

The

# W. P. I.



Vol. VIII.

Thursday, November 10, 1892.

No. 11.

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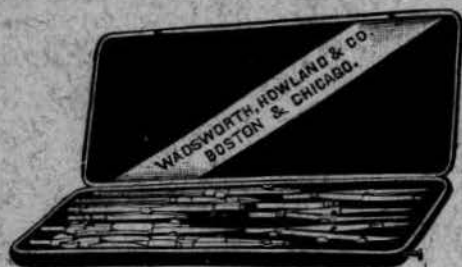
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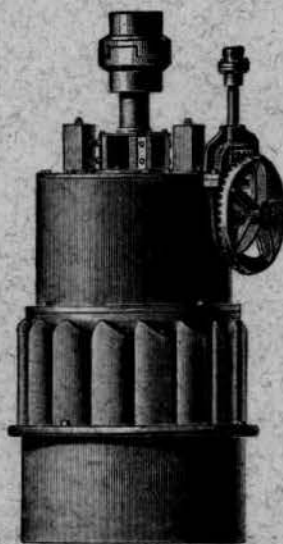
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THE W P I.

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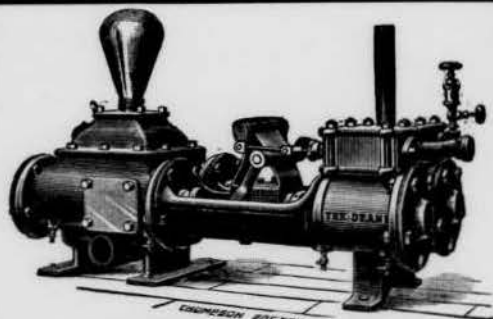
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# THE W P I

Vol. VIII.

WORCESTER, NOVEMBER 10, 1892.

No. 11.

## THE W P I.

Published on alternate weeks, during the School Year, and devoted to the interests of the Worcester Polytechnic Institute.

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The pleasant evening which the Seniors recently spent and at so small an expense, is an example to other classes. These little oases of pleasure when we meet all our classmates together, are too far apart. We are making now the acquaintances for life and the more that we can have in common with them to look back upon in later days, the better. Think of this, under classmen, and take more legitimate pleasure from your course. "All work and no play makes Jack a dull boy," and he must take his pleasure before long if he intends to at all.

The *Rose Technic* has made the discovery that students there have about double the amount of study that we do here. In another column the probable error in calculation is explained, and a corrected comparison of the two schools will be awaited by us with interest. Judging from the amount of work now required here, if the *Technic's* figures are true, the days in Terre Haute must be longer than those in Worcester, for in no other way could such an amount of

work as they give, be accomplished. Come, *Technic*, here is "wholesome food for reflection."

After three years of failure and disappointment, at last the Institute eleven has won a victory. This victory proves two things distinctly. One is that a good team cannot be made in a week or a month. It requires patience and persistent work. Last year students were disgusted because with a green team and new men, the big universities were not defeated out and out. An Amherst man remarked in all seriousness a few days ago upon learning of the C. M. T. S. game, "In two years you ought to have a fine team." In two years! If a Tech had made a like statement he would have said, "in two weeks." Let us then abstain from grumbling, encourage the men who have done so much for us, and look for better things next season. The second point brought out is, that one of the most essential things to a winning eleven is good coaching and plenty of it. If we could have had the services of Mr. Ellis on the first day of school instead of a month later, that first victory would have come earlier in the season.

However necessary may be the specialization of this age, in regard to education, as well as everything else, however successful in bread winning our W. P. I. education may be, this is true, that without other influence specialization is narrowing, and our education and our life work in engineering will not of itself suffice to give us that breadth of thought and depth of culture which are necessary attributes to the ideal man, and which do so much toward the uplifting and enlight-

enment of the human race. With a view of suggesting to at least a few of the students what is an obvious duty as well as a privilege, the W P I publishes elsewhere an article on the value of a line of study and research outside the routine of business or professional life. The writer of the article is one who has always taken a deep interest in whatever concerns the welfare of young men and having added to a college education the experience of an observing and studious nature is particularly well fitted to advise on this subject. We commend to our readers a careful review of the article and a determination to follow its teachings.

The W P I is by no means a perfect machine and consequently a part of its editorial energy goes to waste. Usually its seeds of criticism fall on stony ground, but sometimes the fault is in the seed itself. This was the case two weeks ago, when in an editorial, the removal of the coverings from the library books was urged. They have been removed, but, alas, not thanks to the W P I. The good work had commenced several days before the editorial was printed and a day or two before it was written, so "we" can only apologize for the blunder. However, the change is none the less acceptable, and all will unite in thanking the one by whom it was instituted. Now that all the volumes do not look alike, students will begin to make their acquaintance.

Again an apology is in order from the Editors' corner of the paper. Last spring exceptions were taken to the excuse offered for the non-appearance of the Institute flag,—that the water persisted in leaking in about the pole. A few days ago a committee of Seniors called at the Office and there learned that the W P I had been laboring under a false impression—that the trouble from water was only a secondary consideration. Therefore, as the general body of the

students has probably made the same mistake, it is only fair that a full explanation should be given through these columns. That committee was informed as follows: First, the vibrations which the pole on Boynton Hall would receive from the wind, are liable to affect the clock. Of course we all have a warm affection for this clock, and no one would wish to climb the hill some windy morning and see the ancient time-piece wringing its hands in agony, as shudder after shudder racked its frame. If the tower clock were to be disabled the excuse book would lose an old friend and a gloom and blight would be cast upon us all. Second, and remember we have it on the best authority, these vibrations engender the safety of the tower itself. This is really a serious consideration. It would be foolish to sacrifice a valuable piece of machinery to a little patriotic pride, which, according to the *Boston Herald*, is nonsense anyway, but to satisfy this same pride at the expense of the whole tower of Boynton Hall, would be the height of folly. If the tower were firmly connected with the Hall itself and that with the ground beneath, the disastrous results of combination of wind and flag, become simply appalling in their vastness. No one in his right mind would think of risking the overturn of the whole of Tech hill and the consequent terrible calamity which must befall the dwellers of Boynton St. were the stars and stripes to snap once too often from their halliards on old Boynton. Fly the flag at such a cost? Never! Lastly, the expense of the maintenance of a suitable banner would be something enormous. Such a one as would be needed would cost at least twenty-five dollars, and, it is safe to say, would not endure use on more than five or six quarto-centennial anniversaries of Columbus' discovery. A little thought, and the great drain on the financial resources of the Institute can be estimated.

Taking, then, all these objections into consideration, one can easily understand why there is a hesitancy on the part of someone, in assuming responsibility for the consequences which must result from the display of the students' flag at the students' request.

### BREADTH IN EDUCATION.

In these days, more than ever before in the experience of man, the road to success is narrow and straight. He who would succeed must choose some avocation—the one for which he has most fitness if possible—and train all the faculties to the one aim. "It is better to say," says Washington Gladden, "'This one thing I do,' than to say 'These forty things I dabble in.'" "The high prize of life," says Emerson, "the crowning fortune of a man is to be born to some pursuit, which finds him in employment and happiness—whether it be to make baskets, or broadswords, or canals, or statues, or songs."

The first law of success at this day when so many interests present themselves for favor, is concentration, the bending of the talents and the directing of the energies to one point. It has been justly said "that a great deal of the wisdom of a man in this century is shown in leaving things unknown; and a great deal of his practical sense in leaving things undone." It is the age of the specialist. The day of universal scholars or mechanics is past. The scholar devotes himself to one or two departments of knowledge, and must be content to remain ignorant of a thousand things no matter how attractive or inviting. The mechanic of these days is generally a specialist, that is—his hand and brain are trained to make a particular part of the machine, or shoe, or piano, or watch. The man who would get along must single out his specialty, and upon that must concentrate the energies of his eye, hand, heart, brain. "The men who succeed are they of single purpose. They are the men who accomplish the hard work of the world, and who are everywhere in demand when hard work is to be done."

All the same a man may succeed in the main business of life, and yet share his time and interest with some other pursuit. While bending his energies to the practical business of life, he may profit by the study of somewhat which will change the current of his thoughts and the direction of his energies. The specialist in any department must lose touch with his fellow-workers in other departments if he confine himself too exclusively to his own pursuit. He

becomes a man of one idea. Especially is this true of two classes—mechanics and literary men.

The powers of observation are not cultivated by mere routine work. Therefore some line of study which diverts the mind from its beaten path may be of great benefit to the specialist. If he be a mechanic some branch of natural science may furnish both recreation and profit. If he be a bookworm some mechanical pursuit may be profitably employed as recreation. A well known Doctor of Divinity had a small lathe in a room adjoining his study, and when wearied with reading or writing rested his brain by turning out small articles and ornaments of ivory and wood. Rev. Dr. McCook, a busy and successful clergyman, is also an accomplished entomologist and the author of exhaustive works in several branches of that science. This study has long been his recreation. The foremost authority in America on double-stars is a bank cashier in a western city. Sir John Lubbock, a London banker, knows more about ants and bees than any man in England, having studied their habits in his leisure moments. Sir Roderick Murchison found in a Scotch village a baker who in his leisure moments, after his bread was baked, had acquired a knowledge of botany which put the acquirements of the President of the Royal Society to shame. John Duncan, whose botanical researches secured for him the recognition of the Royal Society of Great Britain, was a weaver dependent upon his daily toil for livelihood. Perhaps the most conspicuous example is Mr. Gladstone, who diverts his mind from his arduous political duties and responsibilities to the study of the classics and theology. A busy and successful minister of my acquaintance is an authority on sun-spots. Examples might be multiplied. In my own case I have found the study of plant life not only recreative but a decided benefit to me in my legitimate line of work. Any man who will devote the time he *wastes* to the study of some branch of natural science may become in a short time an accomplished man, qualified to associate with scholars, and that without neglecting his proper work or imperiling his success. The mind is kept from growing narrow only by diversity of occupation. Nature is the grand text-book of every branch of science and art. The mechanical engineer may gain most profitable lessons from the study of the forces which push the tender sprout up through the hard soil. The practical electrician should not neglect the phenomena of thunder-storms, and the Aurora Borealis, and even the fireflies which swarm in summer evenings might throw side-lights upon some of his problems were he to study them.

At least they would furnish him with recreation and store his mind with valuable facts.

Every mind is liable to be narrowed which fails to learn that facts in every department are allied to the facts of every other. Once the student or the mechanic has laid hold of this clue, he begins to develop powers of thought and application before undreamt of. He rapidly becomes a broader thinker, and a more skilful workman. Many a device for the application of mechanical forces to definite purposes has been suggested by some construction of the lower animals, or even insects. The understanding of the morphology of a common weed is the revelation of the processes by which all things in nature have been evolved. All work, every trade, every occupation, is made more effective by knowledge, and knowledge of every kind bears upon work of every description. Therefore every one of us should prosecute some study which will counteract the narrowing tendencies of our specialty, and open to our minds other doors of knowledge than those of the study, or shop, or counting-room, or laboratory.

J. M. L.

FIRST FOOT-BALL VICTORY.

W. P. I., 24; C. M. T. S., 0.

Saturday, Oct. 29th, on a wet field and amid frequent showers, the W. P. I. foot-ball eleven scored its first victory. The Cambridge team was much lighter than the Tech, so that all that was necessary for the Tech to do was to keep from fumbling and let the heavy men rush through the centre. Cambridge could do almost nothing when they had possession of the ball, the only trick that worked being the criss-cross, which they have learned to perfection. The Tech line frequently broke through and tackled the backs as soon as they started to run. The missing link of the Tech team is a goal-kicker, not a goal having been kicked during the game.

The teams played as follows:—

W. P. I.		C. M. T. S.	
Smith, . . . . .	r. end l. . . . .	Fiske	
Goodrich, . . . . .	r. tackle l. . . . .	Leahy	
Brooks, . . . . .	r. guard l. . . . .	Allen	
Rogers, . . . . .	centre . . . . .	Wiseman	
Brigham, . . . . .	l. guard r. . . . .	North	
Butterfield, . . . . .	l. tackle r. . . . .	Kennedy	
Ware, . . . . .	l. end r. . . . .	Frew (Eldridge)	
Chase, . . . . .	quarter . . . . .	Morse	
Southgate	{ Stone, } r. half l. . . . .	Leavitt	
	{ Andrews, }		
Allen, . . . . .	l. half r. . . . .	Jewell (Eaton)	
Lincoln, . . . . .	full-back . . . . .	Whittemore	

1st half, 30 minutes; 2d half, 12 minutes.  
 Touchdowns—Allen, 5; Brooks, 1. Goals—None.  
 Referee—1st half, A. L. Rice; 2d half, G. R. Moore.  
 Umpire—1st half, J. J. Eaton; 2d half, A. L. Rice.

Cambridge started with the ball and after gaining 10 yards on a V, lost the ball on 4 downs. Allen, Brigham and Southgate then took turns bucking the centre, all making gain, the latter an especially fine one. With the ball 10 yds. from the goal line Allen carried it across securing the first touchdown in 5 minutes. Southgate failed for goal. Cambridge took the ball back to the middle of the field and wisely concluded not to buck the centre any longer. After making 15 yds. on a wedge, Whittemore got around the right end for 5 yds. Three downs and no gain and Whittemore prepared to punt. The ball was passed to him but he dropped it, the omnipresent Chase picking it up and running 30 yds. before he was downed. A few more attacks on Cambridge's centre and Allen scores another touchdown, and Southgate again fails for goal.

Score, W. P. I., 8; C. M. T. S., 0.

Jewell gained 12 yds. in a V. Leavitt tries a run around the end, but Butterfield carries him back 5 yds. Leavitt tries again and loses instead of gains. Jewell tries the criss-cross but Smith downs him and Tech takes the ball. Lincoln and Southgate go through the line for big gains, then, with the ball 25 yds. from goal, Brooks goes through and scores a touchdown. Southgate made another unsuccessful attempt at a goal.

Score, W. P. I., 12; C. M. T. S., 0.

Cambridge tries again but loses on four downs immediately, as the Tech line breaks through easily and tackles the men in their tracks. Tech attacks the centre again and Allen gets another touchdown, for which he tries for goal, but fares no better than Southgate.

Score, W. P. I., 16; C. M. T. S., 0.

At this point Southgate leaves and Stone, '93, takes his place. Cambridge gains 5 yds. at the start-off. A criss-cross fails to work and the backs lose ground instead of gaining. Tech takes the ball and Brooks is pushed 40 yds. before he is downed. A V then pushes the ball over with the usual ill success at a goal.

Score, W. P. I., 20; C. M. T. S., 0.

Once more Cambridge begins at the centre and this time Whittemore punts 25 yds. Brigham is then pushed through the centre for two good gains; then Stone makes a run of 20 yds. after which he is disabled and Andrews takes his place. Having secured the ball on a fumble, Cambridge worked the criss-cross successfully, Jewell gaining 40 yds. around the left end. The ball was now only 8 yds. from Tech goal line, but the call of time put an end to Cambridge's hopes for a touchdown.

In the second half Umpire Eaton takes Jewell's place. Tech has the ball. An occasional V and bucking the centre by the backs secured



another touchdown and another failure for goal. After a few moments more of play during which time Cambridge kept the ball, they decided on account of the slippery condition of the ground and the demoralized condition of their men to give up further attempts and the game was called.

### THIRD CROSS-COUNTRY RUN.

The last Cross-Country Run of the season is over, and the Senior class has increased its lead in points by seventy-five, making a total lead over the Middlers the next highest competing class, of one hundred and nine points. This is the third time the Class of '93 has won the series, having a spotless record for the last three years.

About 4.40 P. M. on Monday, Oct. 31, the runners congregated at the corner of West and Highland streets. The lack of '94 men was quite noticeable. This was largely owing to the long lead which '93 had obtained in the preceding two runs. Only fifteen men toed the scratch, nine from '93, Baker, Farwell, Coombs, Derby, C. E. Goodrich, Parker, Gage, Paull and Vaill; five from the Middle Class, McFarland, Fuller, Gordon, Gallagher and Linnell; and one Junior, O'Connor. The course was from the corner of West and Highland Sts. to Tatnuck Post-Office and return.

At 4.51 the men were given the word by Instructor Coombs and went off in a bunch at a good pace. The bunch, however, soon fell to pieces, and each man went at his own gait. At the turning stake Parker was in the lead by something like twenty yards. Then came Baker, Gordon, Coombs, Farwell and Derby in order. Just twenty-eight minutes and forty-two seconds after the starting word was given, Parker, '93, recrossed the line. The rest came up as follows: Baker, '93; Gordon, '94; Coombs, '93; Farwell, '93; Derby, '93; McFarland, '94; Fuller, '94; Vaill, '93; Goodrich, '93; and Paull, '93. The remainder, for various reasons did not go as far as the turn.

The score for the classes was:—

'93	'94	'95
120	45	0

Total score for the three runs for each class stands as follows:—

'93	'94	'95
333	224	28

The individual medals were won as follows: Gold medal by W. H. Parker, '93, with 59 points; silver medal by Chas. Baker, Jr., '93, with 58 points, and bronze medal by G. C. Gordon, '94, with 54 points.

Mr. Coombs was referee and starter. Hodgkins, '93, was judge at the stake; Whipple and Cobb, '94, and Harrington, '95, kept score at the finish; Denny and Heard, '93, and Davenport, '94, acted as timers. Professor Sinclair showed interest enough to ride by the start after the runners had left. Instructor Rood was there to see the finish.

The road was quite dusty but, worse than that, the darkness and roughness of the course made the run an extra hard one. One runner took a severe fall, bruising a knee quite badly.

It was remarked by several runners that the bicycle coaches were of no use to those whom they were not coaching but were something of a hindrance. It may be all right, but when a man rides before somebody else and makes him very uncomfortable by the dust, in order to help a second runner, there is at least a question of politeness about it, and when the slighted man is a member of another class, the question becomes a still greater one.

This run was the last of a most successful series. The only draw back was the one-sidedness of the contest at last, which tended to discourage the Ninety-four men. The records of the series of the last three years may be of interest at this time for comparison.

Gold medal, 1st series, H. L. Dadmun, '91, with 60 points; E. A. Taylor, '91, silver medal, with 55 points; bronze medal, E. L. Smith, '92, with 54 points. 2nd series—Gold medal, Chas. Baker, Jr., '93, with 57 points; silver medal, A. D. Butterfield, '93, with 49 points; bronze medal, F. E. Wellington, '95, with 44 points. Class standing was:

	'93	'91	'94	'92	'95
1st series,	215	209	109	97	—
2d Series,	270	—	230	20	41
3rd Series,	333	—	224	—	28
Total,	818	209	563	117	69

### NINETY-THREE'S SUPPER.

**A Celebration over the Cross-Country Victories.**

In anticipation of winning the third consecutive banner out of a possible three, the Seniors appointed their officers and the captain of the cross-country team as a committee to arrange for a celebration. As hopes were not disappointed and the banner was theirs, they gathered at the Bay State, at 8 P. M., Nov. 2d. After a few minutes of social chat in the corridor, they filed into the dining-room and took seats at the tables, which were arranged in the form of a T.

W. H. Larkin, Jr., President of the Class, sat at the head of the table, while near him were E.

W. Marshall, toastmaster, and W. H. Parker, champion of the series of runs, fall of '92. Seated about the table were 42 other members of the class and as ex-members' Messrs. W. N. Stark, R. H. Hammond, F. M. Ramsdell and *Jona H. Childs*. A discussion of the regular supper bill of the house with the addition of ice-cream, which Ninety-three always manage to have despite the valiant deeds of other classes, took the attention of each for some time. Then cigars and cigarettes appeared as if by magic, while now and then one could hear a piper puff. Amid wreaths of smoke Pres. Larkin arose, called the gathering to order and introduced Marshall as toastmaster.

The latter, after comparing his probable efficiency with that of Prof. Kimball's storage battery and pleading guilty to a certain degree of youth and inexperience, first called upon A. D. Flinn to respond to "Our Opponents."

Mr. Flinn gave a short account of the three runs, saying that in '91 the class had its most stubborn opponents, and if Dutchy Armstrong had not been offset by Jonathan Childs the victory never would have been won.

Mr. C. W. D. Dyer was called upon as captain to speak for the "Cross-Country Team." Mr. Dyer reviewed the work of the team, commending especially those men who had run persistently notwithstanding their small scores, simply from devotion to the class, and also those patriotic spirits who were ready to rub down for the glory of the class. Three cheers for the team were then given.

Mr. DaCruz, after disclaiming any knowledge in regard to "The Ladies," went on to prove his ignorance of the subject in a witty speech which kept his hearers in applause and laughter. He claimed that women are the most divine creation of Heaven. That they give us inspiration and aspiration. He said, "As I have travelled a good deal perhaps I can give you some points, although I don't know eet very mooch. What ees eet makes ze boys likes ze girls? How ees zat?" Right at this point our pencil broke, and we could take no more notes before the next speaker.

Pres. Larkin, in response to "The Class," gave reminiscences of class history and a prophecy of a glorious future. He urged that "As veterans of the war always wear about their persons some mark to signify their connection with the army, so let us carry in our hearts a living remembrance of our class which shall remain with us through life."

Mr. L. P. Strong gave "93's Athletic Record." He claimed that it had not been beaten in cross-country runs, and was good in other things. Until last spring the class did little in track ath-

letics, but then it was beaten by only one point. Everyone hopes that the point will be on the other side next spring. We have developed a new man in every series, Baker, Starbuck, and Parker.

Mr. W. H. Parker, on "Cross-Country Runners," gave a history of cross-country runs in England and America. Originally steeple chases they developed into the present simple system. An English champion ran 115 miles at the rate of over 5 miles per hour. Mr. Parker then related a humorous story which caused much laughter.

Mr. Paull spoke upon the good-natured but unfortunate Bill McKinley. He related his experiences in obtaining the political opinions of the members of the Faculty. He found that the bill had raised everything at the Institute, tuition and the devil generally, but had been unable to start the school flag.

A. C. Comins, as manager, then spoke of our "The Intercollegiate Team." After sundry grinds on members past and present, he "seriously" outlined some plans of the management for this winter. He urged that *healthy* class rivalry was to be desired and fostered, but that "School first, class second," should always be borne in mind.

Last of all, Mr. Nathan Heard spoke on "Polly con as taught at the W. P. I." For particulars of this speech see '93's Class Book.

An hour was then spent in piano playing, singing and the like; after which the company set out for home.

All agreed that the supper was a great success, and it seemed to be the opinion of many that there ought to be more before next June. A pleasant reminder of the occasion was the menu card of each man covered with the autographs of the others. If the proprietor of the Bay State wants pay for these let him address the treasurer of '93, W. P. I.

In behalf of the class, it may be said that Mr. Douglass was very kind in allowing the use of his piano which he moved into the dining-room free of charge. The service was very good indeed.

#### NOTES BY ENTROPY.

MR. EDITOR:—

When I was reading the abstract of Mr. Hatch's paper which you published, I happened to think that his dislike to give definite rules, etc., might be accounted for in this wise: In '88 there appeared in the *American Machinist* an article on this same subject. The author was a man who is well known in mechanical circles. He proved by figures from actual practice that on a certain piece of work, ordinarily assigned to a

planer, the milling machine would beat the planer every time, as far as cost and accuracy were concerned. He was immediately disputed by a man of equal reputation, who showed by other figures (which never lie) that the opposite was true. They finally compromised by letting the matter rest just where it was when they began. The question of planer vs. milling machine will remain open for debate quite a time longer.

Gear cutting is the favorite standby of milling machine advocates. Of course the greater part of the gears running to-day have been cut by milling cutters. Under favorable conditions, a planer may be made to cut as many gears in a day as a gear cutter. The cheapness, and what is more the accuracy of the cutters furnished by reliable firms, is what makes it pay to cut all gears in this way.

A Brown & Sharpe milling machine which will operate on a block of iron 16 in. wide, 18 in. high, and 4 ft. 6 in. long, weighs about 5000 lbs. A planer of heavy standard make to take work 24 in. square and 7 ft. long weighs the same. That is, of two machines of standard design to do the same work, the milling machine would be about three times as heavy as the planer.

When builders of planers wake up to the necessity of making a powerful machine, and as heavy in proportion to the work to be done as milling machines now are, there will be plenty of time to compare the two machines as manufacturing tools.

\* \* \* \* \*

Mr. H. advised one of the members to "scrap" his castings if they were hard. After a man has spoiled even \$5 worth of milling cutters on a casting he will be apt to want to "scrap" the foundryman also.

\* \* \* \* \*

As one of them I wish to defend the alumni against the charge of modesty in reporting their occupations. I know of one man who has for several years reported himself as "with so-and-so;" not out of any desire to withhold information but because it is simply impossible for him to define his position.

\* \* \* \* \*

About this time politics have been, probably, a matter of considerable interest at the W. P. I. In this connection I would like to say a word about politics and Poly Con. The one thing I most liked about Prof. Smith was that I never could find out how he voted. I sounded him several times upon this, never directly of course, but just so soon as the conversation approached dangerously near the point he began to look wise and kept still.

ENTROPY.

## NOTES FROM THE SALISBURY LABORATORIES.

### Chemical Department.

In the chemical department, away from the path trodden by most of the students, much is constantly taking place of which very few know and yet which is of great interest.

During the last two years, a great deal of original investigation has been carried on by Professor Moore, Mr. Desper and Mr. O'Regan. Although the apparent results for the first year's work have not been great, yet during the past year the "American Academy of Arts and Sciences" has published in its *Proceedings* several reports of investigations carried on by Professor Moore and Mr. O'Regan. This of course is a decided honor to the Institute.

Few realize the days and even months of slow, careful and often unrewarded labor necessary to produce such results. As an example: Last year, for three months, these gentlemen worked to obtain a certain substance. The utmost care and precautions were used and finally their efforts were crowned with success. But all that was obtained was *one tenth of a gram*, just barely sufficient to prove to them that it was the long-looked-for substance; a mere breath of air, and it would have vanished, and with it the labor of three months.

For some time past these gentlemen have been making investigations in regard to quinine. If successful, the results will be published in the *Proceedings* of the Academy, and noted later in these columns.

### Physical Department.

The students taking the postgraduate electrical course are designing a motor to be constructed soon at the Laboratories.

### Mechanical.

Professor Alden has completed the schedule for the Senior Mechanical Laboratory practice and the work will commence on November 28th. There are twelve problems which the Mechanics are to take, and six for the Civils. The latter will spend their remaining time in experimental Hydraulic work with Professor White.

## SHOP NOTES.

### Jones versus Knight. A Peculiar Chip.

Messrs. Jones, drummer, and Knight, book-keeper at the Shop have had a difference of opinion as to the usefulness of the tariff. The former recently flaunted a clipping from a New York paper, which gave an alleged interview with a member of a western canning firm, in which the McKinley Bill was vigorously denounced. The members of the firm who heretofore had been Republicans were now said to all be Democrats.

American tin is almost an unknown quantity, and the tariff a deduction from profits. Mr. Knight, it happens, is anxiously looking forward to his tin wedding and on that account views with alarm a rise in the shiny article. Accordingly he decided to investigate the matter and sent the clipping to the firm in question, and from them received a letter which was a complete denial of all statements made. One member of the firm is manager of a Republican paper, another is stumping the State for Harrison, and the third is the head of a Republican Committee. Mr. Jones now appears at the south end of the Shop only when business takes him there, and Mr. Knight and Mr. Cole exchange winks. One of the daily papers in reporting the incident refers to "Mr. Fred E. Knight, '94."

Mr. Jones recently had his grip stolen from him on a Providence train. He was engaged in a game of whist and had left his satchel in a neighboring seat as some one else furnished the chips.

Business at the Shop has been very good of late. At present elevators are in process of construction for the Superior Barbed Wire Co., DeKalb, Ill., C. G. Taylor, Ann Arbor, Mich., Dr. Martin block, Pleasant St., Worcester, Hopedale Machine Screw Co., Hopedale, Mass, Thos. Packer, Naugatuck, Ct., N. E. Electric Coffee Co., Central Falls, R. I., Bye and Fuller Furniture Co., Springfield, Mass., and for the residence of D. H. Andrews, Newton Centre, Mass.

The largest drill grinder that has ever been made at the Shop is about completed. It will be large enough to grind a four-inch drill, four feet long. We are told it is made of a special quality of cast-iron the same that is used for tool shanks. The new shop is at present being piped for steam heat.

H. S. Davis, '95, while turning up some work in the Shop a few days ago obtained a most peculiar chip. In the lathe was a piece of machinery steel about 15" long from which a cut was made for a distance of 4". The diameter at first was  $1\frac{1}{16}$ ", and at the first cutting from which the chip in question was obtained, it was reduced to  $\frac{3}{4}$ " in diameter. The tool was an ordinary diamond point set in the usual position, and the lathe was a Reed lathe. The chip as it first came away from the tool curled in the usual spring fashion with a diameter of about  $\frac{1}{2}$ ", but as the work progressed, instead of keeping the spring form, it developed into a spiral, each loop being larger than the preceding one, until when the entire four inches had been turned, the diameter of the spiral was about 4". When held by the smaller and heavier end, it elongated to a distance of about 6'. The sur-

face which came away next to the tool had a bright polish and the upper surface was smooth though "striated" but without polish. Davis coiled it up within itself and will have it nickel-plated and kept for a souvenir. All the journeymen who saw it, including Foreman Mitchell, said that in all their experience they never had seen one like it. Why when cut from a piece of uniform diameter with a uniform speed, a chip should act thus, is quite an interesting problem and if anyone will give an explanation of it, we should be glad to publish it.

### BANJO CLUB.

After the minstrel show of last year effort was made on the part of some of the students to keep up the Banjo Club which was formed for the occasion, but several things occurred to prevent and it had to be abandoned.

This year the matter has been agitated since the beginning of the term, and resulted, Monday, October 31st, in the formation of the Banjo and Guitar Club. A constitution was drawn up and the following officers elected: Leader, H. C. Boyden, '94; Business Manager, C. G. Harris, '94; Secretary, H. J. Chambers, '95. The membership has been limited to ten, and consists at present of Boyden, Harris and Magaw, '94; Leland, Chambers and Dove, '95. At least two more banjos and two more guitars are wanted.

The greatest difficulty is to find time to practice together, but rehearsals have commenced already, and if all goes well the club will soon be in the position to accept engagements.

### HARVARD-YALE GAME.

A week ago last Friday, the presidents of the Harvard and Yale Foot-ball Associations met at Springfield and completed arrangements for the great annual contest which is to take place at Hampden Park, Springfield, one week from next Saturday, Nov. 19th. Grand-stands the length of the field on opposite sides are to be erected, capable of seating 14,000 people. One side will be reserved for Yale sympathizers, the other for Harvard. Each will be divided into ten sections and furnished with comfortable chairs, numbered and lettered. Last year much inconvenience was experienced because tickets only admitted to the several stands, and in consequence seats went to the first arrivals. The centre four sections will sell at \$2.50 a seat, the next two on each end \$2.00, and the end ones for \$1.50. Grand-stands will also be erected behind the goal-posts, to which admission will be \$1.00. About 20,000 people will be accommodated. The game will probably begin at 2.30 P. M. Last year a number

of tickets were on sale in this city and the same will probably be the case this time.

Last week Monday, Yale's team went to training-table. It was then made up as follows: McCormick, Capt., q. b.; Hinkey, l. e.; Winters, l. t.; Sanford, l. g.; Stielman, c.; Hickox, r. g.; Wallis, r. t.; Greenway or Norton, r. e.; Graves, l. h.-b.; L. Bliss, r. h.-b.; Butterworth, f.-b.

### TECH CO-OPERATIVE CLUB.

It seems to be generally known that there is such a thing in existence as the Tech Co-operative Club. Just what it is and why, are questions which have been asked about it and usually with unsatisfactory answers. Early last spring several '93 men hit upon a plan of hiring a tenement or house and furnishing it themselves, and thereby save something in rent and have things more to their liking. Later on it was suggested that other men be admitted and a kind of social club formed at the same time. This was done and several '94 and '95 men joined. This fall the lower flat of the house No. 4 John St., was leased and furnished. Here there are cosy parlors and rooms for five men. The fittings are modest but very pleasant and the parlor is well-patronized by members having a spare half-hour on their hands. The suggestion has been made that some day it be merged into a Greek letter fraternity, but this if it comes at all, is a thing of the future. At present it is only a business and social organization. The officers are, President, C. W. D. Dyer, '93; Vice President, G. W. Heald, '94; Secretary, Chas. Baker, Jr., '93; Treasurer, Alfred D. Flinn, '93.

### NOTICES.

- Nov. 10. Second Y. M. C. A. Entertainment, Germania Orchestra; Thomas Hansell, Whistler.
- Nov. 11. 7.30 P. M., Literary Entertainment, subject, "Tennyson," Central Church.
- Nov. 12. Entertainment in memory of Gustavus Adolphus, followed by Social and Dance, at U. C. ME.
- Nov. 13. 3.00 P. M., Lecture on "Seven Wonders of Worcester," by Rev. Walter Vrooman, at U. C. ME.
- Nov. 15. Gymnasium Exhibition in the Evening, at Y. M. C. A.
- Nov. 16. Foot-ball, W. P. I. vs. Harvard Freshmen, at Cambridge.
- Nov. 17. 7.45 P. M., Lecture, First Univ. Church, by Dr. Gunnison, "Over the Alps into Sunny Italy."
- Nov. 17. Third Y. M. C. A. Entertainment. Fred Emerson Brooks, Poet-Humorist; Edward P. Elliot, Impersonator.
- Nov. 19. Foot-ball, Harvard vs. Yale, at Springfield. Father Matthew Lyceum dance in U. C. ME.
- Nov. 21. 8.00 P. M. Meeting of W. M. E. S. at Salisbury Laboratories.
- Nov. 22. Opening of Athletic Tournament at Y. M. C. A. in the evening.
- Nov. 23. 2.30 to 3.30, and 3.30 to 5.00. Humorous Concerts at U. C. ME.

### ENTHUSIASTIC TECH REPUBLICANS.

Although the W. P. I. Republican Club seems to exist only in the newspapers and there is some insurmountable difficulty for its success in practice, nevertheless Republicanism is strong at the Institute.

A large number of the students gathered on Main Street near the City Hall on the evening of the great parade Tuesday, Nov. 1st, and marched down Main St. to Lincoln Sq. Here it was suggested that as so many had gathered it would be a good idea to participate in the procession. A company was quickly formed, and when the parade came along the Techs fell in behind the staff and marched the entire route. Although the lines were often out of alignment to say the least, yet the students received applause along the whole march. The "P. I." "Polly Wolly" and "Who was Benjamin Harrison," were given with telling effect.

General Chamberlin was notified that the company wished to have a share in the eatables as a reward for its work in the cause, and he very kindly consented. So, much to the disgust of the police, the Techs were admitted to the rink grounds and shared in the lunch. Nearly a hundred men were in line.

At the rally in Mechanics Hall on the following Thursday another body of the students was present. They were seated together and contributed to the enthusiasm by vigorously cheering the speakers.

A great deal of annoyance was caused to all present by the continued snapping of the campaign canes after the other applause had ceased, but it should be noticed that none of this came from the Techs. Their applause was sharp and decisive, and seemed to please the speakers. A large party of High School boys were present but their yell was drowned out every time the "P. I." sounded.

### FOOT-BALL MEETING.

At the call of Manager Phillips a meeting of the members of the Institute was held in the Chapel last Monday noon. The object was to find out the feeling of the students in regard to a foot-ball game with Holy Cross.

After a few remarks by Dr. Fuller concerning the actions of the students on election night, it was stated by Mr. Phillips that the Holy Cross manager had cancelled the game for next Saturday, but wished to arrange one for any Tuesday or Thursday afternoon. On motion of Capt. Allen it was voted to ask the Faculty to postpone the exercises from Thursday afternoon of this week until Saturday afternoon. A commit-

tee of three consisting of Phillips, '93, M. C. Allen, '94, and Chase, '94, was appointed by the chair to present the case to the Faculty, and, if the request is granted there will be a game with Holy Cross Thursday afternoon.

### THE W. P. I. AND THE ROSE TECH.

In the October issue of the *The Rose Technic* appeared a brief résumé of Prof. Alden's article in the July W P I. The statistics regarding hours here and at the Boston Tech were taken directly from these columns and compared with what purported to be the hours made up on the same basis, at the Rose Tech. The results showed that the student at Rose puts in a total of 8,277 hours in four years to 2,758 hours at Boston Tech, to 4,405 hours here in three and one-half years. This astonishing statement was shown to Prof. Alden, the writer of the original article in the W P I, and from him comes the following explanation.

#### Correction.

"In the July issue of the W P I the statement preceding the figures on page 86 should be as follows:

'The figures given below compare the total number of hours devoted to *instruction* in each subject for the whole course.' The remainder of the sentence, viz., 'and are made on the basis of two hours of study for each prepared exercise,' should be omitted in this connection. We regret this error by which *The Rose Technic* was led to conclude that its students were doing double the number of hours' work done by students in the East. We should be glad to see the figures for the Rose on the same basis as those given for the Mass. Inst. and the W. P. I., viz., actual hours of instruction, recitation, lectures, laboratory work and practice. In reckoning the number of weeks in the school year, the time devoted to examinations was not included."

### Y. M. C. A. CONVENTION.

The twenty-sixth annual convention of the Y. M. C. Associations of Massachusetts and Rhode Island was held at Pittsfield, Mass., October 20th to 23rd. The Institute Association was represented by Edward W. Vaill, Jr., Nathan Heard and C. E. Goodrich, all of Ninty-three.

Over three hundred delegates were present, among whom were representatives from Brown, Amherst, Williams, Harvard, Mass. Agricultural College, and other institutions.

All the services were of deep interest, especially so to the collegians was the conference and banquet for college men at which Mr. J. R. Mott, College Secretary of the International Committee, presided. Very favorable reports were received from nearly all the institutions represented

in regard to the Association work and all the delegates came away with many helpful ideas.

Although in the midst of the celebrations attending Columbus Day, the people of Pittsfield were exceedingly hospitable.

On Friday afternoon the Pentathlon athletic contest was held and the Association team from Pawtucket succeeded in bearing off the handsome banner, which to become the property of an Association must be won for three consecutive years. A foot-ball contest between the Springfield Training School and Mount Hermon was won after a close struggle by the former, the score being 16—12. The convention for 1893 will probably be held in Fitchburg.

### ALUMNI NOTES.

'87. We omitted to mention in the last issue, that W. W. Bird sent a check for \$5.00 to the W P I, \$1.50 of which was for a subscription, and the balance for the Foot-ball Association. In behalf of both we extend thanks. Such an incident is almost unmatched in the history of the Institute.

'88. Geo. I. Rockwood leaves Worcester in a few days for Chicago, where he will remain as designer for the Wheelock Engine Co. of this city. The Company is combining all its western branches in a central one there, and is planning to eventually give up its plant in Worcester and remove everything to Chicago.

'90. E. W. Lazell is still Manager of the Virginia Brick Company, at Roanoke, Va., and is also interested in other schemes in that region for way-laying the "Almighty Dollar." He writes, "If you know of any of the boys looking South, I can commend Roanoke as a good place in which to locate. Good town, good water, good air, etc., and *pretty girls*." The town has doubled its population six times since 1880.

'90. Chas. H. Faulkner is with the Imperious Package Co., manufacturers of tinned and coppered cans for paints, oils and pickles, at Keene, N. H.

'90. E. J. Lake was quite seriously hurt in playing foot-ball at Harvard recently. He was bucking the centre and injured his neck in some way. No one, not even the doctor, seems to know his exact condition. Although still at training table, he will probably be unable to play at Springfield, the 19th, and may have to give up foot-ball entirely.

'91. The engagement is announced of F. A. Bigelow to Miss Alice Rheutan of this city.

'92. Vernon G. Converse is with the Edison General Electrical Works, Schenectady, N. Y.

'92.—L. C. Smith has charge of the 3rd year geometry classes at Washington University, St. Louis, Mo.

**W. M. E. MEETING.**

The next regular meeting of the W. M. E. Society will be held on Monday evening, Nov. 21st. Papers will be read by W. L. Chase, '77, on some subject connected with the transmission of power by ropes; by T. Spencer Miller, '79, who is Manager of the Cableway Dept., Lidge-wood M'fg Co., New York, and a working model of the steam loop will be explained by A. C. Higgins, '93.

**ELECTION NIGHT.**

At the Faculty meeting held Tuesday afternoon, the request of the students to have the Thursday afternoon exercises postponed until Saturday was referred to the committee on athletics. It was stated to the students, however, that no request would be granted if there was any disturbance caused by Techs, on the street Tuesday night. Consequently, as all were anxious for a foot-ball game with Holy Cross, the students as a body were very quiet. During the first part of the evening about thirty collected at the corner of Pearl and Main Streets to watch the *Telegram* and *Gazette* bulletins. They stayed here until half-past nine giving the "P. I." several times and cheering some of the results as they appeared. Then they moved down Main Street until near the City Hall, where they met a crowd of fellows who seemed to think it their duty to stop all Tech yells. A slight clash followed in which the Techs were not worsted by any means, but for the sake of the foot-ball game Thursday, quickly dispersed.

The Techs, almost without exception, wore old clothes and soft hats suggesting that something was expected. Perhaps it was but it didn't come.

**HISTORICAL CLUB.**

The Executive Council of the Historical Club met recently and decided to take up as the subject for the year, the French Revolution. There are to be ten meetings, five of which are to be historical and five literary, alternating. The first will be held Friday, Dec. 2nd, and the subject will be "Social and Political Conditions in France immediately preceding the Revolution." The plan of the work laid out is different from that of last year and promises well. Prof. MacDonald is much interested in the Club and will be a great help in promoting its efficiency.

**COLLEGE NOTES.**

There are over forty students trying for a place on the Board of Editors of the *Amherst Student*.

Amherst had a Republican Battalion composed of about two hundred men.

Over seventy men presented themselves as candidates for Harvard's 'Varsity eleven.

The University of Chicago is to have a \$200,000 gymnasium. A. A. Stagg will have charge and be assisted by three assistants, one of whom will be a woman.

The ninety-four universities of Europe have 1723 more professors, and 41,814 more students than the 360 universities of the U. S.

The University of Chicago expects to use a large space in the Liberal Arts building, Chicago, during the World's Fair, for a reception room for all college students, professors and graduates.

Thirty-three Greek-letter fraternities have chapters at Cornell.

Arrangements have been made at Harvard to allow students to complete the course necessary for the degree of A. B. in three years. The degree of A. M. can be obtained in four years.

A Japanese student describes Harvard in a letter home thus: "Some very large buildings where the boys play foot-ball, and on rainy days read books."—*Ex.*

During the last seven years, Yale's foot-ball eleven has scored 3,863 points against her opponents 88.

**TECHNICALITIES.**

It must have been a remarkably strong wind that moved the wagons one night last week.

Instructor Rood thinks it was a Vile pun published at his expense in the last W P I.

It is said that now when Instructor Beals buys a rattle, he does it merely for the "kid of it."

A current magazine has an article upon, "The Divine Faculty." This has no reference to the Institute.

LOST. The enthusiasm of the average Tech when it comes to working a little for the good of a society.

The first cane rush of the season took place in the Republican rally held in Mechanics Hall last Thursday evening.

The grounds surrounding the new shop should be sown with next year's Preps. to insure a green growth.

The Tally-ho from Fitchburg took the cake in the Republican parade last Tuesday, but the Tech battalion took the doughnuts at the Rink.

Junior to Prof.: "Will you please excuse me fifteen minutes early? I have to go to a funeral and I want time to get my foot-ball suit first."

It is a disappointed man who dreams that he

has won the cigars he bet on election and wakes to find that his dream has gone up in smoke.

The Y. M. C. A. recently received a bill from Zahonyi. It read, " $\frac{1}{2}$  doz. spoons short, \$1.50." Evidently there is still a field for evangelization.

Next year a triple foot-ball league will be formed between Boston University, Amherst Agricultural College, and Worcester Polytechnic Institute.—*Harvard Crimson.*

Prominent among the dignitaries who lent grace to the great Republican rally at Mechanics Hall, Oct. 20th, was Mr. H. L. Phillips, '93, of Holden, who occupied a seat upon the platform.

Scene at room for three where all take turns at managing fire. Stowe Kerr: "Say, I'd like to know who's been meddling with my fire!" Low Ferr: "Why? Is it out?" Stowe Kerr: "No, it's all right."

Sunday afternoon, Nov. 13th the Y. M. C. A. holds a public meeting in Boynton Hall. The delegates to the Pittsfield Convention will report, and Rev. Daniel Merriman, D.D., will speak. All the students are cordially invited.

Prof. C.—"Egbert, the grandson of Alfred, his grandson's grandfather, Alfred the grandson of Egbert his grandfather, Alfred's grandson, Egbert grandfather of Alfred."

'93.—"Will you please repeat?"

Prof. C.—"Isn't that clear?"

'93.—"Which was the grandson of whom?"

The reason why the first foot-ball game arranged with Harvard Freshmen, had to be given up, was as follows: It seems that the Varsity Manager has authority over the Freshman Manager, and the arrangements were originally made with the latter, but were afterwards altered because the former had other plans.

Sometime during Thursday night, the usually peacefully inclined people of Boynton Street or somebody else went on a lark, for Friday morning one of the Shop wagons was found in front of the Salisbury Laboratories with its (w)heels in the air, the truck for moving the elevator pipes had rolled down towards Boynton St., and the big tennis roller was out in West St.

The electricians have learned how to make a permanent magnet. Get a piece of the best tool steel (the brand used at the W. M. S. being above reproach). Forge to shape. (In most cases, this forging ought to be a States' prison crime). Then charge (to the Institute). After charging get the magnet on a string and play "the Bowery" on it. Now boil it tender, and garnish with nails, iron filings, etc. The result is an instrument whose magnetism is as sure as taxes and breakage bills.

The next number of the W P I will contain an article upon "What to do with your invention" by Louis W. Southgate, '85, and also a full report of the meeting of the W. M. E. Society.

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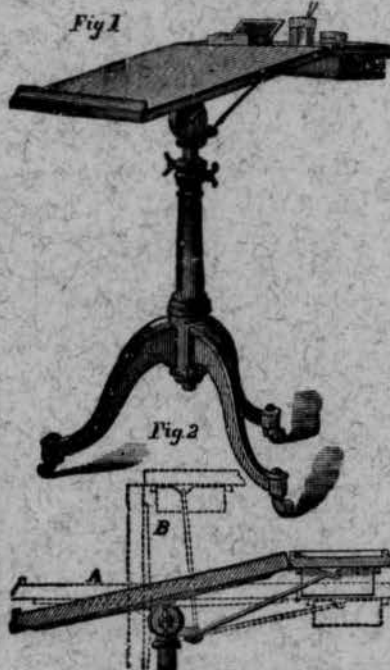
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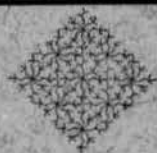
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