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M. I. T. CO-OPERATIVE.
THE TECH

VOL. XVI.

BOSTON, APRIL 8, 1897.

Published every Thursday, during the college year, by students of the Massachusetts Institute of Technology.

CHARLES-EDWARD AMORY WINSLOW, '98, Editor in Chief.
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HAROLD WELLINGTON JONES, '98.
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WILLIAM EATON WEST, '98.
GERALD MARTIN RICHMOND, '99.

W. R. STRICKLAND, '98, Business Manager.

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For the benefit of students THE TECH will be pleased to answer all questions and obtain all possible information pertaining to any department of the College.

Contributions are requested from all undergraduates, alumni, and officers of instruction. No anonymous manuscript can be accepted.

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THE TECH takes great pleasure in noting the hearty stimulus received by Technology Athletics during the last few weeks. The strong interest shown by Faculty and alumni in the subject of Physical Training is most encouraging. The meet last Saturday proved a decided success, especially from the reappearance of the Class of 1900 for the first time since the Fall Handicap Games. Let us make the mass meeting to-morrow a rousing success, and keep up the crescendo of enthusiasm and hard work until we show at Worcester that the old Technology spirit, the true Technology spirit, the spirit that is bound to win in every field, is not dead, but stronger to-day than ever.

The sale of tickets for the Technology play opened in Rogers corridor on Friday, April 2, at 1 o'clock. As this is the only affair in the shape of a play that will be given in Junior Week, it is earnestly hoped that Technology men will be out in force to support it. A play is an expensive undertaking, especially when it is produced on the scale upon which the Walker Club are bound to have this one produced. The Bijou Theatre, where the play is to be given, is splendidly adapted for anything in that line, and the management are confident that the selection of this place will meet with approval by Institute men. It is often said that every seat in a theatre is good, but although not always true, it is true of the Bijou Opera House. There are, of course, some seats better than others, however, and—well a word to the wise is sufficient. The tickets will be on sale every day in the corridor, and we feel sure that Pinero's play of "Dandy Dick" will be even more heartily supported by Technology men than the successful English play of last year.

A GREAT many complaints have been heard among the Sophomores in regard to the method pursued in teaching the subject of Machine Tools. The method as followed consists in placing in the hands of the students a book containing cuts of the various important machine tools and in explaining in the classroom by means of drawings, the workings of the parts. The students are required to take notes and at the end of the term to hand in a complete set of notes on the course. It will thus be seen that three things are required during the lectures: attention must be given to the explanations, the cuts must be looked at to obtain a general view of the machines, and notes must be taken. Under the best of circumstances it is difficult for men who have had but little practice in reading drawings to obtain a practical knowledge of this subject.
without access to the machines themselves; but when such a division of the attention is required it is almost impossible. Printed notes would do much to lessen the difficulty, and it is to be hoped that the authorities, with their usual readiness to adopt needed improvements, will take some steps in this direction.

The class of ’94 has decided to publish a class book after the model of ’93. We are glad to note that the policy of ’93 is already bearing fruit. The plan, as we have before observed, is highly commendable as a means of furthering the best interests of the Institute and of creating a healthy class spirit among the alumni. We congratulate ’94 upon being the first to act upon the merits of so worthy an example.

Typical Theses.

COURSE VI.

[Thesis of Messrs. Hubbard and Gray.]

One of the most accurate ways of determining the efficiency of electrical machinery is by the use of what is known as the “stray power” method. It consists briefly in measuring the losses in a dynamo or motor which arise from such causes as Foucault currents, hysteresis, bearing friction, resistance of the air, brush pressure, etc. The efficiency of the machine is then equal to the output, divided by the output plus the losses. Since the losses are always small compared with the output, an error in their measurement affects the result but slightly. To find the value of the above losses, the dynamo to be tested is run as a motor, with no load and at its proper speed and voltage, from an outside source of current. The electrical energy required to drive it thus is equal to the energy which is lost when it is run as a dynamo.

Using the above method, Messrs. Hubbard and Gray will make a series of tests upon the new dynamos recently installed in the Walker Building, and will determine their efficiency under different conditions as to speed, voltage, load, brush pressure and “lead,” i.e., position of the brushes upon the commutator.

Other methods are often used in determining the efficiency of dynamos. One of these is to find the mechanical power required for driving the machine at any given output, by taking indicator cards on the engine at that output, and at no load, and subtracting the results of the latter from those of the former. The efficiency is then the output divided by the power required. Another way is to connect two machines of the same size rigidly together, and to drive one as a dynamo, using the current produced to turn the other as a motor, the power supplied by the latter thus helping to drive the former. If there were no losses of any sort this would give perpetual motion; hence, the outside power required to keep the pair in motion is the value of the energy lost. After having determined the efficiencies of the machines by the stray power method, Messrs. Hubbard and Gray will determine them also by the other methods, and then compare the accuracy of the different results.

Outdoor Handicap Games.

The first in the series of outdoor handicap practice games was held Saturday, on the Irvington Oval. The number of entries was fairly large, and in some events, considerable enthusiasm was shown. The showing made by the Freshmen was encouraging, indeed, as they won nearly as many points as the Juniors who have long been invincible.

The Tech. record was broken in putting the shot. The new record is 37 feet 1½ inches, beating the former one by 4½ inches.

Mr. Wentworth, 1900, with ten points, won the “Technique” offered as a prize to the man winning the most points.

It is proposed to hold these meets every two weeks, and it is hoped that the succeeding ones may be even more successful than the last.
Following is the summary:

100-YARD DASH.
First, J. F. Wentworth, 1900 (3 yds.); second, J. Nolte, '98 (3 yds.); third, J. C. Dryer, '99 (2 1/2 yds.). Time, 10 1/2 sec.

220-YARD DASH.

120-YARD HURDLE.
First, J. F. Wentworth, 1900 (scratch); second, W. E. Putnam, '98 (scratch); third, J. H. House, '98 (4 ft.). Time, 18 sec.

440-YARD DASH.

MILE RUN.
First, S. C. Sears, 1900 (50 yds.); second, S. A. Hooker, '98 (scratch); third, H. L. Bodwell, '98 (10 yds.). Time, 5 min. 44 sec.

TWO-MILE RUN.
First, W. J. Angus, 1900 (40 yds.); second, D. E. Gray, 1900 (40 yds.); third, W. E. West, '99 (100 yds.). Time, 11 min. 44 sec.

880-YARD RUN.
First, W. J. Angus, 1900 (40 yds.); second, S. A. Hooker, '98 (scratch); third, C. C. Gilson, '99 (30 yds.). Time, 2 m. 14 sec.

RUNNING HIGH JUMP.
First, F. C. Field, '97 (7 in.), 5 ft. 8 in.; second, H. W. Jones, '98 (4 in.), 5 ft. 8 in.; third, W. E. Putnam, '98 (scratch), 5 ft. 6 1/2 in.

PUTTING 16-LB. SHOT.
First, H. W. Jones, '98 (scratch), 37 ft. 1 in.; second, G. I. Copp, '99 (3 ft. 6 1/4 in.), 36 ft. 2 1/4 in.; third, H. L. Schmidt, '99 (scratch), 35 ft. 9 in.

RUNNING BROAD JUMP.
First, J. Nolte, '98 (3 ft.), 22 ft. 7 in.; second, J. F. Everett, '98 (1 1/2 ft.), 21 ft. 5 1/2 in.; third, J. H. House, '98 (2 1/2 ft.), 20 ft. 11 1/2 in.

THROWING 16-LB. HAMMER.
First, H. W. Jones, '98 (scratch), 90 ft. 8 1/2 in.; second, F. C. Field, '97 (12 ft.), 84 ft. 10 in.

A fine display of medals, banners, caps, and other athletic trophies has been arranged by the Executive Committee of the Athletic Association in Rogers Corridor, in honor of the mass meeting in Huntington Hall at one o'clock to-morrow, at which Professor Sedgwick, F. W. Lord, and T. P. Curtis will speak, as well as Captain Grosvenor and Treasurer Lansingh.

Spring has come officially. Prof. John has removed the winter steps.

Juniors have finished Applied Mechanics for this term, and have taken up Sondericker's Notes on Graphic Statics.

The Orchestra in anticipation of playing at the Walker Club Play has decided to have rehearsals hereafter on Mondays and Thursdays.

Numbers of pretty college girls under the proud escort of Tech. men are daily sights now in the various departments of the Institute.

Several Juniors in courses V. and X. are taking Gas Analysis with Dr. Gill as an elective this term, instead of waiting until next year when it falls in the regular course.

A limestone arch of finished blocks is being built to be tested in the new arch-testing machine, a complete description of which was published in No. 5 of The Tech. It is hoped that work on this machine may be commenced soon.

Professor of Physics (lecturing on Optics): "I will now hold this convex mirror so that you may all see your reflection in it. There, I think that you all see at least something, whether—err—whether it is worth looking at or not."

A competition is announced for the cover of the annual catalogue or year book of the Architectural Society. The designs must provide for line reproduction, and the artist has at his disposal two colors beside the color of the paper. A prize of $5.00 is offered.
A number of tests are being made in the laboratory of Applied Mechanics on the torsion and tension strengths of different compositions of copper, tin, and zinc. Few, if any, tests have ever been made upon the torsion of compositions, and data on this subject are scarce.

The Home Concert of the Musical Club will be held after all this year on Saturday evening, April 24th. Owing to a previous engagement of Huntington Hall the Concert will be held in the Y. M. C. A. Hall, corner of Berkeley and Boylston Streets. The management of the Club hope it will be sustained in this added expense by a hearty Tech. patronage.

An unusually large amount of thesis work in Course II. will be done this year in the Applied Laboratory, with a correspondingly small amount of outside testing. The Emery testing machine, and also the Olsen machine, will be in constant use by several sets of men from the close of the regular laboratory work up to the end of the term. The cement machine and several of the others will also be kept busy.

One of the pleasant features of Course XII. is the Geological Club. This is composed of students, as well as outsiders, interested in the subject of geology, and its membership is open to all students of the Institute. There are no fees. Meetings are held every Friday afternoon, from four to five, in the Geological Laboratory, Room 14 R, and at each meeting one or more papers of interest are presented, followed by an informal discussion. The papers are presented by students whenever practicable.

Those in charge of the Architectural summer school have decided to hold its session in Quebec instead of in Europe and Virginia as was at first suggested. The trip will begin directly after graduation, the three weeks allotted to its course being spent in the picturesque neighborhood of Quebec. The men will utilize their time in sketching with pen and water colors, opportunities for which are scarcely excelled abroad. Prof. Homer, Mr. Ross Turner, and Mr. Gardner will have direction of the party, and their presence insures its success.

The April meeting of the Electrical Engineering Society will be held on Friday, April 9th. The evening will be devoted entirely to short discussions of theses by senior members of the society. As time is limited, it will be impossible to hear from all theses, but about ten different ones, representing the various lines of work undertaken, will be presented. None of the students have at this time completed their labors, but each will state his object, outline his plans, and tell of his progress thus far. This opportunity of becoming acquainted with the work of the Seniors will be interesting and instructive to all members of the society.

An interesting series of tests is being carried on in the Emery machine, in the Laboratory of Applied Mechanics, upon a large number of specimens of cast iron water pipe of various sizes. The specimens have been supplied some by Mr. Brackett, of the Metropolitan Water Board, and some by the City of Boston. About thirty have been tested thus far. The results will be used by Mr. Altwood, Course I., in connection with his thesis.

PRINCIPAL PLAY OF THE WALKER CLUB AS PERFORMED IN R 44.

ACT I.
One little deck with angels' backs,
Two little stacks of chips,
One little lamb with golden fleece
One little cocktail sips.

ACT II.
Four little jacks sleep in a sleeve
One little pot to win,
One little flush the lamb is dealt,
One little heinous sin.

ACT III.
One little bet, one little raise,
One little pot increased,
One very large courageous call,
One little lamb is fleeced.

—The Georgian.
Tech. Grads. in Difficulties.

The following clipping from the Gold Creek News, Gold Creek, Nev., relating to C. S. Newhall, and W. P. Anderson, Jr., both of Course III., '96, may be of interest:—

Chas. S. Newhall had a new experience the other day. Mr. Newhall for a time, when not playing the banjo and singing college songs at night, was in the field during the day on the staff of Colonel Maxson. The snow was deep, so deep that a plan was being seriously discussed for splicing Billy Anderson's legs to keep his head above the drifts. Newhall and Anderson were college chums together, and now are Gold Creek's only reliable assayers. In his own case Newhall thought he had solved the problem on scientific principles. With considerable ingenuity, that does great credit to the Massachusetts Institute of Technology, of which he is a graduate, he constructed a pair of snowshoes out of barrel staves. They don't wear showshoes in Boston, but when one is located in the West he soon shakes off the effeminacy of the Hub. Newhall's scheme was a great success. The improvised barrel staves worked like the proverbial charm. He walked placidly along, towering over the heads of his toiling co-laborers. But there came a time when Newhall wanted to go along a steep place on the mountain. There was nothing wrong about that; other men have done the same thing. He intended to throw out a pick that he was carrying as a sort of guy rope to anchor him to the mountain. The metaphor may be a little mixed, but this is nothing to what happened shortly afterward. The snowshoes, following the lines of least resistance, started down the mountain. Newhall went with them. In fact, he couldn't very well do otherwise. Faster and faster they went, with a uniformly accelerated velocity. Now it often occurs in this country, that a steep slope at the bottom of a gulch forms an acute angle with the opposite hill-side, and the present case was no exception to the general rule. Newhall knew this as well as any one else, and he had already begun to reflect on the exigencies of the situation. But what could he do? He had one side and two angles, and could make his calculations all right, but this didn't affect the result. He was in for it just the same, as the man said that jumped into the river. The snowshoes failed to make the rise on the opposite side, but started to tunnel through the bank. They came to a sudden stop. It was not so with Newhall. He went on and planted himself head first in the snow, with the improvised barrel staves dangling from his feet in the air like angels' wings.

A New Method of Driving an Induction Coil.

Since the induction coil has come into prominence through the discovery of the X-rays of Roentgen, considerable attention has been turned toward devising some means of operating it from ordinary lighting or power circuits of 110, 220, or 500 volts. For such voltages all known forms of circuit breaker have proved failures on account of the arc formed. The problem has been successfully solved by Messrs. Norton and Lawrence, of the Physical department of the Institute, who have devised the following method:—

A condenser of considerable capacity is first connected to the mains and charged. It is then disconnected and discharged through the primary coil. The charging and discharging of the condensers is effected by means of a commutator. In this way the only current passing through the coil is from the condenser. The commutator is on the shaft of a small fan motor. The sparking on the commutator is very slight, and the amount of power taken from the mains is small. The discharge obtained from the coil is eminently fitted for driving X-ray tubes, giving an intensity far exceeding that from the ordinary form of induction coil or static machine.

With this apparatus the time required for exposure has been greatly reduced. A good negative of a hand was obtained in five seconds, and one of a purse in one second. Moreover, the apparatus is of such simplicity that the skill of the average physician is ample to operate it successfully.

College bred men in the United States number only one-fifth of one per cent, or one in five hundred of the whole population. They have furnished 30 per cent of our congressmen, 50 per cent of our senators, 60 per cent of our presidents, and over 70 per cent of our supreme court judges.
Worthy of Notice.

Those who know Spitz Bros. & Mork, Wholesale and Retail Clothiers, at 67 and 69 Summer Street, know that any statement they make in the newspapers can be relied on as absolutely true.

They advertise a special reduction sale of $2.00 to $4.00 on a suit on their whole stock of Black Clay Worsted Suits, all new, stylish garments of this season's make and of only reliable fabrics.

The regular prices are plainly marked on the tickets, but you will be allowed the advertised reduction on every suit.

If you are not pleased with your suit, on comparison with others' prices, they will cheerfully refund your money.

This sale will continue only until Easter.

The reduction of prices at this time is noteworthy because of the recent advance in price of clay cloths in anticipation of the new tariff.

It will pay any one in want of a suit for Easter or Dress use to visit their store and see for himself what sort of a bargain he is getting.

They are at 67 and 69 Summer Street, in the wholesale district, one minute from Washington Street.

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COVERT CLOTH SPRING OVERCOATS,

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| Strap Seam | 36 inches long. |
| Welt Seam  | 38 inches long. |
| Also with Patch Pocket | |

Also, Black Worsted, Vicuna Mills.

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We have them also at $5.00, $7.50, $10.00, $15.00, and $18.00.

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Elegant Styles and patterns, in fancy plaids and checks, Staple Mixtures and Serges . . .

We are particularly strong in our $10.00 and $15.00 lines, many of them being equal in quality, fit and style to suits sold elsewhere for $15.00 and $20.00. Made from finer goods, $18, $20, $22. They are full of style.

It will pay to call and examine our styles, qualities, and very low prices. They are unequalled.

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Prove the truth of this statement by examining them for yourself.

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87. Albert D. Currier is located in Chicago as an attorney at law. While at Technology Mr. Currier was manager of the famous "Bijou" baseball nine, which met with little more success than that of '95, as a classmate writes that it never won a game. This non-success does not in the least reflect on Mr. Currier's standing as a business man, however, for his law practice is an enviable one.

89. Wm. H. Merrill, Jr., was one of the principal delegates to the last meetings of the Bureau of National Board of Underwriters, and was quite prominent in the discussions held there.

92. Jos. B. Lukes is special electrical inspector for the new Chicago Library. He was formerly with the Edison Company.

93. It is interesting to note that the average of the salaries of '93 men, obtained for the purpose of publication in the first graduate catalogue of the class, closely approximates the average obtained by the statisticians of the '98 "Technique" for the forthcoming volume. The average obtained for the graduate catalogue is $1,150, while that obtained for "Technique" is $1,181.

96. Harry A. Pressy, Course I., recently assistant to Noyes & Hazen, Consulting Engineers, of Boston, is now with the Metropolitan Water Board.

The graduate members of the Committee on Physical training are E. W. Rollins, '71, and F. H. Briggs, '81.

The weekly lunches of the M.I.T. Society of New York will be held hereafter at Mouquin's, No. 149 Fulton Street, on Thursdays between 12.30 and 1.30.

In addition to the list of games published last week the following have been arranged for by the Freshmen Baseball management: April 27, Boston College, 1900, May 8, Belmont High School.

As many Tech. men as possible should attend the handicap games to be held Saturday afternoon by the B. A. A. on the Irvington Oval. All the events will be well contested, but for the greatest interest will be centered in the much talked of Marathon Race. This will be started at some point near South Framingham, and the route will be straight in over the road to Irvington Oval. It is intended that this race shall finish in the oval during the progress of the handicap games, and each man will finish the distance by running one lap of the oval track. It is now understood that the Massachusetts Militia Bicycle Corps will attend to the contestants en route, two to each runner, and give them all the assistance they need. An ambulance will also be in attendance. All competitors in these games will be registered athletes, but it has been decided to charge no entrance fee for the Marathon Race.

They were sitting in the moonlight,
On an old stone wall,
And he put his arm around her,
That she might not fall.

"George!" she said to him quite sternly,
"You have quite a gall!"

"Many times I've had my arm there,
In a large dance hall,
And you never once objected,"
Said he, "through it all."

"But," she answered, "that was different."
"Well," he said, "we'll hire a hall."

—Lynn H. S. Recorder.
THE Lounger's finances, like those of literary genius in general, are very low at present. When he went to the opera a few nights since, therefore, he did not resort, as usual, to the boxes where the other models of the ton consort, but hied him to the upper gallery where he was rewarded by the chance to study the character of the denizens of that region. Now, it may be that when the poet penned that beautiful maxim, "the farther from earth the nearer to heaven," he was thinking of the third gallery. Certain it is that beneath the rough exterior of the habitués of this locality there often lies hid a truer chivalry than that of the white necktie and coral shirt stud, of which the following absolutely true incident is an example:—

The Lounger had assumed his modest position of vantage in the third row; the piece, a Meisterstück of the old school, had passed applausively through four acts and was now laboring in the throes of a fifth. As is customary in opera, the hero tenor was dying, and had now successfully reached the conclusion of his fifth ante-mortem aria, with excellent prospects of more to follow. The orchestra had long since ceased to make music, and was now bellowing with painful alternations of trumpet and oboe, together with a fine fortissimo effect of the drum. The chairs in the pit applauded, while the "third" yelled with delight. In the front row of the latter, to the Lounger's right, sat a fine young maid of forty-five: one well versed in the etiquette of the place, who would be technically described as a "light of the loft." Immediately behind, and chewing the favorite weed with a gusto which stamped him at once as "one to the manner born," sat an unprepossessing gentleman, who was expectorating with vehemence, and at a constantly increasing rate, as the piece proceeded, but apparently with so much dexterity and precision that not even the most sensitive could take offense. Yet, even skilful manipulators are at times subject to mishaps, and the crisis was one which wrought upon the nerves severely.

The prospects of getting rid of the tenor were brighter than ever before. The orchestra had recovered its flagging strength, and the wood-wind was drowned completely by the thunders of the brass. Just at the supreme moment, when the fate of the tenor hung trembling in the balance, and enthusiasm of the house became a veritable pandemonium, the lady in the front row turned to the gentleman behind her and said in low, but distinct tones, which thrilled over the balcony, "You are spitting down my back."

Obviously, the situation was a difficult one, and many of the Lounger's friends of the jeunesse dorée would have been embarrassed in the place of the gentleman in question; but his native tact and savoir faire did not desert him for a moment. With an instant recognition of his error he asked the lady's pardon, and, with a ready grace, he offered his pocket handkerchief to repair the damage. This the lady, after some modest hesitation, accepted, and in a short time returned, with thanks. The tenor, by this time, had at last been satisfactorily disposed of, and the Lounger strolled home under the stars, and mused upon the seeds of true politeness so often found in the most unpromising soil.

Not long since, while the Lounger was quietly dozing in his favorite corner of The Tech office and dreaming of the joyous festivities of the approaching Junior Week when that wondrous book which has caused so much whispering and so many mysterious gatherings and consultations will appear; when for the—th time he will again whisper sweet nothings into the ear of Beauty 'midst the dreamy waltzes of the Prom.; he was rudely awaked by a loud noise like the report of a hundred cannon. With fearful misgivings that one of the numerous committees of which he has previously spoken had been holding a meeting and that the warmth of the discussion had caused another gas explosion, the Lounger hastened down stairs. When he reached the corridor, what a scene met his eyes! The main arch was decorated with flags and banners and on several tables were arranged a most gorgeous display of cups of every shape and form and medals galore. Signs announcing a great athletic mass meeting, at which several hundred of the faculty were to be present, were posted in every vacant space and the air was filled with enthusiasm. Like a flash an idea struck him with so much force that it caused his vigorous step to waver and his manly form to reel. The noise he had heard was the "boom" in Athletics which is now in progress!
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