

THE TECH

VOL. XXX. NO. 113

BOSTON, MASS., WEDNESDAY, MARCH 22, 1911

PRICE TWO CENTS

"TECH" BOOSTER

DINNER LAST NIGHT

Prof. C. W. Doten and Mr. Lydney Gunn Advise Editors

GOOD ATTENDANCE AND ENTHUSIASM

All on Paper from General Manager to Latest Recruits were Present.

That meetings of the men concerned with, and interested in *The Tech*, are fruitful of a multitude of new and improved ideas, was conclusively proved at the Union last night. All men connected with the different departments of the paper were present at the meeting.

General Manager Bates of *The Tech* first outlined the new system of departments. Under the new system, the managing board will consist of a smaller number of men than heretofore—a scheme which will doubtless facilitate the disposition of the business. The men composing the News Board will be directly in charge of the different departments and an improved system of credits will be established.

Advertising Manager Myers then outlined the plans for the Special Issue which will appear on April tenth. This issue will consist of twenty pages and will be most interesting and complete.

Following Mr. Myers' remarks, Business Manager Hall spoke briefly of the financial prospects of the paper. The proceeds of the recent *Chocolate Soldier's Minstrels* and the Special Issue, will probably bring *The Tech* out even or, if anything a little ahead. Editor in Chief Keith then gave the news department some hints on the facilitation of the work.

Professor Doten was next introduced and he gave some very interesting and helpful suggestions. He pointed out several features of the paper that he particularly liked and explained how other departments might be improved. The speakers' remarks were very much appreciated.

The other guest of the evening, Mr. Gunn of the English department then spoke at some length about the methods in which the paper could be improved. He deprecated the typographical errors, but said that he appreciated the hard and trying conditions under which the paper was constructed. He advised particularly that Faculty co-operation should be secured and suggested ways of securing it.

When Mr. Gunn had completed his remarks, there took place a general discussion of the many problems connected with *The Tech*. This clash of ideas produced sparks that should prove of great value of the paper. The keynote of the affair was, briefly—co-operation.

HAVE YOU ANY

OLD PICTURES OF TECH?

The committee on lantern slides and moving pictures for the Technology Anniversary smoker in Symphony Hall on Monday evening, April 10, will be glad to receive any old photographs, sketches, or other material which can be worked up into a lantern slide and which will be of general interest to the Tech men present. Anything of an historical or humorous nature will be very acceptable and assurance is given that anything lent will be carefully guarded and returned without injury. Address Prof. Charles E. Locke, Chairman, Massachusetts Institute Technology.

AUTOGENOUS WELDING LECTURE

NOW PUBLISHED IN FULL

Text of Talk Before Mechanical Engineering Society on March Seventh by Mr. Henry Cave.

TALK ILLUSTRATED WITH ACTUAL DEMONSTRATION

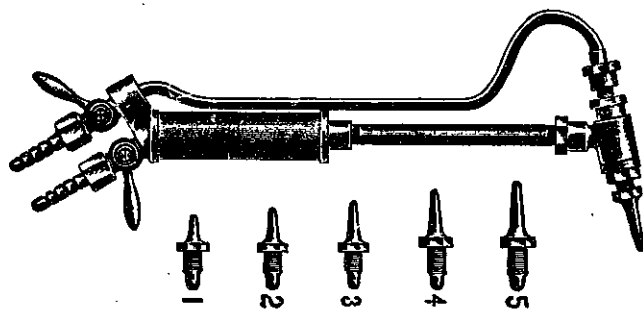
Complete Description of Process and Examples of Its Possible Uses in World of Technical Science.

Lecture on Autogenous Welding, before the Mechanical Engineering Society of the Massachusetts Institute of Technology by Henry Cave, President of the Autogenous Welding Equipment Company.

Mr. Chairman & Gentlemen:—

Autogenous Welding is the uniting of metals into one solid mass by fusion

The reason why a temperature of 6300 degrees is necessary, when the ordinary metals melt at not over 2500 degrees, is due to the conductivity of the metal. It might be thought that the Oxy-Hydrogen flame which has a temperature of between 4000 and 4500 degrees would be sufficient to carry out this work. The conductivity however, is so great that



Davis Bournonville High Pressure Torch with Five Tips.

without the intervention of a different metal. There are several types of Autogenous Welding, the one demonstrated being carried out by means of the Oxy-Acetylene Flame, that is Acetylene Gas burned with pure Oxygen, which gives a Flame temperature of 6300 degrees.

The Oxy-Acetylene Process was first thought of by Le Chatelier, the well known scientist, who figured out that by burning Acetylene with pure oxygen, a temperature of 6300 degrees could be obtained. It was not however, until 1901, that the process could be used, owing to the practical considerations of making a satisfactory torch. The difficulty of uniting Oxygen and Acetylene in a torch, and keeping the flame burning on the outside is great, they having the tendency to ignite at the point where they first come together. This at first was prevented by the use of a hydrocarbon gas along with the Acetylene. It was not until 1906 however, that an equipment was brought into this country for actual manufacturing purposes, though a torch came into the country in 1904, and was used experimentally. From that time however, there has been rapid development in both the equipment, the uses for the process, and the method of carrying out the work.

A good idea of the temperature 6300 degrees F. is obtained from the fact, that if a thermometer had a scale eight inches long between freezing and boiling, it would require to be about twenty-one feet long to measure the temperature of this flame on the same scale. The method of using this flame is to merely melt the parts together, which could be termed locally recasting. Where a part has considerable thickness, it is necessary to remove the metal so as to form a groove, the flame is then applied to the feather edge at the bottom, and this is fused, metal being added and fused to the walls of the groove until it is entirely filled up. Of course metal can be built on though there is no break to repair, so that parts can be strengthened before they break. All metals can be welded in this manner.

where the heat is drawn away from the point where the flame is applied, nearly as rapidly as the heat is applied so that no melt is secured. With the Oxy-Acetylene flame however, the heat is put into the metal so rapidly, that it can not escape, so that the metal begins to fuse when the surrounding parts two or three inches away are cool enough to touch. The metals of higher conductivity of course require a larger flame.

It can be readily seen that where a weld has to penetrate any depth, the flame being applied to the surface will melt the metal at that point, then the metal below the surface will be fused. It is therefore useless to try to make a lap weld or one of any depth, the above described method of grooving out the parts being necessary where welds of any thickness are to be made. The reason why the Oxy-Acetylene Flame gives a temperature of 6300 degrees, is due to the fact that Acetylene is composed of 92.8% of Carbon and the balance Hydrogen, this large amount of Carbon requires a large amount of Oxygen for complete combustion and when Acetylene is burning in air, sufficient Oxygen cannot be obtained for complete combustion from the Oxygen which is in the air.

Acetylene burning in air merely gives a temperature of about 1800 degrees. It will be noted when the oxygen is turned on, that there are two distinct flames, the short flame three eighths of an inch long being very bright in color, and the other one which spreads out being not very noticeable, the temperature of the carbon of the Acetylene burning with pure Oxygen being very much above this point, the Hydrogen is compelled to pass through this hot flame and uniting with the atmospheric oxygen, burns with this extended flame, has two distinct advantages, one that it keeps the nitrogen of the air from coming in contact with the hot carbon flame and therefore cooling it. It also keeps the oxygen in the air from coming in contact with the weld and oxidizing it.

Continued on Page 3.

IMPORTANT MATTER PASSED BY

ATHLETIC ASSOCIATION

Institute Athletes May be Deprived of Insignia by Advisory Council for Sufficient Cause.

MAKES RADICAL ACTION POSSIBLE

Hockey and Basket Ball Reports Turned In; Election of Gym Mgr. Eynon was Approved by Association.

At the regular meeting of the M. I. T. A. A. yesterday afternoon in Room A, of the Union, P. D. White, '11 brought up a matter which if passed by the Advisory Council will mean that their power will be greatly increased. Mr. White said that it should be in the power of the Council to take away insignia from a man if he did something that would be dishonorable or to the detriment of the Institute's name. This was passed by the A. A. and sent up to the Council. This is a very radical measure but it would seem that it was one that would, at some future date, possibly come to by of value. It is always possible that Tech men should do things that should really make them unworthy to be a wearer of the "T". In other colleges men have gone astray and have been subjected to this action but it is to be hoped that it will never have to be used here in the Institute.

The action of the Gym Team in electing a manager was then discussed and it was decided to ratify the action that they look as they were in ignorance of the ruling of the A. A. that all managers be elected by the Association on recommendation of the previous manager. The A. A. then approved this election and S. J. Eynon is the official manager of the Gym Team for the coming season.

It was also voted that the Association through its president appoint a committee to audit all the accounts of the different managers as they come up before the A. A. for acceptance. The financial reports of the Hockey and Basket Ball managers were presented at this time and passed over to the Advisory Council. It was also decided to omit the first regular meeting of the Association for each month during the out-door track season, with a provision allowing any manager to have the power to have the meeting called by merely notifying the secretary one week in advance. Meeting adjourned.

CALENDAR

Wednesday Mar 22

4.15—1913 Cross Country Practise,
4.15—1914 Cross Country—Gym.

Thursday, Mar. 23

4.15—1913 Cross Country Practise.
4.00—Dining Room Comm.
4.15—1914 Cross Country—Gym.
5.00—Technique Board Mtg.—Union.

Friday, March 24.

4.30—Orchestra Rehearsal—Union.
4.30—Track Practise at Field.
1.30—House Comm. Mtg.—Cage.
8.00—Biological Smoker—Union.

Saturday, March 25.

2.37—Track Practise at Field
8.00—Cosmopolitan Club Mtg.—Union

THE TECH

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In charge of this issue... A. H. Waitt, 1914

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Telephone, Back Bay 2184.

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WEDNESDAY MARCH 22, 1911

The Tech Boosters' Dinner at the Union last night was spirited and showed a great deal of interest on the part of a number of Institute men. The Tech still wants, however, the active interest of more men with constructive suggestions, and a little push to make their share of the paper a success. There are at present a few men who are working for the paper with all the enthusiasm of a baseball fan, and to these men, it is irritating rather than inspiring to hear sarcastic suggestions from the Tech man with ideas who is too lazy to come out for The Tech and do his share to perfect the student publication. Ideas are necessary to healthy growth and perfection of the paper, but so also in necessary the number of men to carry out the work of the paper with method and reliability. Men are need for all departments and "now is the time".

THE TALLEST OFFICE BUILDING

The tallest office building in the world is to be built in New York from the designs of Cass Gilbert, '78, architect. It will be a fifty-five story building between Barclay Street and Park Place. It will be 750 feet high or about 50 feet higher than the Metropolitan Tower and nearly 100 feet above the Singer tower. It will be exceeded by only one building in the world, the Eiffel Tower, 980 feet high. It will probably cost over \$12,000,000.

Keep Up-to-Date
The Tech

CLASS DAY COMM. POLLS

CLOSE AT 4.00 TODAY

Over Forty Ballots not yet Called for at the Cage

Seniors, today is your last chance to vote in the Class Day Committee election, so DO IT NOW, while you are thinking of it. There are still over forty ballots at the Cage which have not even been called for, to say nothing of voting.

Remember, the polls close promptly at 4.00 o'clock today, all ballots to be left at the Cage before that time. This is one of the most important elections in the history of the class, and a large representative vote should be cast, as there are over two hundred and fifty men qualified to vote, for each of whom a ballot has been left at the Cage.

HAVE YOU NOTICED?

Astronomers of Course I, star gazing on lot east of Lowell Building.

Have you noticed the lanterns, and the figures of men moving back and forth on "The Dump" east of the Lowell Building in the evenings lately? Men standing in a rigidly tense position, with heads bent back as if gazing at the moon, and others dancing up and down as if to keep warm? Well, such has been the case; and many passers-by have wondered what was going on, but few probably have guessed rightly. The men jumping up and down were the cold footed, and those staring upwards the industrious members of Professor Hosmer's classes in Astronomy, a third year subject taken by Course I students. The students have been out, in groups of ten or twenty finding the directions and the time,—the directions by means of a North and South line located by an observation on Polans (the Pole Star) and its western elongation, and the time by means of observations of various stars to determine the time at which they crossed the North and South Line. Grave errors in the watches of many of the would be astronomers have thus been discovered. Doubtless many men will excuse recent cuts on the ground of these watch errors. One man's watch disagreed with the computed time by twelve hours.

PROF. SHIMER TO LECTURE ON GEOLOGY OF EUROPE

Prof. H. W. Shimer, of the geological department, is preparing to deliver a course of lectures next year on the geology of Europe. During the summer he will traverse the continent from Naples to Norway with a run into France and across to Great Britain to complete the material for this course.

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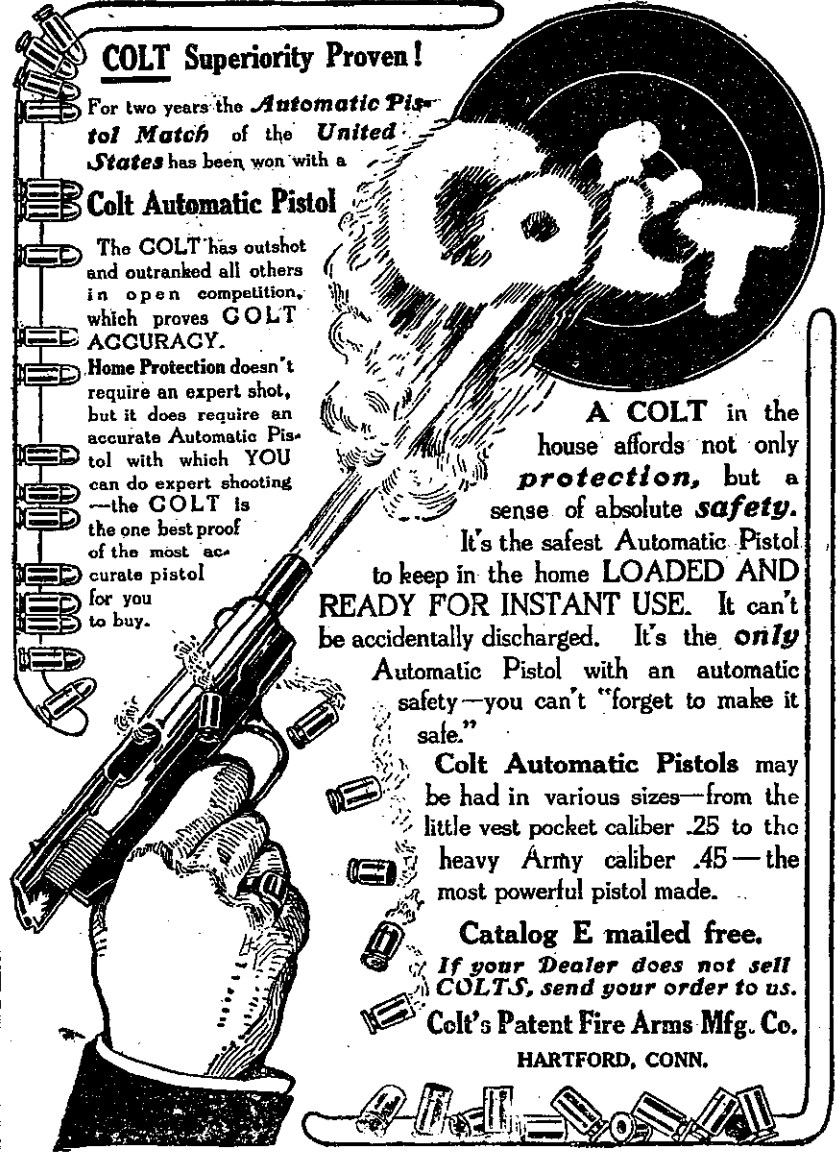
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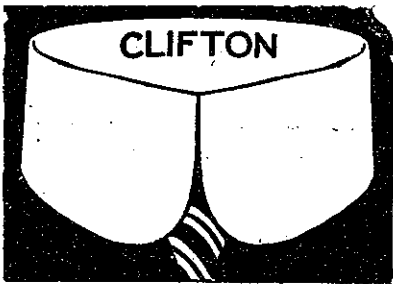
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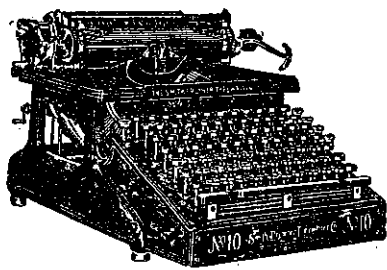
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Continued from Page 1.

AUTOGENOUS WELDING.

The equipment consists of a cylinder of dissolved acetylene and a cylinder of oxygen, the necessary reducing valves, hose connections to the torch, the torch itself and the tips wherein the mixture is produced, and at the end of which the flame burns. The acetylene cylinder being used for portable work, whereas the Davis High Pressure Generator is used for stationary work, the Acetylene in being produced from calcium carbide. A peculiar feature is that it is possible to obtain the material from which a flame 6300 degrees of temperature can burn, and that the material is merely common brass. The flame does not actually touch the brass, it being projected an infinitesimal distance away because of the pressure of the gases, and what small amount of heat is radiated back into the tip is carried off by the cool gasses passing through.

It is possible to save not only considerable on the value of the part, but also large sums of money, due to the reduction in time required to obtain a new part, which is often of very much more importance than the saving of the part itself. The saving to be made by this means, is well illustrated by the welding of a broken automobile frame as compared with other methods of repair. An automobile frame can be welded in a few hours at comparatively small cost, but by other methods it is necessary to strip down the car, and either replace the member with a new one or put in a "fishplate". It is then necessary to reassemble the car, test it out with the possibility that adjustments have been disturbed which materially effect the correct running of the car, this way generally taking about six days, and it can be seen that in the case of a commercial vehicle, that the time thus expended is a very serious loss in addition to the extra cost of carrying out the work.

The process is being extensively used by street railway companies for the repair of broken motor cases and also for filling in the concave joints of the tracks produced by the hammer of the wheels at the joints.

We have welded in teeth of a gear twenty-two inch face, six and a half inch pitch and fifteen feet in diameter, weighing sixteen tons, and in case of a tooth of this size or even considerably smaller, the metal can be built up on the tooth, it not being necessary to fill in the space.

Another extensive use for this process is in cutting steel and wrought iron by a jet of oxygen. It is not possible to cut cast iron by this means, owing to the free carbon in its composition. This process is really a development of the Laboratory experiments of making a jar of oxygen, heating an iron wire to a red heat and inserting it in the jar of oxygen, when it will begin to glow and scintillate, and eventually be burned up. The oxygen-acetylene flame is used to heat a spot of metal on which a jet of oxygen is projected from an additional supply, the oxygen combines with the red hot metal, and Oxydizes away. You all remember the Pier 14 in the North River, N. Y. being burned down a few months ago. There were over a thousand tons of twisted metal which the contractors undertook to remove in thirty days, and owing to labor conditions, they could not get sufficient men to remove the parts by ordinary means inside of six weeks, and they were under a penalty of three hundred dollars a day over the thirty days, so they purchased a Davis Bournonville "High Pressure Positive Mixture" Cutting Equipment and with eighteen men, removed this metal in twenty days.

The heat from the oxygenacetylene flame can be used for a number of purposes other than welding and cutting, such as making short heats either to straighten parts or to bend them. It can also be used for hardening parts locally, being of great advantage in the hardening of such parts as one piece camshafts for automobiles, the heat not penetrating sufficiently to cause trouble with straightening of the shaft after the hardening.

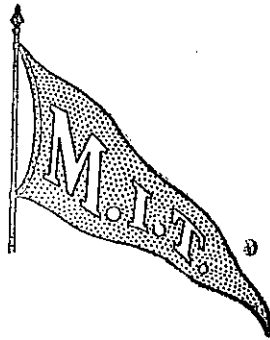
TECH MEN FIGURE IN MEXICAN FRACAS

The revolution in Mexico has an interest for Technology men inasmuch as the leader, Francisco Madero, is the father of three former students of the Institute,—Alfonso, '01, Emilio, '02, and Julio, '07. One of the sons is connected with the revolutionist Junta with an office in New York and the others are actively engaged in the revolution, one of them in charge of the transportation of all the troops. The Madero family is one of the oldest and wealthiest in the state of Coahuila. Three other Madero boys from another branch of the family are also Technology students. This branch, however, is understood to be out of sympathy with the revolution.

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and

FORGING

Exercise in Forging for Course II, Sections 2 and 3, and in Chipping and Filing for Section 1, will begin on Friday, March 24th.

Exercise in Chipping and Filing for Course XIII will begin on Thursday, March 23rd.

Walter Humphreys,
Registrar.

DRAWING DEPARTMENT

Week of March 20.

Descriptive Geometry

This work will cover Problem 22.

Mechanical Drawing

Work on the bicycle sprockets and chain will be continued.

NOTICE, 1911.

Ballots for Class Day Committee are now ready to be called for at the Cage. Polls close at the Cage at 4 P. M., Wednesday, March 22. Vote Now.
H. F. Dollier,
Clerk.

NOTICE

Chocolate Soldiers
BILLS AGAINST THE CHOCOLATE SOLDIERS should be rendered before Wednesday, March 22d, as the balance is to be turned over to *The Tech* soon after that date.

All students and members of the instructing staff, who kindly assisted in the sale of tickets, are requested to cash in as soon as possible.

The Manager.

NOTICE TO ADVERTISING DEPT.

The Advertising Manager expects to meet all the men in his department at the dinner to-night. Meeting will be over by eight o'clock.

MUSICAL CLUBS

Joint rehearsal of Glee and Mandolin Clubs, Thursday, 4.10 sharp.

Copy of Bulletin Notice.

March 16, 1911.

The list of candidates for graduation the present year has been presented to the Faculty, and all persons whose names are on it have been notified individually. The list cannot now be changed except by vote of the Faculty, and any student expecting to be recommended for the degree the present year should consult me if he has not been notified that his name is on the list.

A. L. Merrill,
Secretary.

FACULTY NOTICE

Professor Haven's lectures in Machine Tools and Cotton Machinery for students taking the second year Mechanism of Course II will begin on Wednesday, March 22d.

A. L. Merrill.

NOTICE

"There will be vacant at 211 Newbury Street, on March 24th, a very desirable room. Apply to the Bursar's Office."

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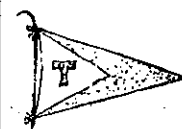
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MR. A. J. SHEAFE

MASTER of DANCING

SHEAFE'S HALL

30 Huntington Avenue

Private Lessons Daily by Appointment

SCHOLARSHIPS

March 20, 1911.

Each applicant for a scholarship (except a State scholarship) for the ensuing year, should hand in his application blank at the Registrar's Office, and leave his name before April 4th on a special card enclosed in an envelope, at the Registrar's Office. (Blanks and cards may be obtained at the Registrar's Office.)

Applications dated since January 1st need not be duplicated but the applicant should notify Professor Dewey in writing if he desires to apply for a scholarship for next year.

With the name state the class, course and all free hours for consultation. Each applicant will be notified through the "Cage" in regard to date selected for consultation. Students applying, therefore, should inquire at the "Cage" for all.

STATE SCHOLARSHIPS. Applications should be made to the State Board of Education on blanks to be furnished at the State House.

While the State Board of Education has full control of the award of the State scholarships, it is customary to submit all applications to the Faculty for endorsement as to standing, for advice as to other dates in possession of the Faculty may warrant. For this reason, while the Scholarship Committee has no authority to request conference or further information from applicants for State scholarships, it will always be glad to receive and consider all information, that may be furnished. In any case, students intending to apply for State scholarships are requested to notify the Registrar to that effect.

Walter Humphreys,
Registrar.

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