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The announcement made in another column that the Trustees have voted to alter the course at the Institute, from three or three and a half years to four, marks one of the most important changes that have been made since the school was founded. It means a radical departure from the principal feature which has distinguished ours from other similar schools throughout the country, a decided change in policy. It means that after twenty-five years of firm adherence to the theory that an engineer can be made in three years, that theory is to be set aside and another, followed for an equal length of time by similar and rival institutions, substituted. But it does not follow from this that ours has been a mistaken policy, for it is a fact that some of these other institutions are now undergoing a change from a four to a five-year course, and this recent action of our Trustees is perhaps only a step in the direction of the educational tendency of the day. There are many arguments both for and against the announced change and there must be and is much difference of opinion in regard to its advisability. It seems as if a better way would have been to raise the standard of admission. To-day we see students fitting for a four-year college course, by four, and in some cases, five years' preparation in the high school, while it is possible to enter the Institute after a course covering as little as two and one-half years.

But it is impossible to intelligently criticize the Trustees' action until something more definite about the grade and amount of additional work proposed has been made public, until we know whether the present studies are to be given in more dilute quantities and made to last during the entire four years, or whether a third more time is to be a gain of a third in knowledge and skill.

The change is certain to affect decidedly the general air and conduct of student life. It will tend to debar a certain class of men who have always characterized the Institute, a class composed of earnest, industrious, practical students in straitened circumstances, who are driven to seek a knowledge of engineering, where it may be obtained with the least possible waste of time and expenditure of money, and who have come here under the inducements offered by a course of study covering only three years and, until recently, with a free tuition. In their places will enter those with more money and less seriousness, who are not seeking an equipment by which they may earn their bread and butter, but rather a general education, carried out on scientific lines, in preference to academical. The result of this will inevitably be, more societies, more athletics, more of the social and pleasurable.
Class and school loyalty will be greatly increased, for at present, students as a general thing fail to appreciate, until fairly in their Senior year, the advantage of becoming closely acquainted with one another, and fail to realize that they are spending the days, upon which in later life, they are to look back for their pleasantest memories and recollections, so that after that condition has been reached, an additional year will help wonderfully to bind students to one another and to the Institute, and to create throughout the school a feeling of mutual interest and loyalty which hitherto has been lacking in a too marked degree.

Those who have had occasion to post notices on any of the bulletin boards in Boynton Hall have been continually annoyed by seeing them defaced with pencil marks in a most reckless manner. It is often not easy to distinguish the original notice from the spurious additions made by some person who has not outgrown his childish tricks. If followed up assiduously during the winter, the joke will begin to lose a little of its originality and brightness.

The time approaches for the election by the Athletic Association of delegates to the Intercollegiate Convention which meets the second Tuesday in February, and it is well for students to begin to think about the several questions which are then to be decided. Naturally the first which presents itself is, where will next year's meet be held? The annual field-sports have now been an equal number of times in each of the two places, Springfield and Worcester, and consequently there is no choice on the claim that one place has had them more times than the other. Other arguments must decide. To the student here, at first thought Worcester seems from his point of view to have decided advantages over its sister city. The grounds at the Oval excel those at Hampden Park in everything but size; the dressing-rooms are beyond comparison, the grand-stands more comfortable. Moreover, if the sports are held here we can enter a larger team and at a less expense. But this year there are new phases of the question which must be considered, and it were well for us to think carefully upon the matter before unqualifiedly advocating Worcester. Last year and the year before, the Worcester Athletic Club offered to make all arrangements if the meet were held here, to do all advertising, to attend to entries and printing and take entire charge, this in addition to very liberal financial inducements; both times, however, its offers were rejected by the Convention with hardly a vote of thanks. This year, if its officers are to be believed, the W. A. C. would be glad to have the sports held on its Lake View grounds, but will make no offers to secure such a result. When the Club was new, it was an object for it to advertise its grounds, but now that these are known throughout the country and the Club itself is a well-established fact, it has less need of the patronage of the N. E. I. A. A. This means then that a Worcester meet necessitates the assumption by Worcester men of nearly all the work, worry, and responsibility of the affair, and that too, within a fortnight of examinations. It is understood that Amherst men favor Worcester this year simply because they have become tired of doing all the work, yet the brunt of it was last year borne by the Springfield Bicycle Club. To alter a little the old saying: Are the Games worth the candles? By this the W P I does not mean to advocate Springfield, but it does wish to impress upon students the necessity of careful consideration before they vote instructions to our delegates.

Besides the question of place, there are others of importance which are to come be-
fore the same convention. Decision in regard to the point system of awarding the banner, that is, five points to the first man in a contest, three to the second and one to the third; the standing jumps whether or not they shall be thrown out; and possibly a proposition to limit the number of entries from the several colleges in each event, may be advanced. This last is a change which should be made this year, for the persistent way in which the larger colleges have filled the lists with contestants who expect to do nothing but prevent other runners from scoring, needs decisive checking in some way. It may be the better policy to leave all these things to the discretion and judgment of our delegates, at the same time the members of the Athletic Association should give the matter thought, and express their opinions that these same delegates may take them into consideration.

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**W P I'S WANTED.**

The Board of Editors wishes to purchase the following back numbers of the W P I. Any one having them for sale will confer a great favor by communicating with the Assistant Editor.

No. 5. Vol. I. October, 1889.
4. " VI., July, 1890.
4. " VI., February, 1891.
10. " VI., March, 1891.
5. " VII., October, 1891.
10. " VII., March, 1892.
2. " VIII., April 28, 1892.

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**MECHANICAL INGENUITY OF CRIMINALS.**

**By Col. E. J. Russell, Ex-Warden Mass. States Prison.**

People are often amazed at the audacity of great criminals either by the commission or attempt to commit crime and it is quite natural to say that if the same skill was practiced in some lawful industry they would really be leaders in mechanics; but skillful breakers are educated in the business and their only happiness is found in the excitement of the trade rather than in really expecting to retire upon the profits of their skill.

Crime is always a miserable failure. As an old man once said to me when leaving the prison at the end of a long term, "Prison philanthropists are always talking about the danger of young men associating with old criminals like myself, but warden, you have young hoodlums here who in planning for great crimes do not hesitate to do murder if success cannot be reached without, but since I have been here I have tried to impress it upon these men that a hope to succeed financially or otherwise is a delusion and a snare. I have been a great bank breaker, have taken as much as $300,000 at a time, and it was all wasted upon those who would give me away before my arrest; and here I stand just ready to step into the grave, bereft of friends with no money or means to make myself comfortable or one person to give me shelter." The writer often thinks of it when he sees a young man who imagines he is smart enough to do such work and escape punishment.

But this is a promise to write an article to show the mechanical skill practiced by criminals in efforts for freedom when serving long terms. Three modes are adopted by many to leave the place. First, to break out. Second, to take to the bed, get into the hospital and become very sick, hoping that as a last resort the pardoning power may let them die outside of prison walls, and third, become very good and especially religious so that kind-hearted people of influence will rally around them for the missionary work they may do outside; but the first is the more honorable and quite as likely to be successful. Three things are necessary to break out: patience, a willingness to suffer pain if necessary, and great daring, all combined with considerable mechanical skill. Three years ago a small man was put into a cell of stone supposed to be almost impregnable but in sunny weather he could see a ray of light penetrate down the ventilator and he set to work first to get a look; and he worked, so he said to me, as opportunity afforded, four months, to remove the mortar about a stone 14 inches square and finally was able to move it out or in at will; he made a paste that looked like other joints in the wall and hung his mirror over the weak spot. When the guard was not patrolling, which was less regular on Sunday afternoons, he would remove the stone, putting it into or under his bed. He had made a pasteboard door, white-washed the color of the wall, and with it he would pass into the ventilator and, so to speak, pull the hole in after him. When once in the ventilator shaft he found an iron bar across the ventilator, 1½ inches in diameter, which he sawed off, and worked his way up the shaft so that he could fasten a hook to which was attached a rope ladder previously prepared with rope yarns which he took from the rolls of leather in the shop where he worked. He could
have passed out here any day before he finally left, but he had a partner in crime who must go with him, and as both were retiring from the evening school, they passed into the broken cell and up the ventilator, and were on the street in less than eight minutes after leaving the school-room. One was recaptured near the prison entrance and the other a few months later, and when I told him the structure of the cell was very weak he replied, "If you knew how I watched, worked and suffered to remove that stone you would give me my liberty." This story illustrates the first requisite necessary,—to work with patience.

A few months ago the community was startled by an account of the escape of eight prisoners through an unused drain in the prison yard, and the reputed ringleader is still at large, and as he escaped from jail before being sentenced to prison and was recaptured, his attempts during my administration will illustrate the second phase of the case,—mechanical ingenuity. On account of his great skill as a breaker he was placed where he could have constant supervision, but he managed to cut the bars of his cell door and was captured in the corridor, and was put in punishment in the strong room sometimes called "Fort Russell" in honor of the architect and builder. During his short time there he probably conceived the idea that he could beat the place and in a few weeks he was found out of his room with the bars cut, expecting to be sent to the strong room for punishment, and at a time when no one was confined there. And there he was sent.

Lest prisoners have articles to assist in breaking concealed in their clothing there is what is known as a punishment suit and one can imagine the surprise of the strong room officer in the morning to find the iron door of the prisoner’s room flat upon the floor and in a two-inch plank door a hole large enough to let his body through; but the night had not been long enough to cut through the double-barred windows of the building. The officer remembered when dressed in the punishment suit he feigned a cough and under a large porous plaster were found the marks upon his breast of saws which were held in place by the plaster. Six hack saws, each four inches long, a steel saw frame which would fold to four inches, with pins to hold the saw in the frame, could be folded in a space four inches long two inches wide and less than an eighth of an inch in thickness, and with these he sawed two steel hinges, one inch in diameter, and finding that he could not remove the door, sawed twice an iron bar one inch in diameter and the staple to the brass padlock and then through the plank door. Undoubtedly he expected to remove the iron door after the hinges were cut which might give him time to cut the bars upon the outer windows and escape before daylight, but the night was too short, and the effort was so great that in his weakness he could hardly stagger to his cell, showing how great suffering a man will undergo to reach the much desired liberty. He is at large now and no doubt has the sympathy of many good people, but from his history there is not the slightest probability that he will return to correct life. His conduct while in prison except the penchant for breaking out was unexceptional, a perfect gentleman, modest, rather effeminate in appearance, but with a certain undefinable instinct for breaking in and then breaking out.

When prisoners are kept in close confinement they have time to plan and must have patience to execute; and when such a man as Jesse Pomeroy is the subject, one skilled in mechanics combined with great faculty to plan, to which is added muscular activity and endurance, we have a chance, in recital of his exploits, to prolong this article much longer than we at first intended. While his various efforts to escape have been greatly enlarged upon by sensational newspapers, his attempts to escape if collected would make an interesting chapter, but the writer will content himself with only one which came under his personal observation. He had come to the conclusion that he must add chemistry to his curriculum, and must have the highest authority upon the science. After months of faithful study he conceived the idea that he would blow up the prison, and in the confusion, make his escape. He got possession of a piece of hack-saw about an inch long and with wire taken from his broom, fastened it to a piece of wood, splint from his pine table; with that he cut two half-inch bolts from the underside of an immense hasp to which the large padlock was attached outside of the cell door. As it might be the work of many weeks and the door might be examined closely every day or two,—although it was the custom to do so only once a week—he took some of his wire and made a spiral spring which supplied the body of the bolt and had on the hasp four perfect bolt heads held in position by the spiral spring. He could remove the bolts at will, and when no officer was about, he could pass into the corridor and return.

When the arch cells were built in 1805 they were constructed with massive upright granite blocks with edges unjointed and filled with mortar. He saw in the corridor that the main gas pipe passed up, opposite the open joint in the granite, and from the inside with infinite patience, he dug through to the gas main and succeeded in tapping it in such a way that he could open or close at will, using a manufactured
cement of bread and lime, a whitewash to conceal his work. For weeks the officer thought he detected the odor of escaping gas but could not locate it. With the leaves of a book and paste, made of his bread he constructed six feet of tubing, which could be put together like stove pipe, and when everything should be ready he could conduct the gas from the pipe into the interstices of the wall closing all the means of escape into his cell, and when everything was ready he could remove the bolts in the hasp, step into the corridor and explode the gas, expecting that the outer wall would be blown away and he could escape into the yard. An explosion did take place at a most inopportune time for the plans of Jesse, just at the noon hour when he could be most easily detected. But instead of Pomeroy being in the corridor he was in his cell, and although he was badly burned, the force was expended upon the brick lining of the prison wall and was inward and just above his room into the hospital. No doubt he intended to wait until night to fire his train but in the room were found several lucifer matches which had been made from splints from his pine table dipped in some compound which he had prepared as the result of chemical study. It was a dangerous experiment although skilfully planned.

The question is always asked—how do these men get the tools and supplies necessary to carry out these plans? But to one acquainted with our prison system it is easily answered. Fifteen to fifty men are always in the prison yard from daylight to dark and all supplies are brought and merchandise taken from the prison by twenty teams or more a day, thus opportunities are given to a teamster to leave a bundle of hack saws or files anywhere, though they are occasionally found first by the officers who patrol the yard. For fifty years, wood and iron tools have been allowed in prison to men who make a proper use of them, in the manufacture of trinkets, jewelry, bone ornaments, etc. It gives a fine opportunity to a skilled mechanic to prepare tools and implements for escape. Prison authorities in this State have a divided opinion as to the propriety of it, but it is a fact nevertheless. Although many prisoners have shown great mechanical skill and a few have received patents for useful inventions, no case is recorded where any considerable revenue accrued to the inventor or his assigns. Prisoners are clannish and although they may not be even friendly they will often assist in any plan of escape, and many a case has come to the observation of prison authorities where there was more than a suspicion that the man escaping depended upon the brains of the man who staid, for mechanical aid.

Wisecr men of all ages have borne testimony to the pleasure and profit to be derived from books. A chapter of Sir John Lubbock's "The Pleasures of Life" is largely given up to quotations showing what very genial friendships may be formed in the quiet world of literature, and I have somewhere an even fuller list than his. Surely it is a duty to avail ourselves of the opportunity offered in hospitable libraries and in inexpensive editions of the English classics.

There is at our command much advice as to what to read. Of course one will not neglect the technical literature of one's chosen profession, but it is indeed a narrow life which has no taste, or no ambition to acquire a taste for the fine arts, which are intended to draw all professions and classes of men together in a common interest and enjoyment. It is our privilege and our duty to learn to find delight in the purest and choicest of general literature.

The W P I of a year or two ago published a very good list of books of both poetry and prose, which a well-informed man would like to know, and Mr. Emerson's Essay on "Books," and Dr. Porter's "Books and Reading" are helpful in making similar lists suited to our particular tastes or needs. In literature we come into contact with the real life of humanity in all time. The more we can absorb of the spirit of those authors whose works have been sifted out as most worthy of preservation from age to age because of their power of thought and grace of expression the richer our lives will become.

I have known men who affect a disdain for poetry, as perhaps suited to the needs of women and invalids, but unworthy the regard of "the lords of creation" with healthy minds. But in selecting our reading we cannot afford to neglect the great poets of our literature, for 'tis they who "complete creation by interpreting it," and their work is the record of "the best and happiest moments of the happiest and best minds," without which, says Emerson, "man is a poor, naked, shivering creature." For the sake of our general manhood we must read outside of our profession, we must read the best authors in different departments of general literature in both verse and prose.

But how shall we read? How shall we find any satisfaction in books which we ought to like, but do not? How shall we find any enjoyment in subjects quite remote from our every day lives? God help us if we have not learned that "man shall not live by bread alone," if we feel no wish occasionally, at least, to get outside our bustling, every-day existence into the
novelty or the calm of the world of books. If we wish to learn to like something better than we ourselves can think or express, then these wise and helpful, but unobtrusive friends will gradually open to us their treasures. To draw them out, however, we must manifest our sympathy and our interest to hear what they have to say.

Having in hand, then, a worthy book, not entirely unsuited to our needs and tastes, and having a real wish for the enjoyment or stimulus or information the book may contain, how shall it be read? Of course this depends much upon the nature of the book itself. "Some books are to be tasted, others to be swallowed, and some few to be chewed and digested." Some books are so crowded with expressions of the sympathy or the counsel or the information we crave that every word must be noted. Others give us of their stores of encouragement and hope and cheer on slighter acquaintance. It is worth our while to acquire the faculty of rapid reading, so that the main purpose of a page may be caught almost at a glance; it is also worth our while to learn to use indexes and tables of contents intelligently, so that we may find just what we want in the least time. In all our intercourse with books we need to be active readers, not passive. Many read listlessly, with little or no application of mind. We must not trifle with books. To sit idly with a book in hand and turn the pages is not to read. The attention must be fixed, and the faculties alert, as though we were never to encounter those thoughts again, and this were our sole opportunity to make them ours. Books are now so accessible that the temptation to be inattentive is far stronger than when Burke or Webster in the intervals of a busy life gained such effective knowledge of literature. It helps in fixing the attention, to have some definite aim in view, to have some report to make, or some paper to prepare, based upon our reading. If this incentive be lacking, it is profitable to pause at intervals, and to review the arguments or incidents or descriptions passed over, to make careful notes, and to commit to memory choice expressions of choice thoughts. A carefully prepared card catalogue of all the books and articles with which one becomes acquainted, systematically kept from month to month and year to year, will help in this respect, and may also prove extremely useful under circumstances which perhaps can not at the time of reading be anticipated.

So we should read with attention, even when "skimming" a book, and with a purpose to increase our own resources of thought and taste. Even if the purpose be simply recreation, attention to the literary qualities and marked features of a book only increases the enjoyment, for any but very weary or very indolent readers. As men, do let us use the soul which God at the creation breathed into the race, and "read not to contradict and confute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider."

FOUR-YEAR COURSES.

Very Important Action Taken by the Board of Trustees. A Few Reasons Why.

The Trustees of the Institute, after a joint meeting with the Faculty on Nov. 19th, specially to consider the subject, have voted to establish four-year courses of study instead of the present courses of three, and three and a half years. No details of these courses have yet been adopted, nor has the time when the change will be made been determined. It certainly will not affect the classes at present in the Institute, or probably those who may enter for the class of 1896.

The reasons for extension of the time of these courses are, un-officially, first, the difficulty of accomplishing as thoroughly as is desirable the work as now laid out in the time allotted; second, the necessity felt in all departments, in order to keep pace with scientific discovery and progress, of adding to the work already done. Technical schools give both general and professional training; the tendency in these schools is to lengthen the time of the courses. The Massachusetts Institute of Technology at Boston and the Towne Scientific Department of the University of Pennsylvania already provide five-year courses for regular work; no other institution in this country doing similar applied work has less than four-year courses, while like schools in Europe allow from four to six years for covering substantially the same ground.

The Technological Institute at Moscow, Russia, for example, which more nearly corresponds, in purpose and methods, to our own Institute than any other foreign school of science, has six-year courses of study for all departments. It is not, then, surprising that this matter which has for a long time been under discussion should have received a favorable consideration by the Corporation.

Another reason suggested for the change in the time of the courses of study is that it would tend to bring the Mechanical Department of the Institute more into harmony with the preparatory schools. Two schools only, the Worcester High and the Worcester Academy, arrange for reviews to prepare for the January examinations. Even these schools are inconvenienced
by their half-year classes, and would prefer to give them up. But everywhere else the courses in high school and academy end with the school year. Pupils must review the last half of the year with those who go to college, or by themselves, generally without much assistance. The result is either unsatisfactory preparation for the Institute, if the fitting course is not completed, or more or less waste of the six months following the high school course. To many applicants and to many parents and teachers the full year courses will be a manifest advantage, and quite compensate for the half-year's additional expense.

The Editors of the W P I have interviewed all the members of the Faculty and most of the Trustees, in order to obtain their opinion of the matter for publication, but scarcely any of them were willing to talk upon the subject. The principal reason given for refusal, was that they did not consider matters as having taken definite enough shape, and because as yet the Faculty have received no official notice of the change.

CAMERA CLUB.

The Exhibit and the Exhibitors.

Arrangements are nearly completed for what promises to be the most interesting and successful exhibit that the Camera Club has ever held. The afternoon and evening of next Saturday, Dec. 10th, is the time appointed for this, one of the too few enjoyable diversions that are held at the Tech.

The print exhibit, which will open in the Mechanical Model Room in the afternoon at 3.30 and continue during the afternoon and evening, is planned so that each man's work is shown as he wishes it arranged, subject to the approval of the committee. The one having the best exhibit is to receive a prize of a valuable etching, the second best, a smaller etching. These prizes will also be shown. The judges will make their decision on the excellency of the pictures shown under each individual exhibit as classified last year. A very neat and pretty souvenir card has been prepared, giving the names of the exhibitors, and other matter.

The most unique part of the exhibition, however, will be the display of lantern slides at 8 o'clock in the evening. This will be participated in by six or seven members who will each show some of his work, and at the same time deliver a short "Stoddard lecture" upon his views. Many of the views to be shown are about Worcester and the Tech, and are none the less interesting on that account, while some are foreign.

The tickets are now obtainable of any member of the Camera Club at 15 cts. each, and every member of the Institute with his friends will do well to avail himself of the rare opportunity in his busy life of spending a pleasant social evening.

Some of the exhibitors and their exhibits are as follows:

A. C. Higgins, '93, president of the Club, views taken in the Adirondacks, about Lake Champlain, and on the coast of Maine, as well as some others about Worcester, and possibly a few lantern slides.

Edward W. Vaill, Jr., '93, some twenty or more views of general landscape subjects. About half of these are platinotypes, a style of print which has not been exhibited before at the Institute. He will also have about twenty views in the lantern slide exhibition.

E. H. Keith, '94, has about fifty pictures, consisting of landscape views, interior views, platinotypes, bromides, silver prints, and aristotypes mostly in this vicinity; also about twenty-five lantern slides for the evening entertainment.

A. Mackay, '93, about a dozen solio Kodak prints of New England landscapes, and H. A. Coombs, '93, will show a dozen Swiss and thirty American views.

H. T. Goss, '94, a collection of marine views, both aristotypes and platinotypes, taken at Watch Hill, R. I. Among them are, "U. S. S. Concord," an instantaneous of the Commodore coming ashore at New London, Conn., a view of Fort Griswold, Conn., of Revolutionary fame; also a house-top view of Worcester.

H. N. Smith, '94, a number from the vicinity of Ogdenburg, N. Y., among them one of a cruiser on the dry docks.

L. De V. Magaw, '94, will exhibit a collection of twenty or more four-by-five prints. Among the most interesting landscapes will be some taken at Lake Chautauqua, N. Y. There will also be several groups and landscapes from different places in western Pennsylvania and Newburyport, Mass.

From non-members, a dozen or fifteen four-by-five Kodaks taken this last summer in Europe, including one of the campus of Eton College, a street in Pompeii, Roman soldiers, lateen sails in the Bay of Naples, in the Forum.

An especially interesting exhibit will be that of leaves from a book compiled as a souvenir of a pleasant summer by the following men, each of whom assisted in its arrangement and design: Aldus C. Higgins, '93, Gumpei Kuwada, '93, Alex. D. Hunt, '91, Charles T. Tatman, ex-'93, Lewis I. Prouty, H. U., A. C. Comins, '93. It consists of a series of blue prints and sketches of Mount Desert, Maine.
LABORATORY NOTES.

The Seniors are finishing a technical examination of butter and oils, and just beginning the sanitary investigation of water.

Dr. Kinnicutt and Mr. Desper are working on copperous chlorides. Dr. Moore and Mr. O'Reagan have just prepared a paper for the American Academy of Arts and Sciences, upon the formation of Nitro-benzo-phenones. Mr. Sweetser is working on a method for the detection of arsenic in papers and fabrics.

Dr. Kinnicutt is carrying on some very interesting experiments upon meteoric iron and ancient bronzes found in Indian mounds by an exploring party, sent out by the Anthropological Department of the Columbian Exposition.

Formerly it was considered that the presence of iron ornaments in Indian mounds was proof of contact with white men, but in 1888, some bronze ornaments covered with iron were found in the Little Miami valley of Ohio, along with pieces of meteoric iron. This was questioned; but within a year, Dr. K. has found some pieces of iron in the same mound, unquestionably of meteoric origin. This specimen belonged to the class known as Palassites. Although compounds of iron and oxygen or sulphur occur very abundantly on the surface of this globe, iron in the metallic state occurs only in Greenland and in meteorites. About 360 falls of meteoric iron are authentically known and catalogued. The specimens now being examined are from Indian Altar mound in Ohio, and were found by a party from the Fair. These two are the only known instances of iron being found in Indian mounds. The first step is to prove that the specimens are meteoric. It is then attempted to identify them with one of the 360 known meteors. Knowing the location of the meteor and of the mound, it is hoped to find some evidence of trade between the early Indian tribes.

We said above that some of the bronze ornaments were plated with iron. Of course not electro-plated; but, after the article had been fashioned from bronze, a thin sheet of beaten iron was fitted on and evidently fastened to the bronze by heating and hammering as the iron was considered the more valuable metal. Dr. K. kindly showed us several of these ornaments which were so disfigured by corrosion that only a practiced eye could detect them in a shovelful of earth. The finding of pieces of unworked meteoric iron in these same mounds shows the source of the Indians' supply, for, as far as is now known, they had no knowledge of the ores nor of the processes for obtaining the metal from the ores.

BANJO CLUB.

Since our last issue the Banjo Club has strengthened itself by admitting two new members—Andrews, '93, and Starbuck, '93—both players on the guitar. Rehearsals are now held once a week, while formerly the Club met only on alternate weeks. With the increased practice, much better results are accomplished.

The Club at present numbers seven members. Two more banjos are especially needed, and Manager Harris would be glad to meet any who are desirous of joining.

The Club, which is now a permanent organization, will be open to engagements after the Christmas vacation.

NOTICES.

Dec. 7. Afternoon and evening, Fair at First Baptist Church.
Dec. 7. Fair and turkey supper at First Universalist Church.
Dec. 9. Camera Club exhibit; afternoon and evening. Exhibition of lantern slides, 8.00 P. M. at Salisbury Laboratories.
Dec. 10. 8.00 P. M. Young Men's Rally for No License, at Mechanics Hall.
Dec. 11. 9.15 A. M. Tech Y. M. C. A. Bible class at City Y. M. C. A. Building.
Dec. 13. 8.00 P. M. Leland T. Powers at Association Hall, Y. M. C. A. Course.
Dec. 15. 8.00 P. M. Concert in the Vestry, by choirs of Central Church, including the "Cantata of Ruth."
Dec. 16. 7.30 P. M. Meeting of Historical Society at Boynton Hall.

WATER-COLOR EXHIBIT.

Prof. Gladwin Entertains His Friends.

On Friday afternoon and evening of last week, Prof. Gladwin entertained a number of the students and their friends in the free-hand drawing room, where he had arranged on the walls, more than a hundred of his water-color sketches.

With the aid of a map, the professor traced the course of his last summer's travels in Nova Scotia where about sixty of the sketches were made.

The majority of the set were painted in the vicinity of Yarmouth. The railroad bridge which crosses Barra Strait was represented in several sketches.

Portions of the public gardens at Halifax, views about the Sydney coal mines and scenes from the old town of Baddeck were exhibited.
The remainder of the collection consisted chiefly of sketches made in the suburbs of Worcester and around Lake Quinsigamond.

**SHOP NOTES.**

Business at the Shop is especially good at present. A large number of orders for drill grinders are being filled as quickly as possible. Passenger elevators are being constructed for C. G. Taylor, Ann Arbor, Mich., and James R. Hodges, Providence, R. I. Freight elevators are in process of construction for Geo. W. Wheelwright Paper Co., Hardwick; Kirby, Mowry & Co., Providence; James R. Hodges, Providence; Mechanics Hall, Bowler Bros. and A. G. Estabrook of this city.

A small engine is being temporarily set up in the new addition to run one or two lathes and a straightening machine.

**THE HISTORICAL SOCIETY.**

The first meeting of the Society for the season was held Friday evening, Dec. 2nd, in the library in Boynton Hall, President Baker in the chair. After Secretary Robert B. Farwell had read the minutes of two previous meetings F. E. Killam, '94, and J. M. Gallagher, '94, were admitted to membership.

The literary exercises of the evening were then taken up. As reported in our last number, the subject before the meeting was "The Social and Political Condition of France in the Period Immediately Preceding the Revolution." E. L. Burdick, '94, read a paper on the "Political State of Europe at the Breaking out of the Revolution." A selection from Dickens's "Tale of Two Cities," showing the social condition of France in the year 1780 was read by F. W. Smith, '95, and F. Bucklin, '93.

Papers were also read by Mr. Z. W. Coombs on "Literary Preparation in Rousseau" and by R. B. Farwell, '93, on "The Economic Causes of the Revolution." Discussion of the various papers was indulged in by a number of the members present.

The work which the Society has laid out for the winter is of a very interesting nature and all students desirous of intellectual development and of an opportunity to learn and to study history cannot fail to be interested. No one could leave a meeting of the nature of the one held Friday evening, after listening to such evidently carefully prepared papers, without feeling that he had learned something.

**COMMUNICATION.**

Editor WPI:

Some days ago while talking with a friend he remarked that a certain man was a good impromptu speaker and added that he has great opportunity for practice at Y. M. C. A. meetings. This remark sadly impresses me with its truth. At the meetings great stress is laid upon members rising to their feet and saying something and in some cases it is carried to such extent that the secretary keeps a record of the frequency of members in taking part in the meetings.

The original purpose of this plan is no doubt to bring members into deeper sympathy with each other in religious matters and to afford opportunities for professing themselves Christians. But is not this privilege abused when the members take the meetings as opportunities for personal confession, for relieving their consciences to a certain extent which is quite contrary to the precepts of such Churches as support the Y. M. C. A., or when they repeat a part of the Bible for no other reason than that it has reference to the topic given on the card, or express themselves with many "seems to me," and phrases of exhortation, or the worst of all, offer prayers to their Divine Creator, being moved not by the spirit, but by the thought that they must "take part in the meeting."

In the primary classes at Sunday-schools such proceedings might be tolerated but among mature men it seems very much out of place. It is not a wonder that such a custom tends to cause insincerity and to loosen the tongues of men. The same warning given by Christ to the Jews is applicable to this organization: "Not every one that saith unto me Lord, Lord, shall enter into the Kingdom of Heaven, but he that doeth the will of my Father which is in Heaven."

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**A MEMBER OF THE Y. M. C. A.**

**THE MINSTREL SHOW.**

One of Worcester's enterprising dailies appeared a few evenings ago with a highly interesting and complete account of the Operetta which is soon to be given by Tech Students. To most of us it was decidedly a piece of news, and singularly enough, the Athletic Directors who naturally would have the matter in charge, knew nothing of it. Of course the notice referred to was nothing else but newspaper filling, but it is a straw to show which way blows the wind, and that our many friends in the city are looking for a repetition of last winter's success in the entertainment line.

Are we to have another show? If possible, yes. There is no reason why we should not do far better than a year ago. There is almost no doubt that the advertisement of a minstrel show by Tech students would fill the Theatre to overflowing, for a great many were disappointed at
their failure to secure seats last spring, and those who did attend were immensely pleased with the entertainment furnished them. An alumnus wrote at that time, "Now that you have given a parlor entertainment to a few of your intimate friends, why not repeat it for the benefit of the public?"

An operetta would be rather out of the question at this late day, but a good minstrel show is sure to take; is the easiest thing in the entertainment line to prepare; and students are as well suited for that, as for anything else. Dyer and Phinney, two of last year's end men, are still in school, and Phillips is a professional interlocutor, as he made a hit in that line at '93's Half-way supper. Da Cruz would still whistle for us and Clark swing the clubs. So altogether it would not be a very difficult matter to plan and execute a first-class performance which would please our friends, furnish amusement to ourselves and money to the Athletic Treasury. If thought best the show might be repeated in Upton. If anything is to be done the work should be laid out before Christmas vacation.

**A BIG SHAFT BREAKS.**

The following particulars are taken mainly from the New Bedford Evening Standard: —

At the Wamsutta cotton mills in that place is a Corliss engine of 1450 h. p. It was built sometime before the Centennial, in 1874 or '75. The pillow-block bearings have been giving trouble of late by becoming hot and melting out the Babbitt linings. On Nov. 21st such an accident happened and the boxes were re-filled. The engine started as usual at 1 p. m. but in less than 15 minutes there came a crash. The engineer promptly stopped the machine, when an examination revealed the fact that the main shaft, 18" in diameter had broken off close to the hub of the fly wheel. The wheel had dropped into the pit as far as possible, and the whole right side of the engine was knocked out of line. The pillow-block cap was torn off, connecting and pump rods bent, the cylinder canted, and scored by the piston. The wheel was 30 ft. in diameter, 8 ft. face, and weighed 60 tons.

The break was an old one nearly throughout, and the binding caused by it must have caused the hot boxes.

The Corliss Co. sent a gang at once and succeeded in clearing away the wheel by Nov. 26th. The new shaft will be 20 inches in diameter and the bearings of the pillow-blocks will be longer.

600 hands were thrown out of work probably for four or six weeks.

**DRIFT OF ATHLETICS.**

We learn from very good authority that an important question concerning the foot-ball rules is to be brought, this winter, before the advisory committee of several of the more important colleges. The question relates to the use of the wedge. A number of Alumni, prominent in athletics, have expressed their opinion strongly in favor of a change by which the wedge or V shall be abolished. There surely is more brute force than skill in the making of one team into a battering-ram and the other into a wall to be battered down. The wedge, too, is the cause of a great number of accidents. The use of the Deland trick this year at Springfield caused a great deal of enthusiasm and it is generally true that the more open the play the more interesting it is to observers.

Action will probably also be taken on the question of who is to be allowed to play on college teams. It approaches pretty nearly to professionalism when a man's expenses at college are nearly all paid for five or six years just to retain his services as a foot-ball player.

Amateur athletics in the colleges which at first were intended only for the healthy development and maintenance of the students is, especially in the larger ones, tending every year more and more towards professionalism. Not only that, but the contests which originally were fair and good natured trials of strength and speed, are becoming transformed into contests of so-called sharpness and chicanery. When men go to college merely to take a course in athletics, when foot-ball "games" descend to gladiatorial combats, when runners are crowded aside and even spiked by friends of their competitors, when professionals are surreptitiously taken on to college amateur teams, then, indeed, one is led to question whether or not it is time to call a halt. The Faculty of Wesleyan have this year decreed that none but students in good standing in their studies shall be allowed to take part in athletics. This policy if enforced vigorously throughout the country, would do much towards restraining the tendencies of the day, for it would most effectually discourage professionalism in all its forms. All lovers of the use of athletics in preference to their abuse, will watch with interest the action of the colleges this winter in regard to the foot-ball rules.

At a meeting of the foot-ball team held just after our last issue Allen, '94, was re-elected Captain for next year. The Manager will be elected in the near future by the Foot-ball Association.
PERSONALS.

*82. Wm. S. Washburn is now Superintendent of the Boston Camera Mfg. Co., 380 Tremont St., Boston.

*89. H. C. Stowe is Engineer and Outside Superintendent for the Canere & Haas Iron Works, New York.

*90. W. L. Smith's address is Box I, Alton, III.


*91. Born September 22, 1892, to Norman V. Fitts, a daughter—'91's first-born.

*92. R. N. Clark is with the Portland and Rumford Falls Railway. His address is Box 120, Mechanic Falls, Me.

COLLEGE NOTES.

The Faculty of Brown has decided to wear cap and gown on all academic occasions.

Yale and Princeton divide $29,000 as profits of the foot-ball game Thanksgiving Day.

A new college weekly, the University Courier, has been started at the University of Pennsylvania.

The University of Michigan graduated 689 men last year, the largest class ever graduated from an American Institution.

Leland Stanford, Jr. University has a campus of 7,000 acres with a drive-way 17 miles long.

Ten graduates of the University of Pennsylvania promised to give a $10,000 athletic club house if the foot-ball team defeated Princeton.

The yell of the theologue of De Pauw is as follows:

Hurrah, Hurrah, Hurrah.
The gospel does away with the law,
We're the logs of old De Pauw,
A greater school none ever saw, Amen!

The Palo Alto of the Leland Stanford, Jr. University, owns the press and type with which the paper is printed and the students do all the typographical work.

University of Pennsylvania has established a travelling scholarship with an annual income of $1000. The holder will thus be enabled to travel through Europe and study architecture.

To celebrate the winning of the pennant from Dartmouth and Williams, the Amherst Student issued a foot-ball number containing besides an account of the games, a very good photo-engraving of the victorious team.

The Cornell Daily Sun says: "If the winner of the Harvard-Yale boat race next summer refuses to row Cornell, Cornell will claim the championship of America and endeavor to arrange an international match with the winner of the Oxford-Cambridge race."

A spelling match has been arranged between ten Cornell professors and ten citizens of Ithaca. This with a concert by the musical clubs is to be given for the benefit of the foot-ball team.

Y. wants to know if the deflections of a man with a load can be calculated by Rankine.

Ninety-three men used to say, "Do we have Anylyt to-day?" but now it is, "any Lit?"

It is rumored that Dr. M—are and Walter Br—ks are attending Firemen's Balls this winter.

Junior [to Farwell, muffled in his overcoat]: "Say, Farwell, are you you, or are you your brother?"

One of our foreigners in describing the poem of the Lorelei, spoke of it as beginning, "What is it that ails me?"

Student: "Is that steam-pipe coated with anything?"

Instructor: "No, it's jacketed."

A professor is quoted as saying that if an equation were treated in a certain way, one of the quantities "wouldn't be in it any longer."

"Say, Charlie, who invented telegraph poles?"

"Why, everybody invents telegraph poles; I even heard of a monkey getting up one the other day."

1st Senior (studying in Electrical Laboratory)—"I can't get this through me.
2nd Senior.—"Just take hold of these wires and you'll get it through you fast enough."

Heard, '93, is to be one of the speakers at the Young Men's No-License meeting in Mechanics Hall next Saturday evening. His subject is, "License and pure politics."

A Senior recently received a letter from a man in Brunswick, Me., offering for sale a horse. Senex replied that as he had completed his course in German, he would have no use for the animal.

1st Foot-Ball Crank.—"Did you win anything in the big game?"
2nd F. B. C.—"You bet I did. Started in with a V, took the right end of the combination,
won a big pile, played a rushing game for a few hours, was full the rest of the time, and brought just a quarter-back."

At a meeting of the Senior Class held last week Tuesday, a committee of three, including Messrs. Higgins, Sinclair and Mackay, was appointed to get prices from the several photographers in town, and make recommendations for Class Photographer. This committee was to report within a fortnight.

Now, the foot-ball season's ended, And the fractures all are mended. Now, no more our way is wended To see them slug, sing, sing. But all through this winter dreary, It will make us weak and weary Just to answer every query, While we plug, plug, plug.

Possible, but not probable. Prof. [at commencement of Senior recitation]: "Now, before we begin, are there any questions you would like to have answered on to-day's lesson?"

Senior: "Yes, sir; what is it, please?"

Prof. : "What's what?"

Senior: "The lesson."

Prof. : "Um, good question!"

On the day before the last recess our old friend John Hurley was the recipient of a turkey with all the other requisites for a Thanksgiving dinner. They were sent in by the students, a continuance of the time-honored custom of remembering John and his past services.

Dr. Fuller invited a party of about twenty young people to his house on Thanksgiving evening. Those present were mostly students who live at a distance and did not go home during the Thanksgiving recess. A very enjoyable time was spent in singing and dancing. Refreshments of cake and ice-cream were served during the evening.

It seems a great pity that the workmen in the Shop cannot wash in clean water, but must do it in water colored to a pea-green by the blue prints. If the new Shop does not make a change in this matter we would suggest that two of the helpers be delegated every morning to supply the draughtsmen with a tub of water.

There is still ample field of work for the new self-appointed committee on public improvements about the Institute. The only drawback to the complete success of its recent undertaking in the fence line is that there was no trouble over the affair. This is decidedly discouraging, and if this policy be continued, there will be no incentive to courageous deeds of vandalism. Students ought to protest. Investigations on trivial matters are always extremely interesting and rarely turn out unpleasantly to all concerned.
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