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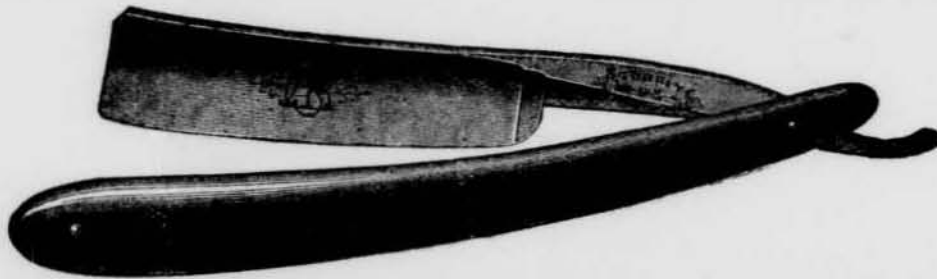
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WORCESTER, FEBRUARY, 1886.

No. 6.

THE W T I,

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RIDE on! Rough shod if need be, smooth shod if that will do, but ride on!

Dickens.

THE semi-annuals are finished. They mark another turn of Time's emery grinder. The eager comparisons of results, the chestnut chidings of unscrupulous professors, the jubilant jests in the lower hall, are gone. The voice of the jovial junior once more is heard in the land, in all its sweetness and high-born purity. Yet a little while and these same examinations, fled into past eternity, will no longer grate on our battling brains. Yet a little while and the sole symptom of our past trials will be the absence of a few faces from the familiar halls of the Old Stone Stronghold. There is a touch of sad-

ness in these terrors of the Tech. There are ties that bind us together like brothers. We come to learn. We come to polarize our minds and to grapple with the unknown. We are champions of a common cause. Is it strange, then, that we feel bound up together? Is it strange that we miss those that fall by the wayside? Is it strange we feel we have lost part of ourselves? We think not. Their loss leads us to think on the days that are gone.

"By lonely contemplation led,"

we look back upon what has been and weigh what we did do with what we might have done. Ah, what a contrast! Weighed in the scales and found wanting! Then do we say to ourselves: we will waste no more moments; we will improve them, for the moments make the man.

WE wish to congratulate all students who have escaped from the toils of the examinations, and to express our sympathy for any who have failed to make connections. Yet, to the latter all we can say is, don't be discouraged, but try again. Those who are to tarry a while longer, must bear in mind that to pass the first examination successfully does not imply any letting up in work. In fact, probably many will find the second half harder than the first, but do not let this discourage us, for what has been done

can be done again, and if we only will take hold with a determination to come in at the finish, no doubt we will be there.

DEAR Messrs. Preps:—The school greets you, staid old Madame Tech, our patron saint, unbends to receive you. We are glad you are come, and although as yet personally unknown to us, we must confess you are a remarkably good looking set of young men. Some of your faces are rather pale and have not yet acquired their normal color; but that is to be expected. That awful spectre examination has been hovering about you of late; you have had to tell all you knew, and all you did not know; you have had to pass some time in agonizing suspense before you learned your fate. But take breath again; that is all over now. You have donned your overalls and jumpers, and for the past few days have been making more noise in the wood-room than all the rest of the school together. You have come to work; good, you will not be disappointed; there is plenty of it here—a great plenty. The zeal with which you have begun to use the mallet and chisel argues well for you. The class of '89 has lying before them now two duties, both of which should command their immediate attention. This paper, the W T I, is run by the school, and is in the direct charge of a board of eight editors. Two of these editors are elected from the apprentice class before the last week in February, and serve till the end of the school year in June, when their term, in common with that of the other editors, expires. The class, therefore, should take what

they regard as proper means to find who will be the best men to fill the position. Further information can be obtained from any of the editors. The other duty is to subscribe at once for the paper and thus place yourself in closer communication with the school.

ALTHOUGH the gymnasium project, like all great projects, is moving slowly, still it is being pushed as fast as the time which can be spared, and the innumerable details to be looked up, will admit. Members of the committee have visited the gymnasiums at both Harvard and Amherst, and it is hoped that before long everything will be in readiness to push vigorously the more important consideration of securing the necessary funds.

IN another column may be found the names of the winners of our essay prizes. We were agreeably surprised at the general response which was given to our offer, and now that there has been a beginning we hope that the end will not come. We are confident that no one who has spent a few hours in this kind of work regrets it. It is just the kind of practice which will no doubt some time be of use to us all. We thoroughly appreciate the spirit in which these articles have been written. We recognize that it is not so much owing to the possible money consideration as to the thought that they might prove of some benefit to the paper and of relief to its present editors. With our full assurance that such is the case, we shall hope to hear in the future, not only from former contributors, but from every man who holds the interests of the paper as his own.

WE understand that the W. T. I. Christian Association is to have a social this month. It seems to us that meetings of this sort have been sadly neglected during the past. Situated as we are, it is difficult to have anything in the way of societies for bringing the students together, and for that very reason we should improve every opportunity for sociability. As a proof that the students enjoy an occasion of that kind, look at the W. & H. receptions, where nearly every student is found. No doubt all would like to have gatherings of this sort often, but as that is impossible, we could certainly have them two or three times a year. If the school would aid in this by the payment of a trifling sum apiece, it could be accomplished.

A FEW months ago designs for a new seal were requested from the students. There were several handed in, and that is the last ever heard from them. There is no doubt that the school needs a better seal than it has at the present time, and we should be pleased to know whether anything has been done about it since it was first spoken of last spring.

SINCE we have no place of our own where we can take exercise, wouldn't it be well for the students to go to some good gymnasium in the city? No doubt if we were to form a club of fifteen or twenty we could get reduced terms. It would not be necessary to take more than four or five hours a week, and the dullest scholar could afford this, especially if by so doing he could perhaps enter with more zeal into his studies. This is a plan which is in vogue at Brown, and is found to work very well.

TO * * *

(Wachusett, Sept., 1885.)

MONADNOCK'S rugged outline towers
Cold against the northern sky,
Softly, round Wachusett's feet,
Cultured fields and hamlets lie.

Far below, hill, lake, and forest
Sweep away in endless maze,
Grand, yet sweet each different landscape
In the twilight's gathering haze.

Yet, for me, their charm is wanting,
They are not the same to-night
As when we together saw them,
Fading in the mellow light.

For my thoughts are far to westward,
Far beyond yon hazy blue,
In the region of the sunset,
There my spirit is with you.

There within some fairy forest
By some fountain sparkling clear,
We are gathering love's remembrance,
As we gathered flowers here.

IONA.

SAVANAROLA.

THE fifteenth century marked in history a depth of degradation hitherto unreached in the civilized world. From prince to peasant the sea of corruption rolled in undisputed sway. Italy, the leader in art, music and oratory, boasted in the midst of her grandeur, a fatal pre-eminence in vice. The study of letters seemed to have inaugurated an era of frivolty and sensuality. Men turned to Plato because the Church showed no vitality of faith, and hid its candle under a bushel. They sought in vain from the profligacy of the cowl and the degeneration of the state, a refuge in philosophy and an anchorage in its vagaries.

At such a moment there was needed a reformer, and a youth of twenty-one, knocking one day at the door of a Do-

minican convent, was destined to meet the need. Little dreamed the world that through its gates passed the preacher, the poet, the prophet that was to be. "In the world without there are none, no not one that doeth good, therefore I seek this seclusion," wrote Savanarola to his father. From childhood the boy had craved solitude. The sports of the ducal palace had no charms for him. There was in his soul even then, a depth of passionate longing for goodness and purity, expressing itself in poetic imagery latent with spiritual meanings. When later, the great preacher stirred men's hearts with his battle-cry of repentance and reform, Italy had lost nothing of the poet, in the preacher. "Expend not your wealth," he cried, "in the erection of churches with golden censers and embroidered vestments. Let the radiance of your faith and the holiness of your lives be your only adornments."

No breath of calumny ever attained the personal purity of Savanarola. His asceticism was of a mild and pleasing nature. The filth and misery of the older anchorites in which they so much gloried were to him examples most revolting, feeling as he did that bodily austerities were of low esteem compared with the graces and virtues of heart and soul. Every step of his path from the pulpit to the scaffold reveals a sublime sincerity of purpose, an unflinching determination to work for his fellows and not for himself.

Failing at Florence to achieve any success in the career of usefulness for which he longed, he turned his steps to Brescia from whose pulpit appealing, threatening, piercing the souls of men, he drew

them in awe-struck crowds to his feet. Striking with one hand the masks off hypocrisy and hurling with the other the condemnation of damned souls, wielding at once the thunders of apocalyptic denunciation and the melting sweetness of the sermon on the mount, the prophet of Italy, like the prophet of Nazareth, drew all men unto him. How superbly, with what royal disdain, he repelled the homage of the princely caste and the proffered offers of Lorenzo the Magnificent. With what supreme loyalty to the truth, he faced the ignominy of imprisonment and the threats of the scaffold. "You tell me to live for the glory of Florence, to cease disturbing the peace of the city because I am endangered thereby. Go tell your master to repent of his sins. Ye who possess wives and children may have fears; I have none, and I care not for your threats."

Shut now the volume of history, and tell me, How shall we look at the life of Savanarola? Was he an impostor, a dangerous fanatic, a self-deluded demagogue, desecrating his holy office with the intrigue and strife of politics? Nay, we see in him the splendid champion of the idea of an equal republic of christian men acting on the highest christian principles. Was the democracy which he instituted fierce and visionary, a delusion or a sham? Nay, it was directed towards the best interests of the republic, the good of the masses of men. The pulpit was his throne, but right and justice were his sceptre, and if no despot of old wielded for the time greater authority than he, it was authority which, filled with God's laws, penetrated and purified the depths made desolate by sin.

What the orations of Demosthenes are to Athens, or the eloquence of Cicero to Rome, the sermons of Giovalino Savanarola are to the history of Florence during his brief period. Raising in a dark and profligate age the banner of truth, and exhorting men to purity and justice, he walked, himself, the path of unselfish holy living. Truth to the guilty is ever painful. When Savanarola charged upon the Church its corruptions, and sounded the trump of reckoning, is it strange that men cried, "He is crazy?" What cared they for the end of the world, the signs of the times, or anything except their own excesses? Did he believe his inspiration peculiar and divine? So did Wicliffe and Knox, so have a host of others, martyrs and saints, of whom the world was not worthy. The visions of this prophet, however, were justified in their fulfilment, long after he had gone on to his reward. The leaves of the oak whose seed he planted are scattered by the November gales, but in the leafless trunk and branches are the promise and potency of that resurrection into life, in which he that soweth and he that reapeth shall rejoice together.

R. P. C.

THE RANKING SYSTEM.

THIS same ranking business, this percentage,
 This bawd, this broker, this all changing
 thing,
 Clapp'd on the outward eye of many a noble
 student,
 Hath drawn him from his own determined aim,
 From a resolve to be a brilliant scholar,
 To a most slight regard for the opinions of
 The faculty, regarding his abilities.

KING JOHN.

QUINSIGAMOND.

I REMEMBER wondering, once, why the beautiful lake was named Quinsigamond. I do not doubt that others have wondered, too. The word comes from the Indian language, and is all the more interesting on that account; for the names the Indians gave to the rivers, lakes, and mountains of our country tell us much about their habits. Sometimes I think the names explorers give to the landmarks of the frigid zone, tell us truer tales of their joys, their sufferings, their hopes and their fears, than could be put into words. Take, as an example, Cape Desolation. How vivid a picture this name calls up of the little band of men trudging bravely and painfully over wide wastes of ice and snow. We see them climb the promontory and pause on its summit. We see them stand there, hundreds of leagues from their fellow creatures, gazing on frozen fastnesses no other eye has seen. Instinctively we listen, as they listened, to the audible stillness. We think over again the thoughts they thought, and the emotions they knew we also know.

It is the same with the red man's names. They teach us what no other memorials teach. They disclose to our imaginations the traits of a strange and primitive man. They are the doors that open to his soul. His loves and hates are shadowed forth in the names he gave to the scenes he knew. What could paint their sweet simplicity and their silent admiration of nature more clearly than the name they gave to the rounded summits of Unkonoonuc? * Viewed from

* Breasts.

the north these mountains, rising above the dim horizon in hazy grace, are still the admiration of lovers of beauty, and no comparison fitter or truer than that made by the primitive red man has yet been suggested or conceived.

Quansigemog was a favorite Indian fishing ground, and there the fishers gathered from all the country round about to capture the much-prized long-nose.* They called the long-nose *Quonosuog*, and joining to this *amaug*, or fishing place, they obtained, by a slight contraction, *Quansigemog*; and this word has come down to us as Quinsigamond.

MIND READING.

DO you believe in clairvoyance? Do you believe it is possible for one person to become cognizant of what is in the mind of another when every possible precaution is taken to prevent any communication between the two persons, or, in fact, when we are as certain that there is no communication between the two by means of any senses which are yet known to the scientific world, as we are that there is no communication between a savage in Polynesia and an Esquimau in Labrador? We all have no doubt heard of the almost fabulous tales of deeds done by clairvoyants, and accounts of wonders undoubtedly have been given many of us which, if true, seem miraculous, and which were performed under such conditions that, to a fair and unprejudiced mind, collusion or trickery seemed utterly impossible. But we have been so often

deceived by conjurers, that we have grown skeptical and our explanation to all such stories lies in the one word, fraud. Here and there, however, we meet one who has been so strongly impressed with the apparent truth of the matter, that he is not content with any such hasty disposal of the question; and so in England it came about in 1882, that a body of these non-contents were drawn together, who had one great wish in common — to investigate the truth or untruth of this matter and of others of a similar nature, and to work in so thoroughly scientific a manner that their results would be incontestable.

On the roll of this society are to be found the names of many of England's foremost scientists, Prof. Henry Sidgwick of Cambridge; Prof. W. F. Barrett, F.R.S.E.; Prof. Lord Rayleigh, F.R.S.; Prof. Balfour Stewart, and many others. From these persons then we are to look for results, from persons of unimpeachable integrity and of long tried ability. In the almost four years that the society has been at work, a vast amount of evidence of the greatest value has been obtained, and the society has been successful beyond their most sanguine expectations. The best idea of how the work is carried on may be obtained in the shortest space and most effectively, perhaps, by quoting from the paper read to the society by Oliver T. Lodge, Professor of Physics in University College, Liverpool:—

“The experiments which I have witnessed proceed in this sort of way: One person is told to keep in a perfectly passive condition, with a mind as vacant as possible; and to assist this condition the organs

* Pickereel.

of sense are unexcited, the eyes being bandaged and silence maintained. It might be as well to shut out even the ordinary street hum by plugging the ears, but as a matter of fact this was not done. A person thus kept passive is the 'percipient.' In the experiments I witnessed the percipient was a young lady, one or other of two who had been accidentally found to possess the necessary power. Whether it is a common power I do not know. So far as I am aware very few persons have been tried. I, myself, tried and failed abjectly. It was easy enough to picture things to one's self, but they did not appear to be impressed upon me from without, nor did any of them bear the least resemblance to the object in the agent's mind. [For instance I said a pair of scissors instead of a seven of diamonds, and things like that.] Nevertheless the person acting as percipient is in a perfectly ordinary condition and can in no sense be said to be in a hypnotic state, unless that term be extended to include that state of mind produced by blindfolding and silence. To all appearance a person in a brown study is far more hypnotized than the percipients I saw, who usually unbandaged their own eyes and chatted between successive experiments. Another person sitting near the percipient, sometimes at first holding her hands, but usually and ordinarily without any contact at all, but with a distinct intervening space, was told to think hard of a particular object, either a name, or a scene, or a thing, or of an object or drawing set up in a good light and in a good position for staring at. This person is the 'agent' and has on the whole the hardest time of it. It is a most tiring and tiresome thing to stare at a letter or a triangle or a donkey or a teaspoon, and to think of nothing else for the space of two or three minutes. Whether the term 'thinking' can properly be applied to such barbarous concentration of mind as this, I am not sure; but I can answer for it if *difficulty* is an important element in the definition of 'thinking' then it is difficult enough in all conscience. Very frequently more than one agent is employed, and when two or three persons are in the room they are all told to think of the object, more or less strenuously; the idea being that wandering thoughts in the neighborhood certainly

cannot help and may possibly hinder, the clear transfer of impressions." * * *

"Most people seem to act as agents, though some appear to do better than others. I can hardly say whether I am much good at it or not. I have not often tried alone, and in the majority of cases when I have tried I have failed; on the other hand I have once or twice apparently succeeded. We have many times succeeded with agents quite disconnected from the percipients in ordinary life, and sometimes complete strangers to them." * * *

"All suspicion of a pre-arranged code is thus rendered impossible, even to outsiders, who are unable to witness the obvious fairness of all the experiments. The object looked at by the agent is placed usually on a small, black, opaque, wooden screen, between the percipient and agents, but sometimes it is put on a larger screen behind the percipient. The objects were kept in an adjoining room and were selected and brought in by me with all due precaution, after the percipients were blindfolded. I should say, however, that no reliance was placed on or care taken in the bandaging. It was merely done because the percipient preferred it to merely shutting the eyes. As regards collusion and trickery, every one who has witnessed the absolutely genuine and artless manner in which the impressions are described, has been perfectly convinced of the transparent honesty of purpose of all concerned. This, however, is not evidence to persons who have not been present, and to them I can only say that to the best of my scientific belief no collusion was possible under the varied circumstances of the experiments."

The objects selected for the agent to think of were varied, a certain card in a pack, a number between 1 and 100, key, clothes-brush, teapot, pencil, toothpick, purse, fictitious names, and original drawings. And this is, indeed, startling, to give the agent any sort of an irregular drawing, without shape or form, provided it is comparatively simple, and to see how nearly the copy is reproduced by the percipient, who holds

in her hand a pencil. Odors have been conveyed also, care being taken that none should reach the nose of the percipient. Things in the mouth of the agent and having a strong taste like cloves, citric acid, licorice, bitter aloes, have also been perceived by the percipient; pain has been created on a certain part of the agent's body and a pain in the same place on the percipient's body has been felt.

To give the reader an idea of just what results were obtained, we append a few experiments, which were performed under the supervision of the above-named scientist. This is, indeed, the most interesting part of the subject, but we are compelled to be as brief as our space. Everything said by the experimenter, Prof. Lodge or the agent, is put in parenthesis, and all the remarks of the percipient, in quotation marks.

Object—a key on a black ground.

In a few seconds, she said, "It's bright—it looks like a key."

Told to draw it, she drew it just inverted.

Object—three gold studs in morocco case.

"Is it yellow? Something gold—something round—a locket or a watch, perhaps."

(Do you see more than one round?)

"Yes, there seem to be more than one."

"Are there three rounds?—three rings."

(What do they seem to be set in?)

"Something bright, like beads."
[Evidently not understanding or attending to the question.]

Told to unblind herself and draw,

she drew the three rounds, in a row quite correctly and then sketched around them, obscurely, the outline of the case; which seemed, therefore, to have been apparent to her, though she had not consciously attended to it. It was an interesting and striking experiment. *Next object—a pair of scissors, standing partly open with their points down.*—"Is it a bright object?—Something longways [indicating vertically]—a pair of scissors, standing up, a little bit open."

Time, about a minute altogether. She then drew her impression, and it was correct in every particular.

Next object—a drawing of a right-angled triangle on its side.—(It's a drawing.)

She drew an isosceles triangle on its side. *Next—a circle with a chord across it.*—She drew two detached ovals, one with a cutting line across it.

Next—a plain card with a blue anchor painted on it slantwise.—"It's an anchor—a little on the slant." (Do you see any color?) "Color is black. It's a nicely drawn anchor." When asked to draw she sketched part of it, but had evidently half forgotten it, and not knowing the use of the cross-arm, she could only indicate that there was something more there, but she could not remember what. Her drawing had the right slant exactly. *Object—the five of clubs, at first on a white ground.*

"Is it something bright?" [No answer, but the object was changed to a black ground where it was more conspicuous.] "A lot of black with a white square on it." (Go on.) "Is it a card?" (Yes.) "Are there five

spots on it?" (Yes.) "Black ones?" (Right.) "I can't see the suit but I think it's spades."

Object—An oval gold locket, hanging by a bit of string, with a little price-label attached. "I see something gold—something hanging—like a gold locket."

(What shape?) "It's oval," [indicating with her fingers correctly. (Very good so far, tell us something more,)—meaning ticket at top. No more was said. When shown the object she said, "Oh, yes, it was just like that," but she had seen nothing of the little paper ticket.

Many other interesting and most important features have not even been alluded to in this brief sketch. The reader if he be interested enough to pursue the subject further may consult the Proceedings of the Psychological Society, which may be found in the Director's room at the Public Library, or Mr. William A. Hovey's excellent little book, "Mind-Reading and Beyond," which is also to be found there.

ELECTRIC PHENOMENA.

THE light posts in front of Mechanics Hall, on Main street, have afforded some very interesting phenomena of late. These phenomena are specially noticeable on a rainy day, when defective insulation of the electric-light wires is combined with their contact with the posts. At such times the display of the before-mentioned phenomena is something startling.

One rainy morning, a short time since, one of Worcester's most respected and dignified citizens was hurrying along to

his place of business, and when just opposite one of the aforesaid posts, as the ground was slightly slippery, he placed his hand upon it to steady himself. Then a phenomenon took place. Apparently the old gentleman suddenly be-thought himself of something which required his immediate attention right out in the street, for no sooner had he laid his hand caressingly upon the post than he rose gracefully and with precision into the ether and alighted the other side of the horse-car track. Neither did he seem to stand very much upon the order of his going. Now no sooner was the old gentleman fairly settled, than something else happened. It seems that this old gentleman had a daughter, and this daughter had a young man, who was a clerk in a dry goods store and who owned a dog, and as chance would have it, only the night before, the girl's paternal had reminded him that the quarterly bill for gate hinges and hammocks was then due and no more could he come till it was settled. Expostulations, entreaties, prayers were of no avail. The old gentleman was obdurate. Then dark and bloody thoughts filled the young man's mind. The next morning as this dark youth, accompanied by the dog, was tripping along to his tape and ribbon counter, who should he spy before him but the old man. Here was his chance. Should he set the dog on him, or should he once more, with gentle words, endeavor to move his hard heart. He would give the old man one more chance and try the latter. Hurrying forward he had almost reached him when suddenly he was nearly paralyzed at the sight of the

pyrotechnic display which just at that moment his *soi-disant* father-in-law was engaged in, and being naturally of a rather weak temperament, he reached out his hand for something to support him, and after groping about for a few seconds, he struck the post. Then it seemed to strike *him* that the example of the old man was a most illustrious one. It also penetrated the canine mind at the same instant, and together they *chasséed* across to the very spot where the old gentleman had alighted, and was just in the act of getting upon his feet. Then the citizens of Worcester were treated to a scene which was awful to contemplate. There was one of their first citizens, after being kicked out into the street, endeavoring to rise, and no sooner doing so than the back of his neck was jumped on and he was again knocked down. Now the old gentleman had just time to recognize his pursuer before he alighted, and when he discovered that it was his daughter's young man, it threw him into a fine frenzy, and for a few moments the woods were full of old gentleman, clerk, coat-tails, and dog. When the mass quieted down somewhat, the old man grasped the clerk by the collar and called gently for the guardians of the peace. The dog, however, felt that if there was any grasping business to be done he would have a hand, so he took a good firm grip on the old man and thus constituted himself a guardian of a piece—of the old gentleman. This added to the general jollification. And now six policemen, emboldened by numbers, and by the fact that the combatants seemed to consist of only two men and a dog, and that neither of the

three seemed to be "Techs," tore up at an alarming rate from their secluded nooks, and made off with the hopelessly entangled mass to the police station. It took several hours of hard labor to disentangle everything, and nothing under heaven could convince the old man that the clerk had not knocked him into the street and then jumped on him from the roof of a building.

The judge discharged the parties, but the hinge and hammock bill remains unpaid, and the clerk is looking for a new B. G.

This phenomenon will bear investigation.

'87's CLASS HISTORY.

Read at the Half-way Supper.

FAVORED indeed that nation is, some ancient sage hath said,
 Whose deeds on history's pages have never yet been read:
 And happy we, assembled here to turn night into day,
 To think how few events of *note* have marred our even way.

Our triumph over obstacles we've met to celebrate,
 Yet not without some losses have we encountered Fate;
 Our favorite dude's bewitching wit no longer is displayed,
 For Carroll D. threw up his books to get a table made [maid].

And Ack became disgusted with the scientific sham,
 And sought a more congenial clime [climb] where he doesn't need to "cram."
 But the reason why we have to mourn dear Freddy's absence here
 We cannot tell unless, perchance, it be Milwaukee beer.

Although their paths diverge from ours we wish
 them prospects bright,
 And were it not for the Doc's advice we'd drink
 their healths to-night.
 And Knapp, the *anchor* of our hopes, has torn
 himself away
 From 'Eighty-seven's outstretched arms which
 plead for him to stay.

But pleased are we to notice that she is not
 quite ignored,
 For, though he's absent from her bed, he's
 present at her *board*.
 I need not make allusion to the virtues which
 adorn,—
 Though modest, still he's capable of *blowing his
 own horn*.

The rest of us, since last we met in festive hall's
 embrace,
 Have had a pretty lively hunt in the intellectual
 race:
 With tangents, sines, and cosines we wrestled
 fair and square
 And had a rough-and-tumble with Tene's Polar
 bear.

Old Chauvenet tormented us in every way he
 could;
 "The good was not original and the originals
 weren't good."
 And when in our just anger we put him on the list
 Our wise, pedantic pedagogues they feared he
 might be missed.

But vain were their precautions, their interdiction
 vain,
 Their happy hopes resolved to naught, their joy
 was turned to pain,
 For when we got to Johnny's room 'twas just
 as clear as day,
 That the boys of 'Eighty-seven had *buried*
 Chauvenet.

How rapidly the pleasant months of recreation
 pass,
 Reluctantly the Tech returns and leaves his sighs
 [size], alas [a lass]!
 About this time upon our roll two other names
 we fix,
 And welcome Mac and Miner, the pets of
 'Eighty-six.
 And Von, with cheerful *presence* and all-pervading
charm,
 Arms our athletic virtues by virtue of his arm.

Upon Descriptive's broad expanse we launched
 our little boat,
 The Professor's kindly hand near by to keep the
 thing afloat.
 It's all *plane* sailing, he would say with a most
 expressive face,
 But of its great "planimity" we often found no
trace.

On Analyts' symmetric charms we focussed our
 mind's eye;
 Oft solved equations, getting *ex* but quite for-
 getting w(h)y.
 We found the walls of knowledge and with
 many toils and cares
 On the hyperbolic spiral we climbed her golden
 stairs.

With the Epic poet we labored too, but oh, I
 cannot tell
 How manfully we battled in the casting of the
 bell.
 Ah, wealthy are our minds with lore, but richer
 might they be,
 Were it not for one Prof.'s grasping brain and
 comic gravity.

Our most translucent gems of thought, bright
 specimens of wit,
 Were cruelly torn away from us to grace his
cabinet.
 To take our rare collection thus would be a
 grave offence
 If it were not replaceable at the Doctor's own
 expense.

But all those little trials cannot our souls subdue;
 We have a few convictions and we've got the
 courage too;
 We've yet one man within our ranks, who, to
 the Prof.'s dismay,
 Still dares to *sneeze* to his heart's content in the
ordinary way.

So here to-night, with faces bright and spirits
 light and gay,
 Let's gather Pleasure's sweets, my boys,—we
 cannot meet alway.
 And worthy plans to propagate, and pure, high
 hopes to leaven,
 Recall to mind that magic name, that dear old
 "'Eighty-seven."

WILL O' THE QUILL.

Scientific Notes.

Of posthumous honors awarded to scientific men long after their death, the most striking instance is the erection of a monument to Archimedes by the inhabitants of Syracuse, Sicily.

As a result of experiments recently made it has been found that if poison be injected into the stomach of a dead body that, by imbibition, this poison will travel throughout the system penetrating in a short time even to the brain and spinal column in spite of the fact that they are encased by a bony covering. This is certainly a very strange fact.

At a meeting of the Pathological Society of Philadelphia, Dr. Formad presented an analysis of 250 autopsies on drunkards. He found that the most prominent troubles caused by alcoholism were cyanotic induration of the kidneys, fatty infiltration of the liver, and mammillated stomach. He thought that the exposure, irregularities of diet, &c., incident to drunkenness, have as much to do with the maladies as alcohol itself.

A new torpedo boat, built for the Austrian government, recently made on her trial trip the remarkable speed of twenty-two (22) knots an hour. Her machinery is of the compound surface-condensing type having three cylinders. She has a locomotive boiler which generates steam sufficient to indicate fourteen hundred (1400) H. P. If this boiler proves successful it will create a revolution in marine boilers where forced draught is necessary.—*London Times*.

Our students of physic will recognize the following as a favorite illustration of Prof. Kimball's, and believing they will appreciate it we insert this supposed case which was first used by Prof. Croom Robertson:—

Suppose by a wild stretch of imagination, that some mechanism that will make

a rod turn round one of its ends, quite slowly at first, but then faster and faster, till it will revolve any number of times in a second; which is, of course, perfectly imaginable, though you could not find such a rod or put together such a mechanism. Let the whirling go on in a dark room, and suppose a man there knowing nothing of the rod; how will he be affected by it?

So long as it turns but a few times in a second he will not be affected at all unless he is near enough to receive a blow on the skin. But as soon as it begins to spin from 16 to 20 times a second, a deep, growing note will break in upon him through his ear, and, as the rate then grows swifter, the tone will go on, becoming less and less grave, and soon more and more acute, till it will reach a pitch of shrillness hardly to be borne, when the speed has to be counted by tens of thousands. At length, about the stage of 40,000 revolutions a second, more or less, the shrillness will pass into stillness; silence will again reign as at the first, nor any more be broken.

The rod might now plunge on in mad fury for a very long time without making any difference to the man; but let it suddenly come to whirl some million times a second, and then through intervening space faint rays of heat will begin to steal toward him, setting up a feeling of warmth in his skin, which again will grow more and more intense, as now through tens and hundreds and thousands of millions the rate of revolution is supposed to rise. Why not billions? The heat at first will be only so much the greater.

But, lo! about the stage of 400,000,000,000 there is more—a dim red light becomes visible in the gloom; and now, while the rate still mounts up, the heat in its turn dies away till it vanishes as the sound vanished; but the red light will have passed from the eye into a yellow, a green, blue, and, last of all, a violet. And to the violet, the revolu-

tions being about 800,000,000,000 a second, there will succeed darkness—night, as in the beginning. This darkness, too, like the stillness, will never more be broken. Let the rod whirl on as it may, its doings cannot come within the ken of that man's senses.

Prof. Thurston, late of Stevens Institute, now Director of Sibley College, the Department of Mechanical Engineering at Cornell, has recently written a paper on the Luminiferous ether, which he treats as if it were a perfect gas. At the close he says, "We conclude, then, that a medium whose density is such that a volume of it equal to about twenty volumes of the earth, would weigh one pound, and whose tension is such that the pressure on a square mile would be one pound, and whose specific heat is such that it would require as much heat to raise the temperature of one pound of it 1° Fahrenheit as would raise about 2,300,000,000 tons of water the same amount would satisfy the requirements of nature in being able to transmit a wave length or heat 186,300 miles per second, and transmit 133 ft. lbs. of heat energy from the sun to the earth each second per sq. ft. normally exposed, and also be everywhere practically non-resisting and sensibly uniform in temperature, density, and elasticity. This medium we call the Luminiferous ether.

Personals.

Dr. Fuller delivered a lecture Feb. 4 in the Houghton St. Chapel.

Owing to ill health Mr. Ames of '88 was obliged to leave his class.

Wheeler, formerly of '87, is superintendent of the New York Creamery Association.

Mr. Woodward of '85 has recently gone to New Haven in the employ of the New Haven Gas Company.

Mr. Quevido has left the class of '88. He intends to enter Stevens Institute. Our winters are too much for him.

Dr. Fuller addressed the members of one of the high school debating societies recently on "English Schools."

Prof. Fuller attended a reunion of Dartmouth alumni at Boston, Jan. 27. He was chosen one of the vice-presidents.

'85, Marwedel has returned to San Francisco and is in business with his father, who deals in machinists' supplies.

Prof. Gladwin's illustrated lecture, which many of us had the pleasure of hearing, is in considerable demand. He has delivered it in several churches.

'84. Harry H. Small has left his situation with the Sperry Elec. Light Co., of Chicago, and is now engaged in a like capacity by the Thomson-Houston Electric Light Co.

Mr. Emery of the class of '85 who has been taking a course in chemistry at the school since his graduation, intends to continue his studies in Germany. He will sail sometime during the summer.

'84, Chester B. Albree has started a shop to manufacture wrought-iron bridge and house railing, fire-escapes, light iron roofs, and bridge work. He is alone in the business, which gives employment to about fifteen men.

Communications.

"Eliza" writes, "I was asked by an Editor of the 'W T I' to contribute a poem. I spent thirty-nine hours in my room and produced a perfect *gem*. Why has it not been printed?" Now, Eliza, all the Editors of the "W T I" have girls and they are all contributing several "*gems*" per month. It has therefore been agreed on the part of said Eds. to print these "*gems*" in the order of their reception. Yours was "*gem*" number forty-seven, and will, therefore, appear in October, 1890.

An inspired student has sent us a poem in seventeen stanzas, entitled, "O! would that I were wise." My son, if you were wise enough not to embody your thoughts in twenty-one different kinds of metre in seventeen stanzas there might be hope for you. As it is, our advice is to study the works of the late Mr. Shakspeare, who has much to say about men who "are reputed wise for saying nothing."

NORTH YAKIMA, WASH. TER., 1, 4, '86.
G. H. BURR, ESQ.,
Business Editor, W T I.

1 Sunnyside, Worcester, Mass.

DEAR SIR:

Some weeks ago I was pleased and surprised by a copy of the W T I. Of course no Tech can be without it, so here's my dollar.

You might tell the civils that work in their line is going to be most active in the Mississippi valley and especially in Missouri, Kansas, and Nebraska the coming year. West of the Dakota line there will be little to do for men not already located. I refer to railroad work.

J. Q. Barlow, '82, made an exceptionally good record as locating engineer on the Cascade Div. N. P. R. R. last summer.

I am in charge of grading in the Yakima Cañon. 67 per cent. of the line for 20 miles is curve but a 10° is not exceeded and the grade is only eight-tenths.

No winter here yet. Graders' scrape and plow O. K. We expect a month of winter soon and that is all.

With many good wishes for the success of your enterprise,

Yours truly,

J. J. DONOVAN, '82.

MR. EDITOR:

I have not been long a member of the school, of course, but there are a few things I would like to know about. In

the first place, I would like to know why my class is called the "Prep" class? If the shop sells the squares and things we make, and what is done with the money? Why the other class-fellows don't get their overalls washed? Why we have to go to chapel and English? Why five unexcused marks suspend a fellow? and if you think we shall take more prizes than '86, next field-day; and lastly, if you think there is any one in '89 who has brains enough for an editor, and how we can tell which he is?

APPRENTICE.

We congratulate our newly received but none the less welcome fellow-student upon the above statement of his clear, concise, and straightforward questions. Nevertheless, it will not enable us to make an answer, for from that sad teacher, experience, he will soon learn that many of them are, and are likely to remain forever, unanswerable. As to the others we refer him to Father Time, trusting that the cares he brings will rest lightly and the experiences he has in store prove profitable.

Thinking a few words of advice to the newly-born "Preps" would not be out of place, we venture a few hints which, if strictly followed, will perhaps make life a little less of a burden for some of them. In the first place at once subscribe for the paper that you may become informed about the workings of the school and thereby not appear quite so green. Do not try to explain original ideas in drawing. Do not believe that you are capable of speaking or writing the English language correctly. Do not think that you are the smartest class ever in the shop. Expect to furnish towels and soap for the rest of the students. If any of you have beards,

cut them off, as these are only tolerated on upper-class men. Do not smoke or drink. (The reasons for the latter will be given you in your junior year.) Never whistle in the halls. If you will faithfully follow these simple formulæ we have no doubt but that you will remain in the school for six months or less. EDS.

THE PREP.

WHAT is it that's just joined the Tech?
What? That thing there! why, that's a prep!
A verdant prep!

Who is it stands with mouth agape?
The nearest coz, to Darwin's ape.
The prep!

Who is it rises in the night
And eats his hash by candle-light?
The prep!

That he may hie him to the shop
And get to work at seven o'clock.
Poor little prep.

NOTES.

Athletic.—The class of '85 of Columbia College has set on foot a movement to erect a \$100,000 Gymnasium, the money to be raised mainly by subscription among the alumni and students.—The students at Harvard are much pleased at the action of the faculty as expressed in the following notice: "Whereas the Committee on Athletics has advised the Faculty that the game of football has been much improved during the past season, therefore,—Voted, that on the recommendation of the committee the Faculty's prohibition of intercollegiate games of football adopted Jan. 6, 1885, be now withdrawn." W. G. George, the ex-champion runner of England, is out with a challenge to any one to run him any distance from one thousand yards to ten miles.

THE HALF-HUNDRED.

SILENTLY, mournfully,
Silently onward,
Into the chapel,
Went the half-hundred.
"Forward the Junior class!
Death if you do not pass."
Into the chapel
Strode the half-hundred.

Now, go it '88!
Was there a man came late?
Ready to meet their fate
Sat they undaunted.
Theirs but to make reply,
Theirs but to reason why,
Theirs but to toil and sigh
There in the chapel
Five or six hours.

Old Profs. to right of them,
Young Profs. to left of them,
Sly Profs. in front of them,
Whispering mysteriously;
Stormed with infernal Dutch,
Physics, and Chem. and such,
Trig. and Geom. that much
They wished in Sheol.

Flashed all their "cribs" in air,
Flashed as they turned them there,
Trying to keep them where
They'd be unnoticed;
Then bent they to their work,
And with a steady stroke,
Right o'er the record broke,—
Record for blunders.

Old Profs. to right of them,
Young Profs. to left of them,
Sly Profs. behind them
Watching for "cribs."
O! many Juniors fell
There in the drear chapel!
Of those that had fought so well
Few, few, remained to tell
Of the half-hundred.

Wide let their glory float!
O, the wild things they wrote!
Startled the Profs.
Honor to those that pass,
Honor the Junior class,
Noble half(?)—hundred.

Exchanges.

MIDDLEBURY College, Vt., is ably represented by its monthly magazine, the *Undergraduate*. In its columns for January we note a brief but well-written article on "The Knights of Labor." The writer takes up in short order the several important strikes of the last few years in which that organization has been largely instrumental, and points out the fact that the immediate results have been increased misery, violation of the laws, and commercial stagnation. He admits that their object as defined by their constitution, viz., "the unification of labor, with the object of putting a check upon the power of aggregated wealth, and of obtaining the adoption of a system which will secure to the laborer the fruit of his toil," to be well and good. But his point is that the means which they use, viz., the "strike," is criminal, resulting in immediate wrong to the strikers and indirectly to society at large. They should, he holds, substitute arbitration for the strike. In short, it is the old question, does the end justify the means? The highest philosophy answers—No. But, as was the case in the French revolution, it is not the fault of the unfortunate men immediately concerned if they do not possess this highest philosophy. They see that they are oppressed, they recognize that there is a wrong, and though their remedy does not possess the Christ spirit, what right have we to condemn them who perhaps unconsciously rank with the oppressors. It is history repeating itself. These uprisings of the masses have ever been sure indications of social wrong, and before we condemn them we should accept their warning and remove from our system the deep-seated poison in which they find their cause.

From the exchange column we quote: "The *Polytechnic*, of Brooklyn, and its

companion, the *Adelphian*, are the best *Academy* exchanges on our list." We find no fault with this criticism which expresses our own opinion, but we beg permission to make this correction: The *Adelphian* represents the *Adelphia Academy* of Brooklyn, while the *Polytechnic* is the organ of the students of the Brooklyn Collegiate and Polytechnic Institute, whose degrees of B. S. and B. A. are recognized by the authorities of the State to represent as much work as those of the best *colleges* in our land. It is something more than an academy. We congratulate the exchange editor. He is one of the few whose powers of observation are sufficiently cultivated to enable him to write "W T I" *without periods*.

The January number of the *Crescent* is a credit to the Hillhouse High School, New Haven, Conn. Its careful typography and good arrangement invite a closer inspection, in the course of which one is not disappointed. The literary department of the present number is exceptionally good, the articles being readable, well selected, and carefully written. The *Turaqua Mines* is the heading of a short sketch of a visit to the celebrated iron mines of Cuba, enlivened by a description of scenes which connect the history of Cuba to our own. The article on *Education* contains an excellent thought, and the *Half Hours with Dickens*, though short, are well spent. We take exceptions, however, to the pyramid in the "Cheeznutz" column, which is utter nonsense.

The *Lantern* surprised us with a copy of its January number, after its long absence, and was immediately made welcome. It supports, in an admirable manner, the interests of the University of Ohio, but, in this number at least, contains but little of interest to outsiders.

Having for a long time admired the good taste and excellence almost always to be found in the "*Lasell Leaves*," we

are happy in believing that the young ladies of that seminary have at last put us on the list. The *Leaves* is thoroughly original, and without trying to be one of the boys, is truly one of the girls tempered with a rare common sense, enough to make the reputation of the seminary. Longfellow and Whittier are ably treated in the last number, and though the subject is not new in college journalism, it will bear repeating whenever handled with equal care.

There are but comparatively few pages in the *Troy Polytechnic*, but those, at least, are ably edited. The article in the January number on *Monge, the Inventor of Descriptive Geometry*, will prove highly interesting to any of our students who care to give it consideration, while a translation of the *Insects of the Hypanis* is thoroughly amusing.

We rejoice that the editor of the *Yale News* has at last succeeded in deciphering our address. We are glad to receive early news from this distinctive New-England college, and thus occasionally to hear from our fellow-students at "Sheff."

We acknowledge the receipt of the following journals:—

Academe, Academician, Academica, Adelpian, Alma Mater, Berkleyan, Central Collegian, Chi-Delta Crescent, College Days, College Message, College Rambler, College Review, Crescent, Critic, Dartmouth, Delaware College Review, Eclipse, E. H. S. Record, Emory Mirror, Epoch, Exonian, Foster Academy Review, Georgia College Journal, Hanover Monthly, Haverfordian, High School Argus, High School Record, Illini, Indiana Student, Lantern, Latin School Register, Lasell Leaves, Lehigh Burr, Messenger, Monmouth Collegian, Niagara Index, Oberlin Review, Philosophian Review, Phi-Rhonian, Polytechnic, Portfolio, Reporter, Seminary Opinator, St. Charles College Gazette, Stevens Indicator, Swarthmore Phoenix, Tuftonian, Tech, Troy Polytechnic, Sentinel, Undergraduate, University Mirror, University Press, University Quarterly, University Review, Varsity, Williams Fortnight, Willistonian, Yale News.

Technicalities.

Welcome to '89!

Full again,—the bulletin board.

See our classified list of advertisers.

The "Preps" are to study French during the apprentice term.

"War has begun"! "War has begun"! The "Preps" are here.

Junior divisions C and D are to have Dr. Fuller in German during this half.

The Middle Mechanics are to build, next year, a brass-finishing lathe.

The Junior class will begin Mechanical Drawing under Prof. Little, this term.

TECHS.

PATRONIZE OUR ADVERTISERS.

The Civils of '87, are privileged to choose between Steam Engineering and Geology.

Wanted:—A division to wait fifteen minutes for its instructor to appear. "Understand?"

The school Y. M. C. A. has issued a card containing a synopsis of the exercises for the next two months.

If '89's men would be popular, let them keep a copious supply of towels (clean) in the wash-room.

Many of the shade-trees upon the school grounds were badly damaged by the recent storm.

'87's half-way supper was discussed Tuesday evening, Jan. 26, and was the most enjoyable occasion of any in the history of the class.

Pamphlets containing an account of the reunion of '76 and '77 and records to '85 may be procured at Sanford's, and Putnam, Davis & Co.'s.

The new regulation in regard to counting the drawing mark resulted in two conditions, a thing which has created a panic in all quarters.

Quite a number of the Techs are members of our new toboggan club which has just been started in the city. Their coast is near Sunnyside.

The Middlers enjoyed four hours a day "extra" of lectures in Physics during the progress of the entrance examinations. This was *calculated* to accommodate the students(?).

As a result of the examinations '86 loses one man, and '88 loses three; a general "shaking up" among the "sixes" seems to have occurred.

Those who have the best interests of the paper at heart and desire to see it continued in succeeding years, will not fail to put themselves out, if need be, to patronize the men who patronize us.

One of the questions upon the Geometry paper in the recent entrance examination was, "What is a theorem?" One of the answers received was, "A theorem is the *denunciation* of a proposition.

A poster upon the shop door recently gave notice of changes in the wash-room saying overalls and towels had been moved together. We judge, from the looks of the towels that they were,—very violently.

A new tapering attachment is being applied to some of the lathes in the shop; the screw machine and upright drill have been equipped with new chucks, and a device for raising and lowering the drill has been applied to the latter.

The drawings for the Niagara elevator have been in progress of construction for some time. The sketch of the rocks before the Cave of the Winds, by Prof. Gladwin, hangs in the drafting-room and is of considerable interest.

Fifty-eight applicants of whom fifty-five were for the apprentice class, took the entrance examinations. Thirty-five were admitted, three of whom will not begin work until next September. Of the number admitted, fifteen were from the High School of this city.

C. A. Bennett, '85, has copied and bound in a very neat style the series of lectures by Prof. Little on Steam Boilers, delivered during the last term. They will prove valuable to any member of the Institute, and are worth much more than the modest price of fifty cents asked for them.

Among the present orders the shop is at work upon is one for a couple of hydraulic lifts for the Worcester Steel Works, which are to pull out from the reheating furnaces rail blooms measuring 6' x 6" x 6" and weighing from 700 to 800 lbs. By this means a small boy can do the work that now takes six men.

Seven articles have been received in competition for the prize, five in prose, and two in verse. We are deeply indebted to Prof. Smith who, at our earnest request, agreed to act as judge. His decision as rendered gave the prize for prose to "Agnes," and the prize for verse to "Le Coucher du Soleil." It appeared that in both cases the author was Mr. Norman Marshall, '85, who thus becomes doubly deserving of our congratulations.

The evening of Friday, Feb. 5th, was pleasantly spent by fifteen members of the Apprentice Class and the Y. M. C. A. at the residence of Dr. Fuller. The occasion was a social reception tendered the Apprentice Class by the Y. M. C. A. After words of welcome by the President of the Association and by Dr. Fuller, the evening was spent in readings, music, and sociability. Prof. Smith read two selections which were thoroughly enjoyed by all. Music was furnished by an improvised quintette of male voices, and an instrumental quartette consisting of flute, violin, cornet, and piano. After partaking of refreshments, a half hour was spent in singing college songs. On departing three cheers were given for Dr. and Mrs. Fuller, who had so kindly opened their home to the Association and its guests.

On Tuesday evening the 26th of January was held the annual supper of the class of '87. The members gathered at Reform Club hall at 8 P. M. When all had arrived a procession was formed and marched to Rebboli's where an excellent *menu* was discussed for an hour and a half.

The menu was headed "Indicator Card" and was got up as a take off on the steam-engine indicator. After supper the company again went to the hall when the exercises were opened by Toastmaster J. A. Chamberlain who very pleasantly introduced the various speakers. Toasts were responded to as follows: "The Class," W. N. Weston; "Mechanics," F. L. Emory; "Civils," E. L. Grimes; "Chemists," C. B. Murray; "Designers," W. H. Kirchner; "Ladies," H. H. Allen; "Steam Engineering," G. P. Tucker; "Athletics," W. W. Bird; "Class History," J. W. Burke. After the speaking a short musical entertainment was given by members of the "Octet," comprising Violin, Cornet, and Piano solos, with several choruses. After this the hours were devoted to having a general good time and to singing and dancing. During the evening Mr. Weston gave the "Chauvenet" dance in a very creditable manner. The occasion was one of pleasure to all and broke up in the "wee small hours" with a rousing "Tech" cheer.

The first six in the various classes for the fall term, are as follows:—

Seniors:—H. S. Green, J. C. Miller, T. F. Mitchell, W. E. Newbert, W. E. Drake, A. F. Walker.

Middlers:—I. L. Fish, J. W. Burke, E. F. Miner, W. W. Bird, E. L. Grimes, W. A. McClurg, Jr.

Juniors:—C. H. Griffin, G. E. Camp, C. W. Chadwick, G. M. Goodell, F. S. Hunting, G. W. Patterson.

The Middlers and Preps have not as yet been heard from, but the Senior and Junior class elections have been held with the following result:—

Seniors:—Pres., H. J. Chapman; Vice-Pres., L. A. Whitney; Sec. and Treas., W. F. Brooks.

Juniors:—Pres., C. W. Chadwick; Vice-Pres., F. W. Speirs; Sec. and

Treas., Ferry; Class Historian, J. B. Chittenden.

APPRENTICE CLASS.

NAME.	RESIDENCE.	ADDRESS.
Allen, Albert P.,	Newton.	7 Dix
Armstrong, Harry C.,	Worcester.	23 West
Ball, Walter S.,	Upton.	48 Irving
Bartlett, Solon,	Boylston.	22 Windsor
Baylis, James A.,	Montreal, P. Q.	17 Catharine
Bean, Arthur J.,	Worcester.	35 Piedmont
Bigelow, Myron J.,	Webster.	19 Main
Brigham, Merrill D.,	Worcester.	14 Edward
Cook, Charles S.,	Worcester.	808 Main
Gardner, Addison I.,	Worcester.	138 Lincoln
Gilbert, Albert W.,	Hartford, Ct.	40 West
Grimes, Thaddeus S.,	Princeton.	5 Dover
Harriman, Louis H.,	Georgetown.	12 Denny
Harrison, G.,	Minneapolis, Minn.	19 Lancaster
Hartwell, William E.,	Manchester, N. H.	16 Dix
Hastings, Walter,	Amherst.	16 Dix
Kimball, Albert B.,	Worcester.	28 Boynton
Leland, Frank,	Worcester.	25 Bowdoin
Mellen, Walter L.,	Worcester.	24 Merrick
Penniman, Edw. G.,	Monson.	2 Davis
Percy, Gilbert,	Chatham, N. Y.	142 West
Perry, Geo. W.,	Putnam, Ct.	670 Main
Pickwick, Eli,	Webster.	19 Main
Rheutan, Isaac L.,	Worcester.	7 Piedmont
Sessions, Frank L.,	Brookfield.	23 Highland
Sherman, Chas. D.,	New Haven, Ct.	43 Highland
Southgate, Phillip W.,	Worcester.	6 Wellington
Swift Edw. Wellington,	Columbus, Ga.	40 West
Thompson, Chas. F.,	Dudley.	9 Garden
Whipple, Frank A.,	Worcester.	11 Chatham pl.
White, Windsor T.,	Cleveland, Ohio.	40 West

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- Boots and Shoes, J. K. Brown, 14 Front St.
- Billiards and Pool, B. D. Hill, Pearl St.
- Barber, F. T. Potter, 127 Main St.
- Bicycles, A. T. Rogers, 18 Boynton St.
- Candy and Cigars, M. D. Gilman, 215 Main St.
- Coal, Fred'k W. Wellington.
- Confectioner and Caterer, Rebboll, Pleasant St.
- Cigars, O. F. Rawson.
- Confectioner, Huyler, 325 Main St.
- Confectioner and Caterer, Zahonyi.
- Dentist, W. F. Gilman, 333 Main St.
- Druggist, J. L. Burbank, cor. Main and Elm Sts.
- Dry Goods, Barnard, Sumner & Co.
- Drawing Stands, Washburn Machine Shop.
- Electrical Apparatus, Reed & Page, 28 Pearl St.
- Express 10 ct. Delivery, 24 Pearl St.
- Florist, C. A. Keyes, Highland St.
- Furnishing Goods, Walters & Holden.
- Furniture, J. Broadbent, 326 Main St.
- Hardware, H. W. Miller, 156 Main St.
- Hotel, Bay State House.
- Jeweller, W. A. England, 394 Main St.
- Livery Stables, L. R. Spooner, rear of Bay State House.
- Laundry, Worcester Collar Laundry.
- Musical Merchandise, S. R. Leland & Son.
- Pens, Joseph Gillott.
- Photographer, C. R. B. Claffin, 337 Main St.
- Razors, J. R. Torrey Razor Co.
- Repairing and Clothes Cleaning, William Frazier, 49 Main St.
- Sporting Goods and Gents' Furnishing Goods, F. A. Clapp & Co.
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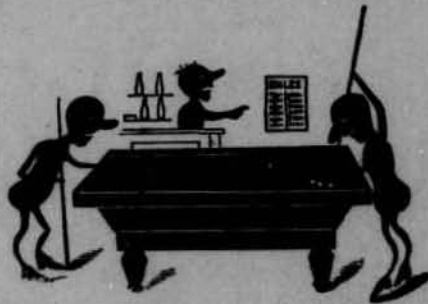
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Fig 2



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