to give us gas
Nor sell out to the railroads for a semi-annual pass."
"Yer right," the Farmer interposed, "there used to be a time
When them blamed new-fangled notions were furrin to this clime,
When the potent filthy lucre with the ballot did n't cope,
And they did n't make up butter out of stuff they put in soap."
And so these hoary critics from the foremost to the last
Compared the rapid present with the steady-moving past.
Some said that "new inventions is the cause of our decline,"
While others held the theory that "our schoolin' is too fine;"
But all were of opinion that whatever be the source
There are manifold examples of degenerative force—
From the brawny baggage-smasher and the sawdust-swindling churn
To the reckless cornerer of "Soo" who weds his typing girl.
The while these biased minds were calling up in stern array
Those rather uncouth pictures of the homo of to-day.
There sat beside the fire a man whose melancholy mien
Betokened to the looker-on a disappointment keen.
His hair was long and curly, his brow was fair and high,
And almost graceful was his way of squinting his right eye;
His bearing was suggestive of a man well-known to fame,
Whose knowledge is unbounded, and Squire Tripass was his name.
A momentary lull at length afforded him the chance
To hurl into the bristling fray his double-pointed lance.
"My friends," with patronizing air, "your premises are strong,
Your terminal conclusions, too, are very far from wrong;
But when you looked around for things to illustrate the case
You skipped the testest mortal shape that ever owned a face,
Professed of more 'rudition than a Pennsylvanian mule,—
It's a civil injunee-ur from a polertechnic school.
He's built a kinder lank and lean, a slender you might say,
He wears a collar on his shirt like one who's airin' pay,
He looks off through his transit with a nancy-chalant air,
And answers questions curtly like as if he did n't care.
Now I have been surveyin' for these forty summers gone,
And mighty sorry specimens I've sometimes lit upon,
But I never was disgusted half so much in all my days
As when I see this dudish chap to-day at Deacon Fay's.
The Deacon's got a piece of land that's down there by the gore,
And if I've chained it over once I vow I have a score,
But the pesky thing is kinky, and the more I sight around
The less my reconnoitrin' seems adapted to the ground;
Till finally the Deacon said he 'rather kinder guessed
My needle was unmagnified and ought to have a rest,'
And as if he had n't done enough to make things purty mean
He got this polertechnic buck to bring down his machine.
Now I have seen this lot of land before that boy was born.
I see it under taters and I see it under corn;
If I can't make them courses gibe when I am feelin' vum,—
Well, I won't send to the city for a strippin' sich as him.
I asked him how his needle worked, as a sorter openin' wedge;
'I have n't tried it lately, sir,' he said without a hedge;
And when I made enquiry as to how he got around
To the point that he began at and took in all the ground,
He said he used the angles that he read off on his limb,
And that local affectation hardly ever troubled him.
Then he talked about my compass in a disrespecting tune
And said it was subjected to the changes of the moon,
Or some such highfalutin' stuff I understood he meant,
And that it never pinted north to any great extent.
But here I interrupted in a way that made him wince,
And the rhetoric I utilized you bet I did n't mince,
I asked if he aspired to be a statesman down in Maine
Or was only paid for lyin' to amuse the poor insane;
I told him that his anglin' was just a trifle sharp,
He might take in a shiner but he could n't catch a carp,
His legs would do for compasses to suit a draughtin' clerk,
But for taking angles in the field I thought they would n't work.
No, I don't object to statements that is stated as they be,
But I won't allow a youngster to pervarycate to me."

MY EXPERIENCE IN ATHLETICS.

MY name is Tom Jones and as I have always been 'rather sickly, I asked various persons what would be the best thing to build up a weak constitution. I followed their advice to engage in outdoor sports and such harmless recreations, and I think the result will fully justify me in that this advice may have been given in something of a malicious spirit. If I recover from the series of ills which now beset me it will conclusively prove that at present I have a vigorous constitution.

I am now in bed with one eye done up and various legs and arms in splints, while other spots too numerous to mention are covered with court plaster.

A friend is copying what I am with difficulty enunciating through an aperture which if I happen to have a third set of teeth may one day be filled up. I have I know pipe-stemmy arms and most ethereal legs, and although on this account I was once taken into court because I had no visible means of support, yet I felt confident that with due application and constancy to training, I could at least equal the average man in the number of feats which he could accomplish.

At first I determined to acquire a lightness of foot and agility of the whole body by engaging a little in the manly art of boxing. This was recommended to me as being especially adapted to give one a good color and circulation. All went well at first but soon a friendly rivalry between another person and myself gradually merged into actual combativeness.

To my sorrow I found that its recommendation was quite appropriate, for my right eye now has all the color one could desire. The most delicate shades of yellow and blue, with some actual
black now adorn my right optic. As to circulation I have since found that the circulation of the report that I was knocked out in the third round exceeded the circulation of any known paper.

My eye gradually assumed a more promising hue and as I am a firm believer in the saying “Try, try again,” I vowed that I would yet prove to an unbelieving world that I was something of an athlete. However, I wisely determined to go easy, so in preparation for base-ball I determined to more clearly learn the game by modestly commencing as an umpire.

I was asked to umpire a game between two rival clubs of the place and in an evil hour I consented. The game commenced auspiciously. But it afterward became very exciting, I mean the game, and also the pleasant way in which the clubs showed their appreciation of the services which I rendered for them. In the last inning the game was so close that a decision of mine would give the game to one or the other of the clubs, and as they looked very savage, I decided in favor of the club which looked the most savage, but alas, things are not what they seem. Well—well—I will spare you the harrowing details and merely leave it to you to imagine a veritable Dakota blizzard which passed that way about that time. That happened some time ago and I had so much consideration for the feelings of the defeated club that I refrained from reminding them of the sad occurrence by allowing myself to appear on the streets for three weeks. I recovered as victims of fate always do, to tortures still more terrible.

The next I knew I was deeply interested in the harmless little game of football, but when I asked if it wasn’t rather rough I was told that when the players debased themselves to the plane of beasts then the game is apt to be a little rough, but indeed, my friend said, when gentlemen like you and I engage in it for a little recreation, why surely, there is nothing more harmless and really beneficial to persons needing a little building up. I have since found however that the building up generally occurs after the game (at least it did in my case) as when they build you up with crutches and the like. Finally, however, I consented to engage as full-back in a friendly (?) game.

When the game commenced I was in especially good spirits but when it became more interesting and I was knocked senseless, this arrangement was reversed and the good spirits were in me. I suppose to take the place of some of the wind that was knocked out of me.

I am now resting in peace (both singular and plural numbers), but there is an aching void and craving in the vicinity of my abdominal regions, for something I know not what, it may perchance be pie, but ah, the fates are against me for as I fall off to sleep I hear the doctors say, that considering my delicate condition it will be best to keep me on Mellen’s food for infants for some time to come.

“Some men’s behaviour is like a verse wherein every syllable is measured: how can a man comprehend great matters that breaketh his mind too much to small observations?”
Scientific Notes.

An electric light of 60,000 candle power has been erected on the Isle of Wight, and is increased by reflection to 6,000,000 candle power.

The Thompson-Houston Electrical Company has presented two of its dynamos to the electrical engineering department of Cornell University.

The sailing tonnage of the world is nearly double that of steam, and according to The Engineer this relative proportion is likely to be maintained.

Upwards of 2,300 miles of main for conveying natural gas have now been laid in the United States, and the total capital invested in the business exceeds $50,000,000.

The Committee of the French Chamber and Senate have decided to award the Volta prize of 50,000 francs, to Mr. Gramme, for improvements made by him in the construction of dynamo electric machines.

The Krupp Works, at Essen, are to manufacture aluminum after the process of Prof. Netto of Dresden. Cryolite from Greenland is to be the mineral used; and chemically pure aluminum is promised at the low rate of about 1.55 dollars per pound.

Steel rails weighing 90 lbs. per yard have recently been rolled by the Bethlehem Iron Co. of Bethlehem, Pa., for use on the Reading Railroad. They are the heaviest ever rolled in the United States; but in Belgium rails weighing 100 lbs. per yard are being laid in large quantities.

Camels' hair belting has recently been the subject of experiments at the Polytechnic school at Munich, from which it appears that the strength of camels' hair belting reaches 6,315 lbs. per square inch, whilst that of ordinary belting ranges between 2,230 lbs. and 5,260 lbs. per square inch.

A German photographer has succeeded in preparing photographic plates so sensitive that an exposure of \( \frac{5}{600} \) of a second is sufficient. A very small lens must be used, so that the pictures are generally only \( \frac{7}{16} \) of an inch in length and breadth. Enlarged to an inch and a half on glass plates and rotated in series of twenty-four before a Geissler tube, the pictures are used for reproducing on a large screen the motions of an animal.

By means of the magnesium flashlight a photograph has been taken of a normal eye, life size, after a quarter of an hour's rest in a completely darkened room, showing the pupil of the eye fully dilated, as its reaction does not begin until after exposure. Hitherto the effect of complete darkness on the pupil could only be observed by the light of the electric spark, but these photographs permit of measurements.

The first of a fleet of electrical power boats, destined for public use on the River Thames, London, was launched from a yard at Chyswick a few days since. The boat is intended to carry eighty passengers; her length is 65\( \frac{1}{2} \) feet, beam 10 feet, displacement 12\( \frac{3}{4} \) tons and speed, with the conservancy regulation, six miles an hour. The machinery and storage cells are placed below deck. The boat carries 200 accumulators; and two 7\( \frac{1}{2} \) horse power motors drive twin three-bladed propellers.

The following method of burnishing iron and steel by means of the electric current was recently communicated to the International Electric Society of Paris. The metal to be covered is placed in a bath of water at about 70° Fahr., and is connected to a source of electricity just strong enough to decompose the water. Under these conditions the plate becomes coated with a layer of magnetic oxide, which is finely adherent and which will take a high polish. If too strong a current is employed, the
layer of oxide will not adhere to the metal.

In a book on surveying, published in Germany by Jacob Korbel, about 340 years ago, the author gives the following instruction, accompanied by a wood cut, as to how the length of a foot is to be found:—"To find the length of a rood you shall do as follows:—Stand at the door of a church on Sunday and bid sixteen men to stop, tall ones and small ones, as they happen to pass by when the service is ended: then make them put their left foot one behind the other, and the length thus obtained shall be a right and lawful rood to measure and survey the land with, and the sixteenth part of it shall be a right and lawful foot."

With reference to the passage of metals into allotropic states under slight external influences, Professor Roberts-Austin mentions that Debray has given a case of an alloy in which a simple elevation of temperature induces allotropic change in the constituent metals. It is prepared as follows:—Ninety-five parts of zinc are alloyed by fusion with five parts of rhodium, and the alloy is treated with hydrochloric acid, which dissolves away the bulk of the zinc, leaving a rich rhodium zinc alloy, containing about 80 per cent. of rhodium. When this alloy is treated in vacuo to a temperature of 400° C., a slight explosion takes place, but no gas is evolved and the alloy is then insoluble in aqua regia, which dissolved it readily before the elevation of temperature caused it to change its state. We are thus presented with another undoubted case of isomerism in alloys, the unstable, soluble modification of the alloy being capable of passing into the insoluble form by a comparatively slight elevation of temperature.

"Applications of science and discoveries in pure science, act and react the one upon the other."

---

**College News.**

Yale contemplates building a new gymnasium.

The Cornell Sun now prints a Sunday edition.

The students of Bowdoin college are ranked in gymnasium practice as in recitations.

Cornell is to have a new chemical laboratory, to cost $80,000.

Union, Bates, and Swathmore, each, lay claim to the same school color, garnet.

President Patton, of Princeton, is an unnaturalized British subject.

Isaiah Q. Williamson, of Philadelphia, has given $300,000 to establish an industrial school in that city.

The largest university in Europe is Rudel-Allrects, at Vienna. It has 285 professors and 5,000 students.

The Michigan University pays $148,-000 yearly to its professors and employees.—Ex.

The Japanese government has ordered that English be taught in all the schools.

Yale's athletic association holds hare and hounds runs twice a week, to keep old men in practice, and to develop new talent in the running line.

Michigan graduated twenty-four young ladies for law last year.

Of the nine largest telescopes in the world, six were made by Alva Clark & Sons, of Cambridge, Mass.

The young ladies of the Harvard Annex propose to put a four-oared crew on the Charles river next season.

A Williams College man threw a base ball one hundred and seven yards, three and one-half inches. He holds the amateur record.—Ex.

We wish to inform our exchange that Holy Cross College of Worcester claims the record of 387 feet, 8 inches, which there seems to be no reason to dispute.
The ladies attending the Minnesota State University have petitioned the faculty that they be allowed the advantages of military drill accorded to the gentleman students only. A "broom brigade" will probably be formed.—College Rambler.

The students of Ann Arbor have petitioned the legislature to prohibit the sale of liquors within five miles of the college.

Sixteen prominent colleges are without presidents.

Census Seeker.—In answer to your impertinent inquiry, let us say that not all the men who come here are homeless, although we admit some of them are home less than others.—Tuftonian.

The freshmen and sophomores of Rutgers engaged this fall in a rush in the chapel. The trouble grew from the fact that both classes had a prayer-meeting at the same time and place.—Ex.

The standard for passing examinations at Cornell has been raised from 60 to 70 per cent.

The Boston Herald says that Harvard is "losing prestige" because of the opposition to athletics manifested by the faculty.

The W. P. I. foot-ball team is the third outside of the American League that has ever scored against Wesleyan.

The senior editors of the Yale News realize a profit exceeding $250 per man.

Cornell is never closed to its students, and many pursue their studies there during the entire year.

"Punched quarters don't pass," muttered the foot-ball player, as he viciously snatched the quarter-back of the opposing eleven.—Ex.

Chambersburg (Penn.) Academy will not receive students who use tobacco in any form.

The faculty of Cornell have reported, after thorough investigation, that the standard of scholarship has not suffered from inter-collegiate contests.

A graduate of Yale College says he never knew whether to place particular significance in the Medical Students' building being opposite a thriving cutlery, the Law School at one side of a prison, and the Divinity College on a road at whose end stood the county poor-house.

A chapter of the Q. T. V. Fraternity has recently been established at Cornell. The Q. T. V. is the only Latin letter fraternity in America and its chapters are located wholly in scientific schools.

The following are the largest sums given by individuals in the United States for educational purposes: Leland Stanford, $20,000,000; Stephen Girard, $8,000,000; Johns Hopkins, $3,148,000; Asa Packer, $3,000,000 to Lehigh University; Ezra Cornell, $1,000,000; Jonas G. Clark, $1,000,000. The most heavily endowed educational institutions are: Girard College, $10,000,000; Columbia, $5,000,000; Johns Hopkins, $4,000,000; Princeton, $3,500,000; and Harvard, $3,000,000.—Ex.

Out of fourteen games of foot-ball between the Harvard and Yale freshmen, seven have been won by each college. The recent victory was the third successive one for Harvard.

An Amherst joker, who slyly added a fragment of stained brick to the geological specimens placed on the professor's table as worthy of explanatory remarks, was rewarded as follows: "This is a piece of baryta from the Cheshire mines. This, a piece of feldspar from the Portland quarries. This," (coming to the brick) "is a piece of impudence from some member of the class."—Ex.

Here is an article that has been going the rounds of the college papers:

"The youngest college president in
the United States is President Hyde of Bowdoin, who is only 37 years old."

But the Lafayette recently printed the following:

"Miami University has the youngest college president on record, Ethelbert D. Warfield, being an '82 man at Princeton."

A good example of college enthusiasm was recently shown at Toronto, at the appearance of Rose Coghlan, when 800 students took possession of the gallery, and between the acts sang their college songs. At the end of the third act of "Jocelyn" a committee of students went upon the stage and presented the actress with floral offerings and an engrossed address. At the close of the performance the students went around to the stage door, took the horses from Miss Coghlan's carriage and drew it in triumph to her hotel.—Ex.

Exchanges.

Last month we took the liberty to severely criticise certain of our exchanges, trusting that we had good cause for doing so. Although there are, of course, times when through the press of other business the editors may be excused for presenting an issue of their paper which may not come quite up to the standard, still they can not be too alert in aiming to make each number perfect in itself. It is often remarked that college journals not only speak for their editors but also for the colleges which they represent. Granting this, it would seem that the editors have the responsibility of the school on their shoulders without holding any claim upon it for support. The manner in which the journal is peculiarly related to the school may be suggested by the following, clipped from a back number of the Critic:

"We think that a school paper gives a very fair idea of the general character and standing of the school. When a paper comes to us neatly and tastefully gotten up, and with well-written articles and editorials and free from abuse, we receive the impression that it comes from a school of gentlemen, and feel like treating it as such. But, on the contrary, when we receive a paper carelessly printed and teeming with abuse, we get an entirely different idea of those who publish it and of the school."

And here is about the same idea in different words, taken from the Geneva Cabinet:

"During the last few years college journalism has taken an important place in college work. Every school of any size whatever has its magazine. These papers are generally exponents of the character of the institutions from which they emanate. A weak, inert sheet postulates a correspondingly weak and inert college or academy. A paper that is neat in appearance and sparkling in its matter would be but the natural production of studious, intelligent and enthusiastic students."

The fact can not be avoided, that the college magazine plays an important part in the presentation of a school to outsiders. For this reason the entire work should not fall upon the editors, however well fitted they may be for the position, but each student should consider it as an important duty which he owes to his school, to do all in his power toward improving and supporting at least one of its periodicals. As in our case where there is but one paper representing the school, double responsibility falls upon its editors and they should use the utmost care in determining the merit of each article before its publication. The students should be made to feel that the paper's columns are open for any grievance or suggestion which they may wish to offer as well as to essays or stories worthy of the cause. We must remember that a selection is to be made between the limits of light trashy essays and matter of a purely technical kind which would interest only a particular class of readers. The
Swathmore Phoenix makes a point of this in criticizing the Earhamite, which it does in the following manner:

"At the other end of the scale, and as a far worse example of the extremes, comes the Earhamite. It reaches us filled with what the Everfordian compares to a lot of school-boy essays. But one editorial and no locals or notes whatever, vary the monotony of its pages. But this is not the worst of this case. Frequently these characteristic essays in the Earhamite are not even written by the students, but are on abstruse subjects of scientific research, and are contributed by the professors. The college paper should closely resemble the students, and Earhamite must resemble an old-time monastery in its dreariness if its social atmosphere may be gauged by its representative paper."

We have just received the first number of the College Index which conducts a very lively exchange column. We shall wait with interest for their opinion concerning "the duties and possibilities of the exchange editor" which they promise to give in their next number.

We take this opportunity to shake hands with the Polytechnic over our mutual compliment received from the Swathmore Phoenix. We consider it an honor to be compared in such a manner with the Polytechnic, which ranks among the best of the monthlies on our table.

The Williams Weekly in a recent editorial gives several strong reasons why Williams should play foot-ball with Andover and Exeter next season. The weekly is full of spicy and original thoughts and has a great influence over affairs at the college.

The Tech is a very able journal,—perhaps the term magazine might be more fitting,—and from the fact that it supports no exchange column we were led to believe the contents to be entirely safe. Accordingly we inadvertently allowed ourselves to become terribly interested in the story entitled "Miss Way," when,—lo and behold! this captivating and malicious article came suddenly to an end with: "Continued in our next." We could bear this from the blood-thirsty, hungry-looking weeklies that are wont to blockade our front door step, but to think of a worthy friend like the Tech playing such a trick on us is simply unbearable. However we can do nothing about it but wait in a terrible state of disquietude until we receive the next number of the Tech.

---

**Personals.**

Jas. Sanford Leland, son of Sanford Leland, '83, is the recipient of the class cup.

C. D. Alvord, '83, died Nov. 27, in Atlanta, Ga.

Newbert, '86, came East a short time ago. When he returns to the West, he will take his wife with him.

The corps of manual training teachers at Washington includes Fairbanks, '86, and Chamberlain, Emery, Fish, Gleason and McNab, '87.

Allen, '87, is teaching at Millbury, Mass.

Eldridge, '88, is with the Deane Steam Pump Co. at Holyoke.

Hunting is draughting for the Fort Wayne Jenney Electric Light Co. of Fort Wayne, Ind. This company recently suffered a heavy loss by fire, in which Mr. Hunting lost all his draughting instruments.

Paul is teaching in the Allen High School, Northboro.

Mulliken is studying civil engineering.

Rockwood is draughting for the Wheelock Engine Co.

Sweetser has accepted a position as instructor in the Pennsylvania State Agricultural College.
Schofield is draughting for the Whitin Machine Co., Whitinsville, Mass.

Gilman spent a week in the city recently.

C. L. Griffin, formerly editor-in-chief of the WPI, has accepted a position as draughtsman with Brown & Sharp of Providence.

Lovell paid the Tech a visit recently. He has been working with the U, S. Geological Survey in New Hampshire.

**Technicalities.**

The eight-hour plan is being tried with the Middle Civils.

"Notes on Students," is causing some alarm among the frequenter of Boynton Hall.

Some one must have been doing missionary work among the faculty, for quite often now there are two professors on the platform at chapel exercises.

The Juniors and High School played football (?) Nov. 17, and the result was a tie, 14-14. It might have been compared to a game of "Hearts," with goals instead of hearts.

Students in German have proposed having a part of their voluminous translations published, so that there may be no great loss without some small gain.

Juniors have sustained the mental and moral strain of a semi-annual in Plane Geometry.

'90's foot-ball team have received their badges for the championship. They are very tasty.

The Middlers visited the Quinsigamond wire mills in two parties, one going on the 14th, the other on the 15th of November. Both report having seen considerable \( \text{Fe}_3 \text{O}_9 \).

Carleton, Crane, Coghlin, Fay, Holley, Hyde, and Weston, '91, and Murphy, '90, have left the Institute. Coghlin and Holley will join the Apprentice class in January.

"Nicht die Kinder blass speist man mit Mährchen ab." A translation of the above sentence was: "Children are not the only ones fed on little tales."

As the faculty gave their consent, about fifty Techs marched in the procession of Republican political enthusiasts. They marched with a precision and regularity that made the veteran campaign clubs turn green with envy. We cannot say just how many spectators mistook the Civils for barbers.

A Middler who played on the class team was disappointed with the account of the class games, which appeared in the WPI, for it did not flatter '90's players enough, so that he could have the account framed.

An interesting trip to Millstone hill was made by Division B of the Middlers in company with Dr. Fuller on November 12, the forenoon being pleasantly spent in wielding hammers and searching for minerals. Molybdenite, Arsenopyrite and Fluorite were among the more uncommon specimens found.

The draughtsmen of the middle class are wading through the subject of shadows.

One of the party which went to Millstone hill discovered on a ledge a rare mineral and hastened immediately, without inspecting it, to the professor in charge of the expedition, who looking it over found file marks. This betrayed its history and the finder gets the recoil of a joke which was not perpetrated by him.

Two Juniors who were testing the strength of the ice on Salisbury pond, recently, suddenly found that it was rather weak, and that it covered some cold wet water.

Everybody at the shop is busy. A large number of drawing models have
been shipped to Frost & Adams of Boston, and the elevator for the Rose building of Providence is ready to be set up, at that place. Several grinders have just been sold and some very nice oak top drawing stands are in process of construction.

Work on the Laboratories progresses slowly and the contractors expect to finish sometime in the near future.

"It's all right except the r in Charlotte." The German professor thus corrected the sentence "Ich Name ist Charlotte" and immediately called for "next." The corrections of the next were nearly completed when the student who wrote the preceding sentence, and did not understand the correction, turned to the teacher and asked "What's the matter with Charlotte?" This was greeted by a roar of laughter and a chorus of subdued murmurs of "She's all right."

A final meeting of the foot-ball team was held Dec. 8, and Lake was elected captain for next season.

Sixteen seniors signed a solemn compact before the Thanksgiving recess, in which they agreed to have no part of their faces shaved after Dec. 3, until the beginning of the Christmas vacation. The penalty for breaking this compact is to pay for suppers for all the signers. Already several men have shaved, claiming that their faces itched too much. It is quite possible that it was scratching more than itching that caused them to shave.

Little drinks of lager,
Little sips of gin
Make the red proboscis,
And consume the tin.

"How much is this silk a yard, sir?"
A blushing damsel asked
Of a gay and gushing salesman,
Who admiring glances cast.
"Only a kiss," he answered,
With an audacious air,
As he unfolded the fabric
Before the maiden fair.

The blush on her cheek grew deeper,
And her dark and lustrous eyes
Became more fascinating
As promptly she replies:
"If you please, I'll take ten yards, sir."
For a moment his heart stood still,
Till the cruel creature added,
"And grandma'll settle the bill."

—N.Y. Graphic.

ONE AT A TIME.

ONE step at a time, and that well placed,
We reach the grandest height;
One stroke at a time, earth's hidden stores
Will slowly come to light;
One seed at a time, and the forest grows;
One drop at a time, and the river flows
Into the boundless sea.

One word at a time, and the greatest book
Is written and is read!
One stone at a time, and the palace rears
Aloft its stately head;
One blow at a time, and the tree's eleft through,
And a city will stand where the forest grew
A few short years before.

One foe at a time, and he subdued,
And the conflict will be won;
One grain at a time, and the sand of life
Will slowly all be run;
One minute, another, the hours fly by;
One day at a time our lives speed by
Into eternity.

One grain of knowledge, and that well stored,
Another and more on them,
And as time rolls on your mind will shine
With many a garnered gem
Of thought and wisdom. And time will tell
"One thing at a time, and that done well."
Is wisdom's proven rule.

—Golden Days.

WRIGHT & DITSON.
WORSTED
SWEATERS, JERSEYS AND TIGHTS.

BASE BALL, FOOT BALL AND LAWN TENNIS OUTFITS.

580 WASHINGTON STREET,
BOSTON, MASS.

Send for Catalogue.
DAVIS & COMPANY,
286 MAIN STREET, 286
DEALERS IN
Fine: Ready-Made: Clothing,
Stylish Garments for Young Men a Specialty.

Those who prefer garments made to measure will find us prepared at all times to show seasonable goods of all grades and prices.


DAVIS & CO.,

Opposite Bay State House.

Richmond Straight Cut No. 1
CIGARETTES.

Cigarette Smokers who are willing to pay a little more than the price charged for the ordinary trade Cigarettes, will find THIS BRAND superior to all others.
The Richmond Straight Cut No. 1 Cigarettes are made from the brightest, most delicately flavored and highest cost Gold Leaf grown in Virginia. This is the Old and Original brand of Straight Cut Cigarettes, and was brought out by us in the year 1875.

BEWARE OF IMITATIONS, and observe that the firm name as below is on every package.

ALLEN & GINTER, Manufacturers,
RICHMOND, VIRGINIA.

BIGELOW & LONGLEY,
CORNER MAIN AND ELM STREETS,
Fall of 1888.

Each season shows a marked advance in the quality and style of
Young Men's Ready-Made Garments.

A few years ago the best efforts of the manufacturers were devoted to Men's Garments, but to-day Young Men and Boys are receiving equally exacting care. We have to-day

THE NOBBIEST SUITS
For Young Gentlemen to be found anywhere. These goods are made to our special order and cannot be told from custom made.

IN OUR CUSTOM DEPARTMENT
Young Gentlemen can find elegant cloths of all kinds to select from, and SKILFUL ARTISTS to fit in the most stylish manner. All work in this department guaranteed. PRICES ALWAYS LOW.

BIGELOW & LONGLEY,
Corner Main and Elm Streets.
SANFORD & COMPANY,
No. 364 MAIN STREET, WORCESTER, MASS.,
—DEALERS IN—
Drawing Materials of Every Description.
SUPERIOR SWISS DRAWING INSTRUMENTS.
Whatman's Drawing Papers, all sizes, hot and cold pressed. Roll Drawing Papers, both plain, and mounted on muslin; all widths and qualities.
Prices as Low as Consistent with
STRICTLY FIRST-CLASS GOODS.

W. F. GILMAN, D. D. S.,
DENTAL OFFICE,
ODD FELLOWS' BLOCK.
Office Hours: 9 A. M. to 1 P. M.; 2 to 5 P. M.

FRED W. WELLINGTON & CO.,
Wholesale and Retail Dealers in
COAL
GENERAL OFFICE,
416 MAIN ST., - WORCESTER, MASS.
Branch Office, 600 MAIN STREET.
COAL POCKETS,
NORWICH, - CONN.
RETAIL YARD,

BAY STATE HOUSE.
Under the new management this Hotel has been thoroughly reorganized and will be conducted on a
First-Class Basis
In every particular. We solicit a trial of our hospitality.

DOUGLASS & BROWN,
Proprietors.

HENRY WALKER,
DEALER IN
FURNITURE,
Carpets, Stoves, Ranges,
AND
House Furnishing Goods of all Kinds.
225 and 227 MAIN STREET,
WORCESTER, MASS.

BARNARD, SUMNER & CO.,
327 and 329 MAIN STREET, WORCESTER, MASS.

DRY GOODS AND CARPETS,
"ALL THE YEAR ROUND."
Departments Full, Fresh and Attractive. Popular Low Prices maintained on all Goods. No Store Undersells us in this City or Boston. No store shows a Finer Selection. Samples sent with Prices, and Parcels Forwarded by Mail at Trailing Cost. MADAME DEMOREST'S PATTERNS. We have greatly Improved our Store by New Departments, Better Room and Light, and more Popular and Quick Selling Bargains every Season.

To facilitate afternoon shopping, our Store is Lighted by Electric Lights.

BARNARD, SUMNER & CO.
WALTERS & HOLDEN,
Men's Furnishers and Hatters,
149 MAIN STREET.
FINE DRESS SHIRTS TO ORDER.
BASE BALL, BICYCLE AND TENNIS SHIRTS,
Full Line in Stock and to Order.
ATHLETIC SUITS TO MEASURE.
Uniforms Furnished the Apprentice Class.
Agents for Laundry.

N. S. LISCOMB,
HATS, CAPS, MEN'S FURNISHINGS,
Furs, Trunks, Bags, &c.
WALKER BUILDING,
407 Main Street, - Worcester, Mass.

"ADVICE GRATIS!"
Buy your
DRUGS : AND : MEDICINES,
Perfumes, Cigars, Cigarettes,
HOT AND COLD SODA,
And anything else you may want, of
Geo. E. Fairbanks,
DRUGGIST,
No. 10 Front Street, - WORCESTER, MASS.

SIGN OF THE BLACK BEAR.
Estate of
J. L. BURBANK,
Successor to
M. B. Green & Co.,
APOTHECARY
And Dealer in Drugs, Patent Medicines, Perfumery, Etc.
376 Main Street, Corner of Elm, Worcester, Mass.
H. L. FISK, Manager.
Physicians' Prescriptions a Specialty.

REBBOLI,
CONFECTIONER
AND
CATERER,
6 AND 8 PLEASANT STREET,

WASHINGTON MACHINE SHOP,
WORCESTER, MASS. M. P. HIGGINS, Superintendent.