



Vol. II. No. 5.

CONTENTS.

Editorials.....99
Washington.....102
The Difference.....104
Extra Studies.....104
*The Horny-Handed Na-
 tive of the "Soil"*.....106
*Eighty-Eight's Half-way
 Dinner*.....107
Density of the Earth.....109
*Formation of the New
 England Intercollegiate
 Press Association*.....110
Our Bow.....110
Athletics.....111
Communications.....112
Scientific Notes.....113
Exchanges.....115
College News.....117
Personals.....118
Technicalities.....119
Museum of Antiquity.... 120

MACULLAR & SON.

We make an especial display of

READY-MADE CLOTHING

FOR YOUNG MEN.

WE HAVE UNUSUAL FACILITIES FOR OBTAINING

CHOICE STYLES,

Connected as we are with the famous

BOSTON HOUSE OF MACULLAR, PARKER & CO.

Our Styles in FOUR-BUTTON CUTAWAYS, SINGLE AND DOUBLE-BREASTED SACK SUITS cannot be duplicated in Worcester for the prices. Our OVERCOATS are Elegant. We have a large line of

Choice Woolens for Garments to Measure.

LOW PRICES PREVAIL

IN ALL DEPARTMENTS.

372 & 374 Main Street.

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 Under-sells us in this City or Boston. No store shows a Finer Selection. Samples sent with Prices, and Parcels Forwarded by Mail at Trifling 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.

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.

F. A. CLAPP & CO.,

371 Main Street, Opposite Elm Street,

YOUNG MEN'S HATTERS AND OUTFITTERS.

HATTERS,
Fine Neckwear, Hosiery,
GLOVES, UNDERWEAR,
KNOX HATS.

Troy Laundry every Tuesday.

Athletic Goods and Uniforms,
Base Ball, Tennis, Bicycle,
FOOT BALL
—AND—
GYMNASIUM OUTFITS.

REBOLI
CONFECTIONER

—AND—

CATERER,

6 & 8 PLEASANT STREET,

Worcester, Mass.

—NOTICE—

To Graduates and Friends of The
Worcester Free Institute.

Any Person desiring a

GROUP PHOTOGRAPH

(Twelve Cabinets reduced on a panel, 8 x 10)

Of the FACULTY,

Can obtain the same by sending One Dollar to
AMZI T. ROGERS, '86, 18 Elm St., Worcester, Mass.



Estate of

J. L. BURBANK,

Successor to

M. B. Green & Co.

APOTHTCARY

And dealer in Drugs, Patent Medicines, Perfumery, Etc.

376 Main Street, cor. of Elm, Worcester, Mass.

H. L. FISK, Manager.

Physicians' Prescriptions a Specialty.

REED & PAGE,

Headquarters in Worcester County for

ELECTRICAL APPARATUS

And General Electric Work.

Private Residences, Churches, Hotels, Stores, Public Buildings, and Manufacturing Establishments fitted with Electric, Gas and Gasoline Lighting. Burglar Alarms, Electric Bells, Watchman's Electric Clocks, Speaking Tubes, Electric House, Office and Elevator Calls, Etc. "Acoustic" Private Line Telephones. "Magneto Calls" with Hand Telephone. All kinds Outside Line Work a Specialty.

REPAIRING PROMPTLY ATTENDED TO.

28 Pearl Street, Worcester, Mass.

FRANK REED. Telephone 45-5. CHAS. H. PAGE.

WORCESTER COLLAR LAUNDRY.

13 Mechanic Street, Worcester, Mass.

Collars and Cuffs Laundered in Superior Style.

Special attention given to Shirts and Gents' Underwear. Work called for and delivered without extra charge, in all parts of the City.

C. B. COOK, - PROPRIETOR.

NOTICE.**Our New Brand of Cigars, THE LA CIGALE.**

Made by hand from the finest selection of Havana Tobacco that can be procured. They are free from all adulterations and flavoring extracts, so preventing the stupefying effects of highly flavored cigars. We are confident that smokers will find upon trial, that we have produced a cigar that cannot be excelled.

None genuine without our firm signature.

O. F. RAWSON & 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.

**MISS E. A. BURKE'S
SCHOOL FOR DANCING**

WILL BEGIN

For Juveniles, Wednesday, Oct. 6, at 2.30 P. M.

For Adults, Friday, " 15, 7.30 "

For Circulars, Terms, etc., please call or address

Miss Burke, 38 Front St., Worcester.

GYMNASIUM,

38 FRONT STREET,

Open for Ladies and Children, Monday, Wednesday and Saturday from 3 to 4.30 P. M.

For Gentlemen, from 4.30 to 10 P. M. every day in the week. Special Rates to Students.

DR. A. A. HOWLAND.

FRANK H. HOWLAND, D. D. S.

DENTAL PARLORS,

32 Front Street,

WORCESTER, MASS.

ELMER G. TUCKER,

340 Main Street,

A RELIABLE DEALER IN THE

Watch and Jewelry Business

In all its branches.

Personal attention given to FINE WATCH REPAIRING.

SPECTACLES AND EYE-GLASSES accurately fitted to the Eyes by the aid of the Ophthalmoscope.

L. J. ZAHONYI,

348 MAIN STREET,

Confectioner and Caterer.

Open after the Theatre.

WILLIAM E. MAY,

DEALER IN

BOOTS, SHOES AND RUBBERS,

201 MAIN STREET, COR. OF THOMAS,

WORCESTER, MASS.



THE W T I.

Published Monthly, during the School Year, by the Students at the Worcester Technical Institute.

BOARD OF EDITORS.

LITERARY.

J. W. BURKE, '87, <i>Editor-in-Chief.</i>	
J. M. GOODELL, '88.	E. W. DESPER, '89.
P. J. MCFADDEN, '88.	F. L. SESSIONS, '89.
A. D. RISTEEN, '85.	
H. P. CROSBY, '90.	E. C. RICE, '90.

FINANCIAL.

G. P. TUCKER, '87.

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

Remittances should be made to the Financial Editor. Exchanges should be addressed to the Exchange Editor, P. J. MCFADDEN, 13 Auburn Street. Communications with regard to all other matters should be directed to the Editor-in-Chief.

Single Copies may be obtained at SANFORD & CO.'S, 364 Main Street, or at WALTERS & HOLDEN'S, 149 Main Street.

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

CHAS. HAMILTON, PRINTER, 811 MAIN ST., WORCESTER, MASS.

Though deep, yet clear; though gentle, yet not dull; Strong without rage; without o'erflowing, full.

—Sir John Denham.

WE never have been able to learn why the school has not adopted a seal. We were once shown the *thing* on the back of the catalogue, and assured that it was a seal. Now that may be all right and very beautiful, but certainly it is not suitable for a school of the importance of the W. T. I. The anvil and hammer are appropriate, but what is the signification of the decanter at the right? In a school where we are assured several times a year that no man has succeeded in business who uses anything stronger than weak tea and coffee, it is somewhat astonishing that a Greek wine flask should form part of the seal. Then that cube and ball; we are aware that

it takes some trouble to balance a ball on a cube, but the skill required to perform that operation is not half so great as that required to ascend the West Street path when the walks are icy; and if the purpose of the aforesaid two objects is to call attention to our adroitness, then a view of a Prep. performing that arduous task for the first time would be more to the point. But the books. Most colleges are content with one; yet we have five, presumably Bowser, Chauvenet, Rankine, Thermodynamics, and Proverbs. But the jewel of the wondrous landscape is the motto, *Pauca fideliter*. Latin, of course. In a school where half the men do not know enough Latin to translate "Gallia est omnis divisa" the motto must be in a forgotten tongue; the only wonder is that it is not Pali or Choctaw. Will some past or present member of the school design a suitable seal and free the catalogue from its only blemish?

A GRADUATE of the mechanical department, has, beside the theoretical knowledge of his business, a practical acquaintance with machines and their uses, he has acquired a sufficient degree of skill in mechanical work to enable him to enter a shop and manufacture the lathe or planer that he has designed in his office. This ability is owing in a great degree to the knowledge of shop practice obtained during his apprentice half-year.

Then he becomes familiar with machinery and learns to handle common tools with a fair degree of skill. But when a Civil steps up for his diploma at the close of the course, he is in a different position. Armed with as much theory as his mechanical class-mate, nevertheless he has not a through knowledge of any one of the ordinary engineer's instruments. He learns as much as possible with the facilities offered, but it is very little compared with what he needs. According to the last catalogue, among the graduates of the civil engineering department are four chief, four division, seventeen assistant, and twenty-four general civil engineers. We have not a doubt that every one of these gentlemen would testify that a greater amount of field-work during his school course would have saved him much perplexity and, perhaps, hard words from his chief; for it must be confessed that a wet, muddy, hungry chief is sometimes impatient with green hands and may commend their skill in a left-handed manner. Now why could there not be an apprentice class of Civils as well as of Mechanics. They need skill in the use of their instruments as well as Mechanics in the use of theirs; in fact, if the reader will look on page fifty-nine of the last catalogue, he will see that there are more graduates now using transit and level than lathe and planer. The mechanical engineer rarely has occasion to use shop tools after graduation while the probabilities are that the civil engineer will use his transit and level until he retires from business. Under Prof. White we have the best course that can be devised for the limited time we spend

under his instruction. But we have only a taste of plane table and stadia work, and government surveying is merely mentioned. With an apprentice course of four or five months, we could learn much more about the use of our instruments, have a fair amount of civil engineering drawing, and acquire a better knowledge of plane table and stadia work; we could lay out a meridian line, and last but not least we could learn to adjust our instruments. Among the curiosities of our outfit is a transit manufactured by Poole, and this instrument might be used by us for practice in adjustment. We have a faint recollection of hearing a member of '83 say that this antediluvian was once being used by his class to lay out a street, and a high wind blew it over, disarranging its wonderful constitution. Mr. Otis, at that time instructor in field-work, estimated the damage at about forty dollars and notified the transitman that he must produce that sum. As the instrument before the accident was worth about ten dollars, the gentleman immediately refused to pay, and we believe that the instructor let the matter drop, seeing the instrument was not worth repairing. This wonder might profitably be used to teach adjusting, and an instrument of little value might subserve a useful end. The way we survey fields might do for work in the backwoods, but it certainly is not the right method here. With an apprentice course we would have time to visit the registry and find the bounds of a field, then get the highway lines from the City Engineer's office, and so have some practice in the real methods of work. As affairs now are we have

to act as rod-men or chain-men for quite a time before rising to positions for which our theoretical knowledge fits us.

THE pernicious habit of studying for marks has an advocate in the *Commentator* of last month. It gives as its reasons for upholding the custom that if a student study for marks he will incidentally acquire knowledge and gain discipline of mind. This is true as far as it goes, but high marks are often obtained, not by profound scholarship, but by brilliant recitations. It is often the quick scholar who carries off the prize while his slower companion plods along, the more thorough of the two, but, according to his marks and rank, all but a dullard. The man who studies for marks studies for these and nothing else, and in his eagerness to learn a definitely assigned lesson he neglects any independent investigation that might make his knowledge more complete.

In the rich atmosphere of an institution of learning there is always to be found floating about information not to be met with in books and for which the student is not marked. All this is lost to the grind who will learn nothing outside of his books while his omnivorous companion is storing up in the granary of his mind that which is soon to be turned into the staff of life, and upon which he can with confidence lean. We would not discourage the habit of study, but only that exclusive devotion to books which gains for the student approbation of the professors, applause on Commencement Day, but chagrin and disappointment in the field when the battle of life has fairly begun.

THE greater part of the winter season is over and the warm days of spring will soon be here. Now is the time to make preparations for the coming season's campaign in out-door sports.

Most of us find ourselves so closely bound to our school duties that any extra exertion seems, at the first thought, to be almost impossible, but if we will consider a little further perhaps we may be able to avoid any such difficulty.

Nearly everybody takes pleasure in seeing an exciting game of base-ball or a hotly-contested chase after a foot-ball, and yet those who get the most enjoyment are the participants, notwithstanding the many hard bumps and scratches that they receive.

But all this does not come of itself; it requires time and labor on the part of some; and ought we not to be willing to do something toward bearing the weight of the burden?

There is ample material for first class base-ball and foot-ball teams, if each one would give his aid.

Just now is the time to organize and get everything ready, so that when the season opens, a good start may be made.

Nearly every college, of any importance, has something to show in the line of athletics, and we must not let our reputation be lowered on this account, but press forward, and in this way show that the Tech. is still alive and able to hold its own.

A gymnasium is worth everything in this line, but since we have none, we must do the best we can without such means of assistance. We have the good promise of one (no one knows *when*) and if we show some interest, the much

wished-for gymnasium perhaps will hasten its pace.

However, let us all put our shoulders to the wheel and do what we can toward the success of this enterprise.

WASHINGTON.

THE first reception of the year, at the White House, was on New-Year's Day. I had read very much of the beauty of Mrs. Cleveland and of the unattractiveness of Mr. Cleveland, and when the day came I felt considerable curiosity to see these two striking personages. Before the public reception, the President received the foreign ministers and numerous other functionaries, but at last one o'clock came and His Royal Highness was ready for the people. I was one of the first to call. The Marine Band was playing in the outer room, and in the second room, numerous little girls were running about among numerous gentlemen and ladies in full dress. In the third room, I passed before three or four dignitaries who eyed me suspiciously, as though afraid I was contemplating running away with the house. Then came the President and Mrs. Cleveland, Secretary Bayard, and numerous ladies of the Cabinet. Mr. Cleveland showed plainly the effects of his recent illness, but in his general appearance I was very pleasantly surprised. I had understood that he was short, very fat and rather repulsive. I found him to be quite short, and somewhat stout, though not objectionably so. His complexion is dark, and his face is rather good looking, newspaper stories notwithstanding. He does not impress one as a cunning statesman, but rather as a

man who is sincere and honest in his intentions, and who when he has once decided what course to pursue, does not propose to be frightened out of it by any man or any number of men. He looks as though he believes that *he* is the man that was elected president, that took the oath of office, and upon whom rests the responsibility. I do not see how any man can look at him and then wonder why it is he has already vetoed many more bills than all the other presidents together, since the inauguration of George Washington.

As for Mrs. Cleveland, I was rather disappointed. Some of the newspapers profess to believe her the handsomest woman in America, if not in the world. This had of course given me a very large idea of her beauty, and I expected more, perhaps, than I reasonably ought. I heard one gentleman say that it was only by a very charitable extension of the term that he could call her even good looking. I think this is rather violent. Mrs. Cleveland is a good looking girl, but no one would have imagined her to be the handsomest woman in the world, nor even in the country, if she had not been so fortunate as to be the wife of the President. To any of the gentlemen who think differently I extend a cordial invitation to stroll down Pennsylvania Avenue at about four o'clock, when the young ladies in the Departments are just issuing into the streets, and count how many of them are better looking than Mrs. Cleveland. I am sure they would find a dozen or twenty in a short time.

But there is one particular in which both Mr. and Mrs. Cleveland excel. It is in shaking your hand. Too often this

ceremony is performed in a mechanical, it's-the-fashion-but-I-wish-it-wasn't sort of way, and for my part I know that I have occasionally been unable to wholly conceal my repugnance to the clammy grasp, if it is a grasp, that has been extended to me. No such feeling as that is possible in the presence of either the President or his wife. Each looks you in the face and grasps your hand as warmly and heartily as though you had been acquainted since childhood. In fact I think it is Mrs. Cleveland's winning ways that have led so many to suppose her the handsomest woman in the land. If that be the case, there is a truly good excuse for their belief. At any rate her influence upon Mr. Cleveland is making itself distinctly visible. He is a better sort of man, generally, than he was before he was married. While he was yet single he avoided receptions of all kinds as he would avoid a pestilence. Since the joyful event he has been gradually modifying his views,—or rather Mrs. C. has,—so that not long ago, of his own free will, he called upon her at one of her receptions, as any other person would, and went through the customary formula of introduction to her.

It would be useless for me to describe the White House, because photographs of the interior and exterior may be obtained anywhere, and they give a far better idea than I could of the appearance of the place. I will say, however, that the White House is in no sense a palace. That is, it does not at all impress one as the abode of the highest officer of the best country on earth, or in the universe, so far as we know. It is nearly centrally located in the city, and

lies between the Treasury and the State, War and Navy Departments. Originally it was intended to have the White House at some little distance from the bustle and noise of the city, and it was so placed that the back of the Capitol is towards it. The perversity of human nature had not been taken into account by our worthy forefathers. Everybody proceeded to build houses and stores and things in just the wrong place. The result is that the back door of the Capitol opens the wrong way, and the statue of Justice, above the dome, has its face turned away from the city, and towards Europe, as though expectantly awaiting the arrival of the big shells and solid shot that England may some day send over to us if we don't get a bigger navy pretty soon.

About one-third of the population of Washington is colored, and colored black. The dusky portion spends most of its time on the street, while the white portion does not. The result is rather startling to the stranger, for his first impression is that the city is full of negroes with a white man scattered through them here and there to vary the monotony of the thing a little, and to impart tone and depth to the otherwise prevalent blackness. But after a short time one gets used to that and comes to rather like the existing arrangement.

There are dances, receptions, musicales, dinner parties, and so on, in endless numbers, and no day ever seems to pass without a procession and a band of music. There is also said to be a choice selection of heiresses and such things available. They are said to believe in the motto: "And whosoever will, let him come."

The writer feels a little dubious about this, however, as he has already been seeking such a glorious "snap" for five months and his success, so far, cannot cast a shadow without assistance.

THE DIFFERENCE.

THOSE silvery tones announce the breaking day,
The engineer his sleepless fire has fed,
The Prep with glimmering lantern wends his way,
And leaves the sleeping Junior still in bed.

Now breaks the heavy darkness into light
And Juniors, here and there their slumbers cease,
Save where some dreaming, over-weary wight
From mighty Morpheus has not won release.

Save where some gallant youth, who night before
With blithe young maiden to the ball has walked,
Sleeps calmly on and sleeping can adore,
Without a fear of being late and chalked.

Still 'neath the heavy mantle, on his couch,
The Middler lies and snores with all his might;
Small odds to him for which excuse he vouch,
But never will he use "Was out last night."

O, Middler, how can you so peaceful sleep?
What is the method you so oft employ
To adulterate the truth and still to keep
Each twinge of conscience out of the alloy?

Thrice more the clock has sounded forth the hour
Since from his humble cot the Prep arose.
The Middler now arises from his bower,
But still the Senior sleeps; O, woe of woes!

EXTRA STUDIES.

THE technical schools occupy a place between the industrial schools on the one hand and colleges on the other. The industrial school endeavors to give its students only the training necessary to become a good mechanic; the college endeavors to train the mental and moral faculties of the student, and leaves the manual training of such as want it to the post-graduate course. The technical school endeavors to turn out a good mechanic, a man grounded in the higher branches of his profession, and a fairly

educated man. Now it is evident that for a man to attain this triple object, hard, earnest, well-directed study is necessary. In this school, we have opportunities given our mechanical engineers that are offered nowhere else; in the other branches, the means of instruction are not so extensive, but the ability of the professors places these departments on a level with those of other institutions. Looking at the exceptional advantages for certain branches of instruction which the chief department of the school possesses, and also taking into consideration the fact that the course is limited to three years, it is only natural that our curriculum does not include more of those subjects, a fair knowledge of which a man must have to be liberally educated, in the true sense of the words.

But every man who aspires to be a genuine worker appreciates the value of a more extended course of study than is offered by the school, and during the spare moments of his three years' stay here he has an opportunity to lay substantial foundations in one or two branches outside his regular work. We doubt if many of the students at Boynton Hall would greatly desire the so-called liberal education that is founded on a misty knowledge of Greek and a dilute solution of Latin, but we would like the liberal education advocated by the President of Harvard, an education which gives a man a fair acquaintance with the leading subjects of modern thought. The statement, that a man who wishes to become a good engineer, or chemist, should spend eight or nine of the best years of his life training himself, principally, in two languages, of

whose pronunciation no one is certain, is absurd. But we do not claim, no technical school can claim, to give to a man that education that truly deserves the name liberal. Now for the sake of comparison let us look at the way we spend our time and the way some of our college friends spend theirs :

COLLEGE.

Greek,	280	hours.
Latin,	280	"
Mathematics,	340	"
French,	80	"
Chemistry,	60	"
Physics,	100	"
Rhetoric,	220	"
Philosophy,	180	"
Physiology,	60	"
History,	120	"
Electives,	840 to 1160	"
<hr/>		
Total,	2560 to 2880	"

W. T. I.

Mathematics,	740	hours.
Chemistry,	250	"
Physics,	290	"
English,	200	"
German,	320	"
Mechanical Drawing,	480	"
Free-hand " "	320	"
Geology,	60	"
Practise, regular,	1600	"
Practise, special,	1008	"
<hr/>		
Total,	5268	"

We have a just right to point to these figures and say that although our education may not be so broad it is more thorough in what is undertaken, and that we do as much work in three years, more in fact, than our prospective B. A. friends do in four. Yet the fact remains, and it cannot be denied, that under the head noticed in our table as electives a man may make such a choice of subjects

that he has a perfect right to say that he is better educated than we.

To a modern scientist, a knowledge of French and German is essential. Chemists look to a German university as the place where they wish to study; civil engineers long to attend the French engineering schools. The majority of us cannot afford time or money to do so, and we fall back to reading the professional publications of these institutions, and right there comes the rub. We have often become interested in some French notices of discoveries until, like Mark Twain, we get to the most important part of the piece and then are floored by some forgotten or unknown idiom.

Then we feel like hiring some street Arab to bless the kind but misguided gentleman who for several years persuaded us that French and German were not to be mentioned in the same breath with the always useful Latin and Greek. In short, as young men, fitting ourselves for scientific pursuits, we must acquire at least a *reading* knowledge of French and German.

Now take the subject of English Literature. In our course we read one of Shakespeare's plays, take a brief glance at the master-pieces of the language, and have a good training in composition, to use the grammar-school term; but we doubt if the professor of languages claims that he more than points out the treasures of the finest language ever spoken. We are taught that the fittest always survives in the organic kingdom. Truly, the same law holds good among languages, and the reason that more people speak English than any other language,

is because English is the best language ever spoken. "It is the outcome of a history longer and more splendid than that of any other people. A few among nations may claim to have produced writers of equal genius yet no nation can point to a literature which *surpasses* that of the English-speaking race in the lustre, or which *equals* it in the number, of the great names which it can boast." A knowledge of English Literature, an insight into its growth, an acquaintance with its master-pieces, is a necessary part of a liberal education, and that we must obtain during leisure hours.

Then we must broaden our range of scientific reading, and in order to do this more study is called for than the Institute authorities require. Let some of our students who think they know enough of physics, for example, pick up one of the little books on Heat, Light, or Sound, by Prof. Tait, and read it through. We are confident that in these volumes he will find many things that he has not seen before, yet the books "are elementary treatises for the student's private reading intended for ordinary students who wish to acquire familiarity with the *elements* of the subject." As we finish the regular studies, one by one, and think over what we have acquired, the inevitable conclusion is that if we are to succeed in our scientific life, we must study hard to get a firmer grip on what we have been over.

We have tried to show the necessity for a broader education than the school gives. To attain this education we must devote some of our spare time to hard study. At first it comes hard;

fresh from the easy rule of the academy or high school, the regular studies weigh heavily upon us, but if squarely encountered in the first place, they soon grow lighter, and we are at liberty to quite a degree to attain that prize so tempting to all genuine students, a liberal education. A systematic plan of extra work need not conflict with our regular studies. The change of work is restful. Longfellow says, "As turning the logs will make a dull fire burn so changes of study a dull brain."

THE HORNY-HANDED NATIVE OF THE "SOIL."

TO most of us the common house-fly is not a very interesting object, and in the hot summer months he makes himself still more uninteresting, taking possession of our homes and feeding at our tables, not being content to eat from one plate only. Disagreeable and troublesome as this little pest is, he has some interesting features if viewed in the right light. Did it ever occur to you how he is enabled to walk up the vertical sides of your tea-cup, with apparently as much ease as if walking on a horizontal surface? A teacher once told a class in physiology that the bottom of a fly's foot is a concave disc, and that this disc is provided with a "sucker," by means of which the fly can exhaust the air under his foot and so obtain a firm hold even when walking on vertical surfaces; and this seems to be the popular idea.

Now if you will place a fly's leg under a microscope of moderate power you can easily satisfy yourself as to this point. You will see something that

resembles very much the drawing given below. The leg appears to be entirely



covered with coarse hair, with now and then longer and larger hairs which project from the leg like spines. There are two large "spurs" or spines at the first joint above the foot, one each side of the joint. The foot is, however, the most interesting part. You will notice that there are two large claws, one each side of the foot, and between the claws there are two pads that seem to be covered with finer hair than that on the leg. These pads constitute the bottom of the foot with nothing to suggest the idea of a concave disc. Instead of that, it would seem from the appearance that the fly uses the claws in his foot to take hold of the little irregularities in the surfaces upon which he walks, in

much the same manner as a woodpecker climbs up on the bark of a tree.

W. F. B.

EIGHTY-EIGHT'S HALF-WAY DINNER.

ON the evening of January 26, the day after the semi-annual examination, the Middle class had their half-way dinner at the Bay State House. The committee of arrangements consisted of Mr. J. B. Chittenden, chairman, Mr. C. Ferry and Mr. P. J. McFadden. The hotel reading-room was reserved for the class after eight o'clock, at which hour the members began to arrive. At 9:30, the dinner hour, the class marched in couples from the reading-room to the dining-room, which was held for their exclusive use during the remainder of the night. The sight that there met their gaze was one to inspire alike class patriotism and gastronomic longing. The table was set in the centre and occupied the full length of the long dining-room. A card designating each man's place was found at every plate, and care was taken to have sit near each other, men who usually are seen together or who would be congenial.

The menu card was gotten up with a deal of ingenuity. On one page was the menu, and after each course, instead of the name of the next, there was printed such unintelligible words as "Molecules", "Well, I don't see what I can do for you," "Criticism" &c. In the middle of the other page was a thermometer tube, with the mercury standing half-way up the column. On the left of the tube, divisions were marked representing the several half-years between Feb.,

'85, and June, '88, and in the divisions were recorded events that had happened during those periods. The zero point was taken at Sept., '85, when the Civils and Chemists came in, and when the course proper commenced—the six months of Prep. year being measured below zero. On the right of the tube were the toasts and the names of the respondents.

At half-past eleven, dessert and coffee was served, and the waiters withdrew. Mr. Chadwick, as toastmaster, then proposed the health of the Class. This was responded to by President Goodell in a speech full of humorous stories and touching incidents. Mr. McFadden was next called upon to respond to the toast of the "Mechanics of '88." Mr. Rice then did justice to "'88 in the Field," and Mr. Rockwood proved that "Every Pack has its Joker." "Acid and Base" was responded to by Mr. Cushman, and "Chain and Transit" by Mr. Jewett, while Mr. Camp demonstrated how important it was to "Converge, converge." The toast "John Hurley, the Friend of '88" was responded to in a humorous speech by Mr. Frary, when the greater number of the class for the first time heard of John's lesson in sweeping. In his response to "Our Inventors" Mr. Myers gave some sound advice to aspiring patentees, which with the shining example before them the class undoubtedly will take. "Our Landladies" were defended by Mr. Griffin as was also "That August Body," by Mr. Eldridge. In choosing the man to respond to the last toast of the evening, "The Ladies, God bless them"—the toastmaster displayed consummate judg-

ment in selecting Mr. Chittenden—a man abundantly able to manage the subject, nor daunted by its magnitude. Mr. Chittenden closed his remarks with the following:—

Not to the queen of fashion,
Not to the jeweled breast,
Not to the slave of passion,
Not to the royal crest,

Not to the brow that's fairest,
Not to the eye most bright,
Not to the genius rarest,
The toast I give to-night;

But be it to the maiden
Who with eye and brow serene
On field-day, wears with confidence,
The cardinal and green.

Who with pleasant smile of welcome,
And voice so full of cheer,
Has ever kindly greeting
For some Tech seated here.

Classmate, you must name her,
None other can, aright,
To her before all others,
We'll drink success to night.

A poem, replete with witticisms and local hits, written by Mr. Chittenden, was then read by that gentleman. The remainder of the evening was enlivened by instrumental and vocal music, and dancing, when at half-past two, after giving the class cheer in front of the Bay State, the boys turned their steps homeward with the feeling that '88 had had the best half-way dinner ever given by a Tech class.

O, we think we have the Seniors pretty cold,
And we've taken in the Middies little mould;
Yes, we guess we know their measure,
And to us 't will be a pleasure
To meet them in the tourney on the wold,
To defeat them in the tourney on the wold.

Prep.

DENSITY OF THE EARTH.

MANY experiments have been made to determine the mean density (or specific gravity) of the earth, and the results are not altogether satisfactory. Newton, in his *Principia*, estimated the density to be between 5. and 6—that is, about 5.5. He seems to have been endowed with the gift of prophecy, for his guess appears to be about as good as the measurements subsequently made. In 1738 some French mathematicians endeavored to determine it by comparing, experimentally, the attraction of the earth with the attraction of Mt. Chimborazo, S. A., and then measuring the mountain and finding the specific gravity of numerous samples cut out of it. Their results were unsatisfactory. In 1774 Maskelyne was more successful. By studying the attraction of Mt. Schehallien, in Scotland, in this way, he obtained data which when reduced give 4.713. In this century the experiment has been repeated upon a different mountain by Sir H. James, with the result 5.316. Pendulum experiments made by two Italians on Mont Cenis, gave 4.950. Mr. Airy, until recently the British Astronomer Royal, made three attempts to determine it by measuring the difference between g at the surface and g at the bottom of a mine in Cornwall, 1,200 feet deep. His first two experiments were rather discouraging, the first on account of “the accidental combustion of the packages of instruments in mid-air while in the act of raising them from below, attended with their precipitation down the shaft of the mine;” the second by “the subsidence of a mass of rock,

many times the size of Westminster Abbey, during the experiments, deluging the mine with water” and bringing the experiments to an abrupt and premature end. His third attempt he made in a different mine, also 1,200 feet deep, and from his results the value 6.565 has been deduced. The density has also been determined by direct measurement (by the torsion balance) of the attraction exerted by a sphere of metal of known size and known density. By comparing this with the attraction of the earth the mass of the earth was deduced, and by dividing its mass by its volume the mean density was obtained. This method requires an almost inconceivable delicacy of manipulation, and it also involves mathematical considerations of some complexity. “The experiment as conducted by Cavendish afforded as its final result 5.480. Repeated since with greater precautions by Professor Reich, 5.438 was obtained; and still more recently, by the late F. Baily, in a series of experiments exhibiting an astonishing amount of skill and patience in overcoming the almost innumerable obstacles to complete success, 5.660; a result undoubtedly preferable to the two former.” Mr. Baily has shown that Cavendish would have obtained 5.448 instead of 5.480 if he had computed it with greater care.

If we take the mean of all of these determinations, counting Mr. Baily's experiment twice on account of its greater accuracy, we have $5.47 \pm .11$. Thus Newton's guess appears to be quite good enough for all ordinary purposes. To determine the density with accuracy, from these experiments, it would be

necessary to examine each one critically, and to assign to each an appropriate weight.

Herr Lipschitz's formula for the density of the earth at any depth gives 5.58 as the mean density.

FORMATION OF THE NEW ENGLAND INTERCOLLEGIATE PRESS ASSOCIATION.

THE first annual convention of the New England Collegiate Press Association was held, February 22, at Young's Hotel. Fourteen colleges were represented by 32 delegates. Appended is a list of the delegates and papers they represent: Amherst Student, Messrs. Bulkley and Harper, Palmer; Bates Student, Mr. Woodrow; Bowdoin Orient, Mr. Choate; Colby Echo, Mr. Farr; Boston University Beacon, Mr. Wilde and Mr. Kimball; Dartmouth, Mr. Urquhart; Dartmouth Literary, Messrs. Quint, Simpson; Harvard Advocate, Mr. Mitchell; Maine State College, Mr. Lazelle; Tufonian, Messrs. Melcher, Maulsby, Austin, Edgerly, Fairbanks; Tech, Messrs. A. S. Warren, Sprague, Peters, Mauran, Dearborn; Worcester W T I, Messrs. Tucker, Burke; Wesleyan Argus, Mr. Breed; Williams Fortnightly, Messrs. Abbott, Holden; Williams Literary, Messrs. Baxter, Cravens, Livingstone; Yale Courant, Mr. May; Yale Literary, Mr. Gates; Yale News, Mr. H. B. Ketcham; Middlebury Undergraduate, Mr. Clark.

The objects of the association are principally social, and annual conventions are to be held on the first Friday in October.

After the business meeting a recess was taken till 7 P. M., when the dele-

gates sat down to supper. Mr. Bulkley of Amherst was toastmaster, and performed his duties with ease and grace.

An adjournment was made at a late hour till Oct. 7, 1887, at Young's. The greatest of enthusiasm and good-fellowship prevailed, and success in promoting the cause of college journalism seems assured.—*Extract, Boston Herald.*

OUR BOW.

NOW that the "Preps." (with a big P), have become firmly established they are expressing their opinions with regard to things in general, and to their routine work at the school in particular. During that period of adolescence in which the traditional hayseed is being replaced by the sawdust the Tech student is shy and quiet and he takes without murmuring all the hard knocks from the upper classes; but he is, however, an indispensable adjunct to the school, in that all he has belongs to everybody in general. Recognizing this fact, the present Prep. class, with great humility and deference to the wishes of its esteemed friends, the Juniors, and others, wishes to say a few words with respect to the guidance of all of its above-named contemporaries.

To speak more directly, we desire that it be distinctly understood that, while we do not object to the legitimate use of our "tow'l," we draw the line, or rather the "tow'l," on a mixture of axle-grease and machine oil. We also request that undue thoroughness be not used in the search for said "tow'l." If it is not found in its accustomed place, and a vigorous prodding in the left hand leg of our over-alls does not bring it to light,

leave it alone for goodness sake, and don't crush everything into a shapeless mass in which an upturned dinner basket is the prominent object. And, by the way, speaking of dinner baskets, we wish to merely hint that any attempt to confiscate the same will immediately precipitate a sanguinary conflict. Juniors and others will please make a note of this. Again, we view with alarm the backward manner in which the collectors of various funds come forth from their lairs. We have been approached thus far by but one of these financial agents, and fearfully ask each other what it may mean. Walk right up Mr. Base Ball, Mr. Athletics, Messrs. Tennis, Bicycle, and the rest of you! We understand fully that the base-ball nine subsists entirely upon our boodle, and that the various "busts" of the other organizations are paid for by us. Come right along before the appropriation is exhausted. Then, too, if the upper classmen have any more petitions that badly need signing, or if they have other axes to grind, we will be only too glad to accommodate them. If there is any one thing that we like above all other things it is the signing of a petition. It seems as if our signatures were made to fit in under a request that school be discontinued for a day or two. And, lastly, we would pray to be delivered from the yarns and so-called "true stories" of the versatile Middler, which are most fearfully and wonderfully made up.

And now, while we are engaged in the pastime of embellishing our fingers with cuts from the chisels, preparatory to a more intimate acquaintance with the buzz-saw and the planer, we assure our

friends that we are happy and contented and that, after the manner of preceding Prep. classes, we intend to whoop things up with the opening of Spring. Wow.

[Indeed, our dear Prep, we are exceedingly rejoiced to hear you shout so loudly for '90. We were beginning to feel a little afraid that you were going to be different from any other class that ever joined the Tech and were going to remain as silent as you were during your first week here. But we have been happily disappointed, for you have not only shown that you can make considerable unnecessary noise, but like all your predecessors you are beginning to build air castles out of broken records on the coming field-day, and like all your predecessors, you are listened to by that sympathizing experience, which, though it smiles upon your fond ambitions and confident bearing, would fain draw you aside and earnestly whisper "Learn of me."—ED.]

ATHLETICS.

AT a meeting of the W. T. I. athletic association, March 1st, an amendment to the constitution was unanimously passed which will make an entire change in base-ball matters, and one which it is hoped will be for the better. By the amendment the association elects a manager who has control of all base-ball funds, and arranges all games. Candidates for positions on the team give their names to this manager and after having been in practice some time the captain is chosen from their number. The captain and manager select the men and substitutes for the Institute team, who are to be put into steady training until the season opens.

Mr. Cushman, '88, has been chosen manager and challenges have already been sent out to several nines. All that now remains necessary for the success of the new scheme is the hearty co-operation of the whole Institute for its sup-

port, and, judging from the enthusiasm generally prevalent, the Tech is going to have a first class ball team this Spring if it has to become bankrupt, though we trust that the alumni will come to the rescue before that.

But let us remember that nothing can be done without hard, earnest work, and even then others may excel.

About twenty Techs have recently joined the gymnasium on Front Street, and although rather late to begin for field-day training, we wish the greatest benefit to every man who is trying to improve the present athletic records.

Communications.

The following letter from a well-known member of the class of '82 is self-explanatory:—

MR. EDITOR W T I, Worcester.

DEAR SIR: I see by the January number of the W T I, that somebody, the Middlers I suppose, have been celebrating, and have paid \$50.00 for a bonfire. In reading this article I am carried back to the time when the Class of '82 wanted to celebrate, and it was pretty thoroughly discussed whether we should run the risk of the everlasting displeasure of the Faculty, and build a bonfire anyway, or first ask Dr. Thompson's permission. The counsel of some of our wise heads finally prevailed, and we decided to wait on the Doctor by committee, and request permission to light a bonfire and have a war dance on Tech mountain, the night of Jan. 1st, 1881. This was done and the Doctor gently but firmly declined to allow any such thing. And now I will explain why the inexorable rule, "No Bonfires on Tech Grounds," which has been a source of sorrow to every Middler at least, was made by the Faculty. I make this explanation in the interest of good feeling between Faculty and student, and

I must tell the truth, no matter where it hits.

The narrative I am about to relate culminated on the night of Jan. 1, 1880, and the great and "galorious" schemers were the men, or rather children, of '81. I was not there, for, as a Junior on probation, I kept out of all unruly crowds, but I got the story from one acquainted with the facts, and an eye witness. The class of 1881 was made up of natural born geniuses, at least they thought so, and I must confess they were a remarkable set in some things. They intended to have the usual celebration with bonfire and fireworks at the "Half-Way," and some one of them conceived the idea of having a cannon, so they could make the inhabitants think a battery had broken loose in the neighborhood of the Tech. Accordingly a committee of Mechanical Engineers was appointed to make drawings and specifications of the proposed cannon, and a committee of Chemists to test and recommend the explosive to be used. In about a week the committee on plans and specifications presented elaborate drawings (for if those fellows got a string they could draw a tanyard) of the cannon, and a majority of the committee favored gas-pipe as the material for construction, while the minority inclined toward lead as the more tenacious metal. The committee on explosives unanimously agreed that dynamite was the thing to load her with, and so reported. After a good deal of discussion, the class finally settled on gas-pipe and dynamite, and a committee was appointed to construct and load the cannon. A piece of 1½ inch gas-pipe 10 feet long was obtained and plugged up at one end with a nice little piece of iron, turned out by one of the Mechanics, and a rivet put through. A hole was then drilled in the pipe, a firing pin fitted, and the cannon was ready to be loaded. They then got about a quart of nitro-glycerine, from where I never knew,

put it into the cannon, sealed the other end with another plug, and laid the whole thing gently away. And, do you know, it never entered these bright Technical student heads all the while they were making this infernal machine, that it was dangerous. But at that time nitro-glycerine had only blown up one or two factories, and shaken the town of North Adams, so there wasn't so much known about it as now. The night of Jan. 1 came, and about 12 o'clock, after having built the bonfire as close to the tower of Boynton Hall, on the office side, as they could get it, the committee on cannons was ordered to produce their loaded ordnance and plant it; which they did, and then that howling mob joined hands and began to dance around the fire, and when they got well warmed up, the chief cook waltzed into the ring and struck the firing pin with a big hammer, and—presto, change—the air was at once filled with a mixture of students, bonfire, dirt, gas-pipe, &c. The tower of the hall rocked, a chunk of that gas-pipe skinned the clothes all off one fellow, and sailing into the office, buried itself in the wall within 6 inches of a very valuable picture, and I suppose the mark is on the wall yet. Pieces of that gas-pipe were found all over Worcester, and one piece in Holden. The clock on the tower was so shaken up, it never kept good time any more. Sad to relate, it didn't kill any of the Middlers. The Faculty next day appointed guardians for that class from the class of '82, and forever prohibited bonfires and cannons about the Tech.

Perhaps in the light of the foregoing facts, which, I am sure, any member of the Faculty will substantiate, you will not think the Faculty unreasonable for having a desire to protect their lives and the property entrusted to their care, against possible recurrence of any such proceedings.

I refrain from mentioning names of the committees referred to, as I believe they all know better now.

Scientific Notes.

Prof. Samuel P. Langley of the Allegheny Observatory at Pittsburgh, has received from the Royal Society, London, England, the Rumford gold medal for "meritorious discoveries in light and heat."

The monks of St. Bernard, who devote themselves as ardently to the study of science as to the rescue of wayfaring men, have brought the telephone into their service of mercy. The famous hospice is now in telephonic communication with the Cantine de Proz, and the village of St. Pierre, as also with the Cantine de Fontint and the village of St. Chemy, on the Italian side. A further extension of the system is in progress, though the execution of it must needs be surrounded with great difficulties in that Alpine region of snow and ice.

Mr. Stark, civil engineer, has made a report to the Massachusetts Railroad Commissioners on the experimental section of the Meigs elevated railroad, which has been built in East Cambridge. This section has a grade of 120 feet to the mile, and one curve of 50 feet radius. It is equipped with an engine weighing 30 tons and a passenger car weighing 17 tons. The report of Mr. Stark is favorable to the Meigs system.

It appears in the eleventh annual report of President Gilman to the Trustees of Johns Hopkins University that during the last decade, fellowships have been bestowed upon one hundred and thirty-four individuals, and to the fellowship system President Gilman ascribes, and with reason, much of the success of the university. By far the major number of these scholarships has been bestowed upon students of science; biology, chemistry, mathematics, physics, geology and engineering having had 78 fellows, while all the languages, together with historical science and philosophy have had but 56 allotted to them.

"On the 1st of April, in the year 1987, a remarkable youth will be born. He will study physical geography and telegraphy, and will find, what every schoolboy knows, that in going round the world a day is gained or lost, as the case may be. He will then send himself round many times by telegraph, and found himself in the middle ages. He could not get back, as the telegraph was not then invented, so to drown a small sorrow in a greater he married and became his own remote ancestor."

The heating of cars by steam is being tried on several railroads this winter. The Connecticut River road has in use the Emerson system; the Boston and Albany has the Martin system, as prepared by the Martin Anti-fire Car Heater Co., of Dunkirk, N. Y. The Long Island road is trying the Martin system on one train and the Gold system on another. The Gold system has also been tested recently on the Providence, Warren and Bristol railroad, and on the cable road at Hoboken, N. J.

The bridge pier in the Mississippi at St. Paul, erected by the Minnesota and Northwestern railroad company, has been pronounced by the Secretary of War an obstruction to navigation.

Among the reported discoveries for the prevention of rabies is that of Dr. Fernandez of Barcelona, who claims that a dog that has been bitten by a viper never has rabies, and cannot become rabid when inoculated.

The Edison Illuminating Co., of Boston, has commenced paying monthly dividends of one per cent. Out of the 68 Edison stations in the country, the Boston station, it is said, pays the largest profits

The longest completed tunnel in the world is at Schemnitz, in Hungary. It is 10.27 miles in length, with a cross section of 9 feet and 10 inches by 5 feet and 3 inches, and is used for drainage purposes. The new Croton aqueduct

will be nearly 30 miles long, with a section of about 16 feet in diameter.

Major Powell, director of the geological survey, in a statement which he has furnished for publication, says it is not likely that the existing iron mines of this country will soon be exhausted; but that the remedy for prospective exhaustion is further exploration, for the future mines to which the geologist points in various parts of the country.

To produce a cement which, when dry, will burnish to a bright gold or silver color, mix white coburg, copal, mastic, and white hard varnish with zinc white, bisulphide of tin, and powdered Dutch foil; or when a silver lustre is required, the Dutch foil is replaced by silver powder.

There has been invented an automatic collecting or toll-taking device, to be attached to telephones at public or pay stations. The mechanism in the telephone box is so arranged that the telephone will not operate until a coin of a certain size and weight, dropped into a slit in the front, acts upon a switch lever, thereby making electrical communication between the transmitter and the line wire. The act of hanging the receiving-telephone, after use, in the place provided for it, drops the coin into a till and releases the switch lever, thereby breaking the electrical connection and "setting the trap" for the next user.

The construction of two canals in southern Russia is projected. The Duke of Leuchtenberg proposes to pierce the Isthmus of Perekop. This canal would shorten the distance between Odessa and the harbors of the Gulf of Azov. The second project is far more important. The Russian government intends to connect the Don and the Volga by a canal, and the country between the rivers is being surveyed for this purpose. Thus a waterway between the Caspian and the Black seas will be established, and a new outlet opened to

the produce of Asia. The project is a very old one, having been started by Peter the Great in 1696.

In his report of the Alert expedition, Dr. Bell, who is thoroughly acquainted with the Hudson-Bay Basin gives a general sketch of the distribution of strata in Hudson Bay, and makes it probable that the whole of this vast basin is composed of flat-lying paleozoic strata. His observations lead him to the conclusion that during the glacial period an enormous glacier filled Hudson Strait, and flowed east toward the Atlantic ocean. A southern branch seems to have come from Ungava Bay.

A new explosive invented in France, is said to be as much superior to nitroglycerine as the latter is to common gunpowder. It is called "melinite," and its explosive force is to that of gunpowder as 100 to 5. Its destructive effects are fearful, inasmuch as bombs charged with it do not explode immediately on striking a wall or similar resisting surface,—the explosion taking place some little time after penetration. This new war material is the invention of MM. Locard and Hironard of Bourges, to whom the minister of war has given an order for 200,000 bombs charged with it.

The recent trials upon the new telephonic circuit established between Brussels and Paris have given most conclusive results. Not only is it now proved that by employing bronze instead of iron for a telephone circuit speech is transmitted more easily from Brussels to Paris than between two subscribers in a single town, but the more important fact is brought to light that one can telephone with this degree of perfection while the telegraph is being worked on the circuit used for the telephone. It is thus demonstrated that if, by degrees according to requirement, the iron wire at present used on telegraphic lines be replaced by copper or bronze wire, and if the Van Rysselberghe system be

adopted, as is the case on the whole of the Belgian network, one will be able to establish, between Brussels and Paris, as many telephonic circuits as there are telegraphic wires.—*La Nation*.

Exchanges.

The *Seminary Opinator* has reappeared after a protracted absence.

We welcome this month four new exchanges:—The *Bowdoin Orient*, the *Williams Lit.*, the *Princetonian* and the *University Quarterly* from New York University.

We almost envy the *Academy Trio* its success in procuring advertisements of educational institutions, especially of institutes of technology.

The January number of the *Emory Phoenix* of Oxford, Georgia, is the best of that paper we have yet received. The article on "Thoughtlessness" is well worth reading. We are waiting with some impatience for the *Phoenix* to appear as a magazine instead of in its present ungainly form.

The *Adelphian* in a well written article, calls attention to the abominable English in which students are wont to clothe their answers in the recitation room. It calls upon them to be more particular of their language, not only that the professor may the better discover what they know, but also as an important step toward cultivating that almost lost art of conversation.

The *Undergraduate* should enlist in the literary ranks of the paper, one or two of its "town and campus" or "personals" editors and set them after something for the literary department, which at present shows a dearth of originality. Of the three articles in this department in the last number two were taken from other journals (with due credit, however); the other, occupying but a column and a half, was original.

We greet with pleasure the first visit of the *Pennsylvanian*, and hope to number it among our exchanges. The appearance of one number was marred by the notice of the death of Prof. E. Coppee Mitchell, Dean of the Law School. Of course we know nothing of the professor personally, but we do know some of the law students of the U. of P. While they always spoke in highest terms of the three eminent professors in the law department, especial mention was always made of him, whom they were pleased to style 'a grand teacher.'

The favor with which tobogganing has been received, this winter in the New England states, has led to the frequent use of that word in the newspapers, and there seems to be some doubt as to the verb corresponding to it. The *Dartmouth* misses it when it asks: "Will Dartmouth tobog?" The proper verb, as given in the supplement of Webster's latest edition is *to toboggan*. The word being a corruption of the Indian *odabagan*, a sled, and comparatively new in the United States, it is possible that custom may sanction the violation of the authorized pronunciation.

The *Ogontz Mosaic* deplores the custom that many college papers have fallen into, of writing so much on foot ball, base ball, &c., and wonders what the writers of these articles would do if they were without such themes. We do not know, girls, what they would do. They might concentrate their energies upon the exchange column could they hope to work themselves up to such a state of enthusiasm as to speak of an exchange as "the lovely little *Vindex* from St. Mark's," or they might write of how eighty grown women were seized by a "panic of fright" (whatever that is) at the ghostly footsteps of a—"poor little mouse." This they might do, but we think they would resign from the staff first.

The *Varsity* is vigorously advocat-

ing the formation, by the government, of a technical department at the Provincial University. In recounting the advantages of such a plan, and the success of existing institutions, it mentions three American science schools as typical examples: The Mass. Inst. of Technology, the Worcester Technical Institute and the Sheffield Scientific School (Yale University). In describing the peculiar features of the three schools, ours is spoken of as being "devoted to the industrial training of young boys, who serve their apprenticeship, as it were, at this school." We are not surprised that a college so remote should entertain inaccurate ideas of our school, and as the *Varsity's* article shows it has been misinformed, we mean no offence when we correct it. To do so we will briefly give an outline of the course.

In the first place our students are not young boys, but are of the average age of those in any college in the country. The course here is one of three years for Chemists and Civil Engineers, but for Mechanical Engineers, in addition, six months practice (7 hours a day) in the wood-room is required. After the six months have expired the Mechanics enter upon the term proper, at which time the Civils and Chemists join them and remain together until graduation. This six months' work in wood is what the *Varsity* refers to as the apprenticeship. In that, it is right; the class during that period being called the Apprentice class. But one of the main features of our school is the practice (of one whole day a week) which is required of each student—this feature being substantially credited by the *Varsity*, to another institution.

The cause the *Varsity* advocates is a noble one. The question of the expediency of technical education has ceased to be a debatable one in the United States, and industrial schools are springing up on every hand. It was only a

few weeks ago that news came that an institute modeled after ours is to be started in Atlanta, Georgia. If such a school can be carried on with profit in the South, how much more so in the more active manufacturing districts of Canada.

College News.

Phillips Andover has furnished 15 college presidents.—*Ex.*

The editing of a college paper is no mere child's play.—*Ex.*

Bowdoin students recently had to attend prayers in a temperature of zero.

Vassar is to have a new gymnasium valued at \$20,000.

Twenty-five cuts a term are allowed students at Princeton.

The University of California has now over one hundred professors and instructors.

Webster's dictionary is being revised again by ex-President Noah Porter, assisted by 100 clerks.

The authorities of Cornell have declared that attendance at recitations will no longer be required.

Columbia College is to hold in April a centennial celebration of its change of name from King's to Columbia.

The Boat Club of the University of Pennsylvania is going to buy a steam launch for the use of the crew.

America has 333 colleges. Of these 155 pronounce Latin by the Roman method, 144 by the English, and 34 by the Continental.—*Ex.*

There are thirty Yale graduates on the Hawaiian islands, several of whom occupy important positions under the local government.

The tuition at Amherst has been raised from \$100 to \$110 per annum. This is to go into effect at the commencement of the next college year.

Captains-elect of foot-ball teams are: Cook, of Princeton; Beecher, of Yale; Holden, of Harvard; and Alexander, of University of Pennsylvania.

Rev. Dr. Mark Hopkins has been connected with Williams College for 56 years. During this time 1,726 students have been graduated, all but 31 of whom have been taught by him.

A new college for women has been opened at Bryn-Mawr, Pa. The cost of the buildings will be \$200,000, and they are pronounced equal to those of Vassar. The course of study will be nearly the same as that at Johns Hopkins University.

Ex-President White has endowed the Cornell University School of History and Political Science with his valuable historical library, comprising some 30,000 volumes, besides 10,000 pamphlets and manuscripts. The whole collection has been gathered during the life of the donor, and although its cost has been \$100,000, it is worth much more than that now. It is especially rich in old manuscripts of the middle ages, and works upon the history of architecture and caricature. It also contains much that relates to the history of the American and French Revolutions. As a permanent tribute to ex-President White, the board decided to designate the new school as "The President White School of History and Political Science."—*Yale News.*

A Pennsylvania court has ordered that a student of Dickinson College, who had been expelled by the faculty, must be reinstated, because a fair trial was not allowed him. A gross breach of discipline had been committed, which, if he had been proved guilty of it, would have warranted his expulsion, but the faculty, though they heard what he had to say in his defense, did not let him hear the evidence against him nor inform him of its nature and sources. The court held that his position as a student

in the college was a right of which he could not lawfully be deprived without an opportunity to defend himself; that such opportunity was not given him, and that the court had authority, by appropriate process, to require the faculty to restore him to his former position and rights. Dickinson College, therefore, under the supervision of the courts, is an institution in which the faculty, as well as the students, may learn something.—*Worcester Spy*.

Personals.

“Professors George I. Alden and Milton P. Higgins of the Free Institute have received an invitation from the Atlanta (Georgia) Technical School soon to be established, to occupy prominent positions in its corps of instructors. Profs. Alden and Higgins have been to Atlanta within the past two months to advise the Commissioners of the School, in reference to the plans, and the former gentleman takes into consideration the healthful climate, and both express themselves as well pleased with the field of labor and the many advantages offered. In the city of Atlanta there is more tendency toward industrial training than in any northern city. Both gentlemen will make another visit within a month, and not until after that can a definite plan of their future work be given.”

Mr. Arthur M. Morse, a native of Worcester and a graduate of the Free Institute, class of '73, and for several years secretary of the English Bros. Machinery and Supply Company of Kansas City, was married last Wednesday at Indianapolis, Ind., to Miss Agnes A. Sells, a resident of that city, where Mr. Morse was located for nine years previous to going to Kansas City.—*Worcester Telegram*, Feb. 22.

Adams, '76, writes that he has two years' work on hand. At present he is making detail plans for new lighthouses

at Crabtree Ledge and at Lubeck Narrows, Me. He combines the occupations of Landscape Architect, Sanitary Engineer and U. S. Lighthouse Surveyor.

Booker, '77, has been appointed Chief Engineer C. S. F. & C. Ry., and his headquarters are now at Kansas City, Mo.

Clark, '80, has been engaged as Assistant in Chemistry at Wesleyan University, Middletown, Conn.

Under the head “A Retiring Teacher,” the Worcester Telegram, issue of Feb. 19, prints the following:—

“With the close of the winter term of the high school yesterday, Mr. John I. Souther severed his connection with the school, which, as a teacher of natural sciences and geometry, has extended over a period of three years. Mr. Souther's class in geometry in room 24 presented him through its representative, Miss Moore, with a complete set of Scott's Waverly novels as a token of their regard and esteem. Mr. Souther has been extremely popular with both teachers and scholars during his connection with the high school, and his departure is regretted by all. He is a graduate of the Worcester High School, class of '78; also of the Technical School, class of '81, and of Yale College.

Mr. Souther leaves the city at once for Hurley, Wisconsin, where he intends to locate as an assayer. Hurley lies in the Gogevic iron range mining region, and there is much opportunity for laboratory work and assaying for a chemist of Mr. Souther's abilities.”

Estes, '84, has recently accepted the position of draughtsman for the P. & W. R. R. at Valley Falls, R. I.

Married at Manchester, N H, Dec. 29, 1886, Mr. Geo. F. Higgins, Tech '85, and Miss Mary P. Clark.

Rogers, '86, has engaged as machinist with the Pond Machine Tool Co. of this city.

We notice several changes in the occupations of the alumni as corrected in the new 1887 catalogue. We are not able to give the date of the changes but suppose many of them are not generally known.

Lynds, '75, is now employed by the Cloquet Lumber Co. of Cloquet, Minn.

Bateman, '76 is engaged by the Fitchburg R. R. Co. at Fitchburg

Bartlett, '78, is chief chemist of the Chester Rolling Mills Co., Thurlow, Pa.

Upham, '78, fills the position of Patent Examiner at the U. S Patent Office, Washington, D. C.

Vail, '78, is Gen. Supt. of the St. Louis Car Wheel Co., St Louis, Mo.

Abbott, '79, is now Principal of the Union School and Academy, Spencer, N. Y.

Wells, '80, is at present engaged as Chief Clerk, Dept. of Bridges and Buildings, C. B. & N. R. R., La Crosse, Wis.

Haynes, '81, is now Supt. of the Portland Natural Gas & Oil Co., Portland, Ind.

Allen, '84, is employed as draughtsman by the Westinghouse Electric Light Co., at Pittsburg, Pa.

Cushing, '84, is Supt. of the Bennington Falls Pulp Co.'s mills, in Middle Falls, N. Y.

Technicalities.

The Middle class has begun indicator practice.

The officers of the Junior class for the next term are—president, Penniman; vice-president, Allen; secretary and treasurer, Gardner; directors, Cook and Allen.

The officers of the Apprentice class are—president, Frary; vice-president, Davenport; secretary and treasurer, Nutt; directors, Treadway and Fitts.

“The Gods are just,” or the petition was granted.

Prof., after some wonderful work by the class in Calculus: “Well, young men, I don't know whether to send you home to learn your alphabet or your multiplication table.”

“Sixes,” at the last examination:—
Seniors.—Morse, Miner, Fish, Burke, Bird, and Murray.

Middlers.—Goodell, Camp and Temple, Hunting, Griffin, and Shimomura.

Juniors.—Penniman, R. F. Gardner, Allen, Barnes, Percy, and A. B. Kimball.

The Middle class has elected the following officers for the ensuing half year: president, McFadden; vice-president, Griffin; secretary, Eldridge; directors, Rice and Camp.

At a recent gathering of Technical students, eight were opposed to labor unions and six in favor.

English poetry is receiving wonderful additions from members of the Middle class, who are translating some of Goethe's poems into English verse.

The following notice, which was posted upon the bulletin-board, will explain itself to our graduates:—

NOTICE!!

FOR SALE—A choice lot of Machine Poetry, slightly imperfect, which will be closed out regardless of cost.—Apply at Room 6.

Past members of the school will be glad to learn that the interest in base ball is reviving, and that there are indications that a good team will take the field this Spring.

The Senior class officers for the ensuing half year are as follows:—president, C. B. Murray; vice-president, G. A. Ward; secretary and treasurer, R. P. Gleason; athletic directors, McClurg and McNab.

The W T I has obtained possession of the following translation by Mr. X., of the Middle class, for the collection of Prof. U. :—

1. I dream I'm going back again
And shake my hoary head,
The photographs of auld lang syne
I hug to my heart instead.
2. He is the boss in chief
Who fishes in earth's deep,
Who has full many a grief
Yet forgets 'em all in sleep.

McFadden, '88, had some excellent views on the walls at the exhibition of the Camera Club, and was awarded six prizes,—three first, one second, and two third.

We are aware that the Preps are a tender class, but when one of them announced in the class-room that "he shaved himself with the dew of the morning" we were surprised.

Professor: "Never say, 'found himself;' it is not English."

Student: "Well, professor, if you will look on the board behind you, you will see that you wrote 'found himself' in one of your sentences."

Professor: "Here is the bismuth button obtained before the blow pipe. Please return it to the table when you have finished examining it."

At the close of the hour, the gentleman is horrified to see a large brass button reposing peacefully on the charcoal.

Student, reading King Lear: "I've seen the day, with my good biting falchion I would have made them skip."

Professor: "What is a falchion?"

Student: "It is a kind of bird."

No Junior has my towel,—not as yet,
And he is n't going to get it, now you bet;
To protect it from the dirt
It is dove-tailed to my shirt,
And I wear it in the wood-room like a net,
And I wear it in the wood-room like a net.

Prep.

Museum of Antiquity.

REGRETFUL REMINISCENCES.

I've dined with painted savages in regions most remote,
I've seen—and heard—the boarders eat at a German table d'hôte,
I've leaped from off of flying trains and seized, when "on the run,"
The lignum-vitæ sandwich and the patent-leather bun.
I've fondled, when by impecuniosity accursed,
On corners in the dead of night, the fragrant "weiner wurst."
The gastronomic gamut I have run 'mid varied scenes,
From Pommery to lager beer, from terrapin to beans.
In fair New England have I dwelt, to quite dyspeptic feel,
Because the doughnut and the pie usurped the morning meal.
In sylvan Philadelphia, too, where, at the break of day,
The scrapple and the pepper-pot hold undisputed sway.
Oh, retrospective vision of various cusines!
The demon of dyspepsia reigns o'er thy shadowy scenes.
But they can all be laughed to scorn, in Gotham's cosiest nooks,
Where his Satanic Majesty sends neither food nor cooks!

Edward E. Kidder in N. Y. World.

Three college students were having a spread in the rooms, when there came a thundering knock at the door, and they asked who was there. "Me," said the angry voice of the college president. "Oh, no," said the students, "you can't give us that. If it were President _____, he would have said, 'It is I.' Go away." And the baffled dignitary went.—*Graphic.*

"Say, pa," asked the pride of the household, "if a man does what he ought to do he does his duty, don't he?" "Yes, he does, my son." "Well, suppose he don't do what he ought to do, does he do his donty?"

CLARK, SAWYER & CO.,
 Importers and Dealers in
Crockery and China,
 HOUSE FURNISHINGS, GLASS WARE,
 Paper Hangings, Silver Ware and Gas Fixtures.
 478 to 484 Main Street,
 WORCESTER, MASS.

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

NEW YORK HAT HOUSE.

CORRECT STYLES!

LOWEST PRICES!

LARGEST STOCK!

466 Main Street, Opposite Old South Church.

J. A. TOUPIN, Class '87, Salesman.

FRED. W. WELLINGTON & CO.

Wholesale and Retail Dealers in

COAL.

GENERAL OFFICE,

416 MAIN ST., - WORCESTER, MASS.

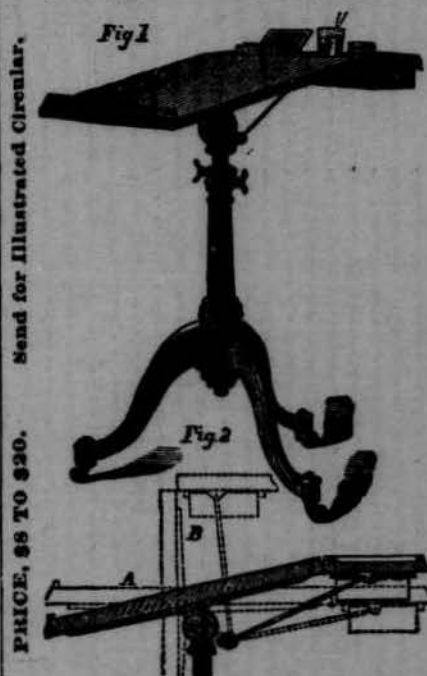
COAL POCKETS,

NORWICH, CONN.

RETAIL YARD,

Southbridge, c. Hammond St., Worcester, Mass.

PATENT ADJUSTABLE STAND,

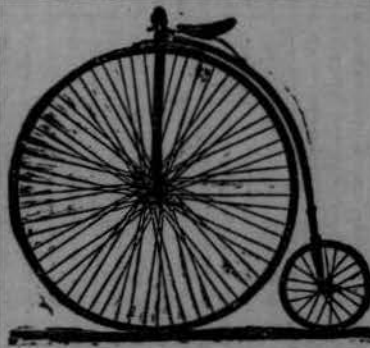


Send for Illustrated Circular.

PRICE, \$9 TO \$20.

FOR THE
 OFFICE, LIBRARY OR SITTING ROOM,
 FOR
 ARTISTS, ARCHITECTS, DRAFTSMEN AND SCHOOLS.

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



**VICTOR, CLUB,
 NEW RAPID
 AND
 FACILE.**

**Second-Hand
 MACHINES,
 Sundries, Jerseys,
 Hose & Shoes.**

**REPAIRING
 a Specialty.**

**MACHINES
 Sold on Instalments**

Worcester Head-
 quarters for Wheel-
 men.

Cycling papers on
 file.
 Hydraulic Elevator.

LINCOLN HOLLAND & CO.,

8 Washington Sq. (Opp. Union Depot), Worcester.

W. A. Lytle & Co.

Call attention to

Spring Overcoats

In the Greatest Variety ever shown in the City.

\$10, \$12, \$14, \$15, \$18, \$20 & \$25.

Many of these garments are full silk lined and faced. All are cut and made in the most correct manner. Be sure and see these goods.

W. A. LYTLE & CO.,

409 Main Street, Walker Building, Worcester.

J. C. WHITE,

—DEALER IN—

ARTIST MATERIALS

—AND—

Mathematical Instruments.

12 Pearl Street, - - Worcester.

W. A. ENGLAND,

394 MAIN STREET,

WHOLESALE AND RETAIL DEALER IN

WATCHES, CLOCKS, SILVERWARE AND JEWELRY

OF ALL KINDS.

A large line of Optical Goods, Spectacles, Eye Glasses, etc.

FINE REPAIRING IN ALL BRANCHES A SPECIALTY.

Circulating Library Connected with the Store.

W. A. ENGLAND, - 394 MAIN STREET, - WORCESTER.