

THE TECH

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INFORMATION ON CO-OP SOCIETIES

**Purpose and Work of Such
Organizations in the
Colleges**

SUCCESS AT HARVARD

**Where Profits are Returned to
Members—Scholarships and
Loans at Institute**

At the annual meeting this month, the directors of the Technology Co-operative society will elect officers for that organization for its twenty-fourth season. The approach of their meeting brings to mind the question, often thought and suggested but seldom actively discussed, as to just what the Co-op really is, what it does, and whether it is doing it as effectively as it should. With this idea in view The Tech has tried to gather a little useful information on the subject.

In some other colleges co-operative societies or corporations perform much more extensive functions than is the case at the Institute; and at many no such organizations exist. Harvard has an active and flourishing society which operates a store in which goods of many kinds are sold. It also owns Lyceum Hall, and while occupying most of that building for its own use derives some income from it. The store is subdivided into departments of men's furnishings, books, stationery, tailoring and furniture; of which the second and third furnish the greater share of business. Prices are set at as low a price as is consistent with good business management, but some profit is expected. At the end of each season, after all running expenses are paid, the net profits are divided among the members in proportion to their purchases during the season. This plan has worked successfully for many years and seems to meet the approval of all persons concerned. The Harvard Co-operative Society has about 2,500 members.

At Yale a similar organization is maintained, operating a store for the sale of students' supplies and referring to a list of affiliated tradesmen for goods not kept in its own stock. The associated list is perhaps not so valuable as it has been in past times, according to a statement made by one of the officers of the corporation, but the firms on it are probably fairly well patronized. No inducement is made to members except immediate discount on purchases. This year 1642 students belong, and all members of the faculty have been made permanent members.

The Institute Co-operative Society has not attempted to cover quite so broad a field, and its work is not exactly similar. In the first place, it has at no time felt able to maintain a store of its own, except for the small supply "coops" in Engineering A and Pierce buildings. All the accounting for these small supply depots is done by MacLachlan, from whom most of the supplies come, and who is best fitted to do the work. No other method would be practicable, unless the society should operate a central store of its own, whose business warranted the engagement of a competent manager at a salary of something like \$3,000 a year; or unless some able alumnus should be found who would devote practically all of his time to the work without compensation.

With 509 members, the successful operation of such a store would require fair business ability. That the work could be done entirely by students is impossible. Probably the society could, with good management, succeed in keeping prices at, or slightly below, their present level, but the change would probably not be great from present rates. Comparison of MacLachlan's scale of prices with those at other stores usually shows that the hostile feeling which rises in certain places at the

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CAPT. H. S. GOTT WINS TECH MEET

**Belden 1909, Jacobs 1910,
and Allen 1911, Tied
for Second Place**

BOXING MATCH A JOKE

**R. C. Jacobs 1910 Elected Captain
of Next Year's Team—Jacobs
Chosen Manager**

With the annual spring gym meet Monday evening, Technology's gym season came to a close. Capt. H. S. Gott 1910, easily carried off the cup for the individual honors, with C. H. Belden 1909, R. C. Jacobs 1910, and W. D. Allen 1911, tying for second place. Gott scored twelve points, while the other made only six tallies each. Three prizes were awarded in the horizontal and parallel bar work, tumbling, flying rings, and the side horse. A wrestling match and a boxing tournament finished the rest of the program. Gott's work on the parallel bar, and that of C. J. Belden on the flying rings were the two star events of the gymnastic work.

The wrestling match tied by H. S. Pardee 1909, and E. C. Meyers 1912, after a hard struggle. Only three men came to the front in the boxing championship event, H. D. Billings 1910, R. S. Breyer 1910, and H. H. Stevens 1912. Billings defeated both his opponents handily, although Breyer put up a good argument.

After the meet, R. C. Jacobs 1910, was elected captain of the team for next year. Jacobs 1910, and S. H. Seelye 1912, were chosen manager and assistant manager, respectively.

The summary:

Horizontal bar—Won by W. D. Allen 1911; second, Capt. H. S. Gott 1910; third, R. C. Jacobs 1910.

Parallel bars—Won by Capt. H. C. Gott 1910; second, S. H. Seelye 1912; third, C. J. Belden 1909.

Side-horse—Won by A. Alter 1911; second, S. H. Seelye 1912; third, R. C. Jacobs 1910.

Flying rings—Won by C. J. Belden 1909; second, Capt. H. S. Gott 1910; third, W. D. Allen 1911.

Tumbling—Won by R. C. Jacobs 1910; second, R. White 1912; third, Capt. H. S. Gott 1910.

Judges—W. C. Towne and A. J. Bruce, instructors of the Technology gym; Dr. Garland, Boston Y. M. C. A., and B. K. Sharp, M. I. T. 1907.

ADDRESS ON BOILERS

**Emmonds of Heine Co. Speaks to
Mechanicals Tonight**

Tonight at eight o'clock Mr. Emmonds of the Heine Boiler Company, will address the Mechanical Engineering Society on the method of construction of the Heine tubular boiler. The subject is a most appropriate one, since it is something which all mechanical engineers are bound to come up against sooner or later, and Mr. Emmonds is an authority. The lecture will be illustrated with a number of lantern slides, and refreshments will be served after the talk.

Non-members will be admitted upon payment of twenty-five cents. New applicants submitting their names at this time will not be charged.

Mr. Bailey, who was to have spoken on "Coal," has been called out of town, and will be unable to be present.

The second annual Circus and Hippodrome of the University of Pennsylvania was given last Saturday evening under the auspices of the Gym Club of Pennsylvania. Over 200 students took part in the performance, which "spored" a programme of twenty different acts.

SUN SPOTS DUE TO VORTICES

**Caused by Particles of Elec-
tricity on Sun
Revolving**

LECTURE BY DR. HALE

**At Last Meeting of Society of
Arts for This Year
Attendance Good**

Sun spots are caused by vortices in the atmosphere of the sun, was the statement of Dr. Geo. E. Hale 1890, in his lecture Monday night on "Solar Cyclones and Magnetic Fields," delivered at the last meeting for this year of the Society of Arts.

The work of the Carnegie Solar Observatory at Mount Wilson, Pasadena, California, of which Dr. Hale is director, is one of the most important divisions of work of the Carnegie Institution, both from a financial point of view and from results accomplished. This work is the study of cosmic evolution, principally by means of our sun, a typical star.

Dr. Hale's lecture dealt with only one phase of this solar work, namely, the study of sun spots. In the photographs of sun spots, taken by means of the reflecting telescope, with ordinary light, they appear to be black openings in the solar clouds. In order to study them more closely, it is necessary to photograph the sun by only one kind of light. For this purpose a very large spectroscopic is used which is attached to the telescope. A photograph of the sun is then taken by means of the calcium light emitted, and it is seen that the sun spots are really obscured by clouds of luminous calcium vapor. If a photograph is taken, however, with the red light of hydrogen, an entirely different appearance of the spots is obtained. They are surrounded by lines of stress very much as is a magnet in iron filings. Thus sections of these disturbances are obtained at three levels, first, the lowest level of the sun itself, seen in an ordinary photograph; second, the level of the calcium vapor, and third, the highest level of the red line of hydrogen. Their appearance suggested the idea of vortices, and it was the work of the astronomers to prove or disprove this theory.

It is known that particles of negative electricity, cathode rays, are emitted by the heated vapors of the metals. These particles, if they are whirled around, will produce a magnetic field. A magnetic field has the property of breaking the single lines of the spectrum into double lines, if the luminous body is viewed along the direction of the lines of force. Therefore, if sun spots are vortices caused by a preponderance of negative electricity, these electric particles will produce an electric field which will break the lines of the spectrum into two parts. Accordingly, these double lines were looked for, but at first without success, as a sufficiently large spectroscopic could not be attached to a movable telescope. A vertical tower telescope was then erected with which a large spectroscopic could be used, and the double lines were seen without difficulty. In the meantime, in the laboratory magnetic fields had been produced, and their effects upon spectra studied. These effects were evident in the spectrum of the sun spots, showing conclusively that the sun spots are whirlpools of negative electricity in the atmosphere of the sun.

In order to study spots on the other stars, a large reflecting telescope, with a 100-inch mirror, has just been constructed on Mt. Wilson, in the face of serious difficulties in the way of transportation. With this telescope—the largest reflecting telescope in the world—

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RELAY TEAM TO ENTER PENN MEET

**Wesleyan, Amherst, Brown,
John Hopkins in
Tech's Class**

GAMES ON APRIL 24

**Training Now Going on at Field
and Men are Fast Getting
Into Good Shape**

Technology this year will be represented at the annual spring relay games at Franklin Field, Philadelphia, on April 24, by one of the strongest teams that the Institute has ever produced. The trials will probably be held some time during the week before the team leaves, which will probably be picked from the following: Captain Carl Gram, K. D. Fernstrom, W. C. Salisbury, A. L. Moses and P. D. White. Four men and one substitute will be picked to take the trip. Gram is expected to compete in the century dash, but none of the others will enter anything but the relay race.

Nearly two hundred colleges will be represented at the meet, including two new entries, those of Harvard and Wisconsin, neither of whom have ever sent a team to the games before. The Badgers will enter a four-mile squad in addition to their one-mile team. Harvard will be represented by a mile team, and Rand will enter the 120-yard hurdles.

Technology's opponents in the relay race have not as yet been announced, but will probably be picked from the following: Wesleyan, Amherst, Brown, John Hopkins, and some of the western colleges. The Institute team should be able to take care of any of these squads, and compete on even terms with any college represented in the games.

Although the weather is still cold, a number of men are reporting regularly at the Field, getting into shape for the spring and college meets. The number of freshmen out is remarkable through the number of men from the first year class out for the track work is not as great as one would think would be out, because of compulsory exercise for some at the gym.

P. D. White, 1911, is showing great form in the half mile and there are no close competitors for this distance, while in the quarter and the 220-yard dash the regular men on the relay team will cover the ground in record time. So far there are no finds in the dash work.

J. S. Grant 1912, and L. B. Walker 1912, are the best 1912 men in the dashes. J. Becker, the freshman who showed up so well at the indoor meet, has not been out so far this spring.

In the pole vault, W. D. Allen 1911, is still at the top, H. Greenleaf 1912, and E. Mangan 1912, are the only freshmen of promise in this event.

H. S. Benson, the 1912 star, is out with the freshman cross-country team at present and has not done any regular training for the events at the Field so far, but will doubtless run in the mile.

With the men in the dashes, and the distance men, who have had experience in the intercollegiate, the prospects of capturing a good place at the N. E. I. A. A. this year are excellent.

CALENDAR

WEDNESDAY, APRIL 7.

7.00 P. M.—Civil Engineering Society meeting, 11B.

8.00 P. M.—Mechanical Engineering Society meeting, Union.

THURSDAY, APRIL 8.

1.00 P. M.—1909 Class Meeting, Huntington Hall.

FRIDAY, APRIL 9.

6.30 P. M.—New York Club meeting in Union.