THE WEEKLY EXPONENT

Vol. 2. BOZEMAN, MONTANA, FRIDAY, MARCH 3, 1911. No. 23.

PASSED BY HOUSE

ENGINEERING HALL AUTHORIZED BY HOUSE. SENATE APPEARS FAVORABLE.

NEARLY $300,000 FOR COLLEGE

Final Action Was Taken Last Night. Session Has Dealt Liberally With Higher Education.

The various bills containing appropriations for the maintenance of the college have passed the House and in all probability they will be through the Senate by the time this is through the press. No opposition is expected to any of them in the senate. The total amount carried by the various bills reaches close to the $300,000 mark. It is divided as follows, and is the full amount the college will receive for the next two years from the state:

For maintenance of college, $102,205.

For a new engineering building, $60,000.

For greenhouses, $10,000.

For maintenance of Experiment Station, $42,500.

For an implement barn, $4,000.

For dry land experiment farms, $36,000.

Maintenance of Fergus County Substation, $10,500.

For buildings of Ravalli county Horticultural Station, $7,000.

All of these have passed the house and no opposition to them is expected in the Senate. There is a remote possibility that the appropriation for the Engineering Building may be raised again to $80,000 in the Senate.

The pure food bill and the dairy bill have passed both houses. The former makes Wm. M. Cobleigh pure food chemist for this state and carries with it an appropriation of $3,000. The latter carries an appropriation of $6,000. The legislature has been very fair and generous in their dealings with the college, which is greatly appreciated by the faculty and student body.

Work on the engineering building will commence as soon as possible, but it will probably not be completed and ready for occupancy until September, 1912.

PARADE REVELATION TO EVERYBODY—OVER 500 IN LINE.

The mammoth parade, which opened formally the tournament yesterday afternoon was a revelation to many and may be said to have effectually disclosed the magnitude of the undertaking. More than 200 visiting high school students, including players and speakers, 150 from the local high school, 300 from the college and the whole led by the peerless College Regimental Band, making a total of more than five hundred enthusiastic and spirited young people.

The parade formed at the corner of Rouse and Main, in front of the Bozeman hotel and marched to lively music to the corner before the Gallatin County court house, where it turned back and despersed at the corner of Main and Central. The street cars were waiting for the crowd and all other available vehicles were pressed into service to accommodate the immense crowd. Even at that hundreds walked to the scene of the afternoon's activities.

Probably no more impressive or enthusiastic scene was ever witnessed on the streets of Bozeman than that which met the eye of the spectators as the grand cavalcade, the greatest assemblage of basketball athletes ever gathered together in the United States, moved up the street.

Directly following the band were the respective high school delegations, numbering from eight to thirty, each distinguished by a banner bearing the name of the high school represented. These delegations, in close marching order and in perfect step, occupied nearly two blocks. The last four of the schools were represented by proxy, their teams not having yet arrived. Those represented were: Missoula, Flathead, Teton, Great Falls, Beaverhead, Butte, Gallatin, Granite, Carbon, Powell, Anaconda, Park, Billings, Broadwater, Sweetgrass, and Fergus.

Many of the different high school pennants and colors were displayed, to such an extent that the effect was of

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PROMINENT ALUMNUS TAKES BRIDE.

On last Tuesday morning at 9:30 in the Holy Rosary church, Louis F. Nash and Miss Jane Ann Watson were united in marriage—the ceremony being conducted by Rev. Father Leithan.

The groom was attended by Ed. Nash, his brother, and Miss Margaret Watson, sister of the bride, was bridesmaid. A reception was held at noon at the Nash ranch, five miles west of town and in the afternoon Mr. and Mrs. Nash left for Hardin, Montana, where they will make their future home on the groom's ranch.

Mr. Nash graduated from the college with the class of 1904, and his many college friends wish him happiness.

PLAN DEMONSTRATION TRAIN

Farm on Wheels to be Equipped by College. Will run this Month.

Under the direction of Prof. F. S. Cooley, superintendent of the Farmers' Institute work in Montana, a train will be sent out over the main lines of the Northern Pacific Railroad the latter part of this month. This will be a miniature farm on wheels, carrying equipment and exhibits to demonstrate the lectures which will be given by some of the professors of the agricultural department at every stop. The expense of outfit falls on the railroad company, and the farmers of the state get the benefit.

The Better Farming Special was run across the state for the first time last June, but as this comes right at the time when most of the farmers are busy it was thought that attendance could be increased by making the tour at this time. There will be more cars and more exhibit material with fewer stops and fewer lectures than were handled in last year's trip. Everyone in charge of the affair expects that the tour will be much more successful than last year.

There will be twelve cars probably three of which, a dining car, sleeping car, and parlor car will be used for accommodation of officials, lecturers and visitors; six cars will be devoted to the exhibit of grains, horticultural products, agronomy and dairy products, displays from the biology, home science and chemistry departments; there will be one car devoted to exhibiting farm machinery; one for a miniature poultry yard; and another will contain a number of farm animals. Last year there were but six cars, only one of which was devoted to exhibits.

There will be about thirty-six stops of two hours at each place and three stops each day, from 10 to 12 in the morning, 2 to 4 in the afternoon, and from 7 to 9 in the evening. The time will be used in showing the visitors the displays and there will be a few short lectures. Various departments will have speakers. Profs. A. Atkinson and H. F. Patterson will lecture on the different phases of the agronomy department; O. B. Whipple and L. G. Schermerhorn are representative of the horticultural faculty of the college, and the animal industry department will have R. W. Clark and H. P. Griffin on the lecture platform; W. J. Taylor will talk from the standpoint of a veterinarian; from the biology department there will be D. B. Swingle, M. H. Spaulding, R. A. Cooley and J. R. Parker; W. F. Schoppe, head of the poultry department will give a few addresses; and the home science department will be represented by Miss L. A. Harkins and Miss Florence Ballinger.

The Boosters club will be represented by Clinton Booker, who has been invited to assist in arranging the exhibits and will have charge of the distribution of much of the college literature which will be given to all of the visitors. For this purpose he will have about one quarter of the large exhibit car, and will have it artistically decorated. The member of the Boosterines will be Miss Blanche Metheney, who will also assist in handling the display of domestic science apparatus and products.

The train starts at Wibaux on March 20, and will complete the work at Missoula, March 31. The cars will be in Bozeman about ten days before the tour is started in order that all the equipment can be collected.

Nelia Winter, who is teaching near Townsend, spent Saturday in Bozeman with her mother, returning to Townsend Sunday afternoon.

TO THE HIGH SCHOOLS OF MONTANA

The Montana State College of Agriculture and Mechanic Arts offers greeting. The ready and enthusiastic response to the invitation to join in the tournament has made doubly pleasant our preparation for the event. You who are gathered here for this series—players, alternates, speakers, faculty representatives and visitors—all are urged to make the most of the occasion. You are welcome to all the attention and all the assistance that can be of service to you.

This being the first event of the kind ever held here, or indeed, west of the Mississippi, there are many details requiring adjustment. Perfection cannot be hoped for, but it is the earnest desire of this college to avoid all unpleasantness If anything should arise that is not exactly what you had looked for or that is not entirely satisfactory, do not hesitate, but report to the authorities in charge. With a proper exercise of discretion and patience, it is hoped and expected that the details will be so worked out that future years will find a basis for adopting needed regulations.

Meanwhile, the college invites a careful inspection of its different departments and of its magnificent equipment. It is freely confessed that one of the purposes of the tournament is to enable more high school people of the state to become acquainted with Montana's leading institution of higher education. To achieve this purpose the inspection trip this morning was planned, and further investigation is invited. The institution is yours for the occasion. We rejoice in your pleasure and our only regret is that there are a few high schools in the state not here represented. We hope that your impression will be such that you will feel that those schools are missing much.

Here's to an unending succession of successes for Montana's Annual High School Basketball Tournament.

FOUR OPENING GAMES PLAYED OFF

CARBON, DEER LODGE, BEAVERHEAD AND MISSOULA GO DOWN BEFORE THEIR OPPONENTS. PLUCK AND FAST WORK EXHIBITED.

RECORD BREAKING CROWD IN ATTENDANCE AND ENTHUSIASM

Todd of Billings is Protested; Plays Star Game, Which may be Thrown Out. Matteson Of Deer Lodge Proves Surprise. Hartman and Schermerhorn Officiating.

Before the largest attendance ever assembled at drill hall, with permanent and temporary bleachers filled to overflowing and with hundreds compelled to stand along the side lines, the first four games of the big tournament were played off yesterday afternoon. As a result of the contests four teams were eliminated from further competition, Carbon being the first to succumb to the superior force of their opponents, Broadwater county.

Deer Lodge was next vanquished by Billings, the latter team playing Todd, a protested man. Should the decision of the board of managers result in his disqualification, the two teams will probably meet again this afternoon.

The third game was the closest seen here in recent years and at the call of time stood 14 to 14 between Beaverhead and Anaconda. After 8 minutes of lightning playing Kelly, of Anaconda, whirled a pretty one through the ring, winning the game for his team.

In the fourth and last contest of the afternoon Gallatin proved an easy victor over the Missoula high. The local lads were much heavier and gave evidence of a more thorough and extended training than their opponents.

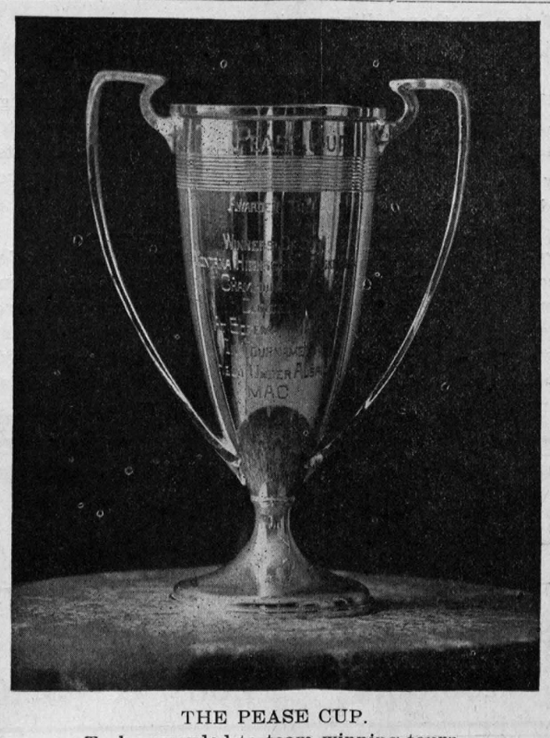
Broadwater 15, Carbon 8

The opening game of the interscholastic series was a lively scrimmage between the fives representing Carbon and Broadwater counties. Broadwater was the winner by a substantial margin and the game ended with the score 15 to 8. The contest was fast but was marked by a good deal of rough play. Broadwater, as the result of fouls, called chiefly on C. Beall for illegal dribbling, scored seven of her fifteen points. Carbon gathered in two points from the foul department.

Broadwater showed nice team work throughout but the plucky work of some of the Red Lodge boys won the support of the crowd. Especially was this true of Price who, in spite of his diminutive size was a wonder of speed and pluck.

Nash and McCarthy for Broadwater were practically dead shots in the free throw department and Nash added four points to his team's score in this way, while McCarthy made good three more. Brisbin got away with two pretty field baskets and Stark-

(Continued on last page)



THE PEASE CUP.
To be awarded to team winning tournament.

PROGRAM FOR THE TOURNAMENT.

According to official announcement the following is the program for the tournament. The games all occur in the College Drill Hall, the extemporaneous speaking contest in Assembly Hall and the reception and dance in Elks' hall.

Thursday, 7:30 p. m., completion of preliminaries. Friday, March 3, 8:30 a. m., inspection tour by visitors; 3:00 p. m., first heats of semi-finals; 7:30 p. m., conclusion of semi-finals. Saturday, March 4, 11:00 a. m. extemporaneous speaking contest; 3:00 p. m., championship game; 8:00 p. m., reception; 8:45 p. m., awarding of championship trophies; 9:00 p. m., dance.

CIVILS GIVE GOOD PROGRAM

Papers and Addresses by Members of the Club—Splendid Musical Numbers Also.

The civil engineers gave the program at assembly last Friday and the hall was appropriately decorated for the occasion. The wall back of the platform was adorned with pennants, some of these being arranged in the form of the letters C. E. There were also transits on the platform, and the members of the society sat there. The first number on the program was a piano solo by Ruth Hartman.

This was followed by a talk on the Panama canal by Ben A. Clark. Although this subject had been discussed considerably lately, Mr. Clark touched principally on points not brought out before, and his talk proved unusually interesting. He traced the canal from the Atlantic to the Pacific ocean ,and then gave something of the history of the undertaking.In 1513 Balboa first crossed the isthmus, and ever since that time the search has been to find or make a waterway from ocean to ocean. Nineteen different routes have been considered, the best known of these being the Nicaraguan and Panama routes. In 1838 New Grenada granted the French the rights of the Panama way, and an engineer was sent there in 1843. A new grant was given in 1847 with exclusive rights for ninety-nine years, to begin in 1867. This right was turned over to an American firm who built the Panama railway. In 1875 the United States made a complete survey of the route, laying it out nearly as it is at present. In 1898 the fourth French company failed and the U. S. bought the construction rights and the canal zone in 1904. After telling about the construction and size of the canal, Mr. Clark closed with a brief account of the civil administration on the isthmus, including the courts, prisons, and schools.

Will Chapman read a short paper on "Vacation Lights and Shades," which showed that the engineer's life is not all pleasure.

Carl Widener sang a solo, and was heartily encored by the audience.

William G. Tremper, president of the society, followed with a paper on changes in "Our Educational System." Mr. Tremper compared the college graduate who has completed the classical course with the typical college man of today about to complete his technical education. He attempted to prove that Latin and Greek are not necessary to give one culture, or even better command of the English language or an increased vocabulary. Quotations were given from many prominent engineers to show that modern languages and technical subjects are worth more to a man after he has finished college than are the dead languages. At this day a man to attain any degree of success must be master of something, must be a specialist in his line. As soon as men's opinions as to the essentials of education had changed, the effect upon the public school system was to increase the enrollment of the high schools from thirty-six per 1000 population to ninety-eight, or an increase of 272 per cent. Young people are attending colleges in greater proportions than ever before, since other courses than the classical are given prominence.

Coach McIntosh and President Hamilton spoke about the tournament, and Prof. Jones awarded the prizes won in the recent butter scoring contest.

Next Monday Prof. W. M. Cobleigh speaks on "The Chemistry of Foods," before the Woman's Club, of Bozeman.

16 TEAMS ARRIVE

ALL SAFELY AND PLEASANTLY SETTLED IN THEIR HEADQUARTERS.

IS MORE THAN WAS EXPECTED

Last of Competing Teams Arrived Yesterday Afternoon. Glendive Unable to Come.

Shortly after two o'clock, Wednesday morning the high school basketball teams began to arrive for the interscholastic tournament and from then on until late Thursday afternoon scarcely a train arrived either from east or west without some team to partake in the carnival. The first group to arrive was that representing the Powell county high school. This team alighted from No. 42 at 2:55 a. m. Next to come in were the sturdy boys from Dillon, who arrived during Wednesday morning. Both these teams as well as that from the Butte highschool were on the college basketball floor during the afternoon, loosening up stiff joints after the trip in, and getting familiar with the floor. Butte and Anaconda arrived on No. 4, at two-thirty and were quickly ensconced in their pleasant headquarters. This completed the turnout for Wednesday.

At 1:05 a. m. Thursday a part of the reception committee welcomed a rather sleepy, hungry crowd of fellows from Billings and Red Lodge. There were over twenty in this group. An hour or so later on No. 42, Missoula Granite and Flathead made their appearance and were soon located in their Bozeman headquarters. The teams from the Park and Teton county highschools showed up at five o'clock in the morning and their arrival raised the total of schools accounted for to eleven. Nearly all of these teams comprised basketball men and extemporaneous speakers as well, and each was accompanied by coach or principal.

Great Falls and Broadwater arrived yesterday on No. 170 and in the afternoon the last teams of the competitors came in,—Fergus and Sweet Grass. Glendive wired that the principal of this school had met with an accident and that they would be unable to come.

Including Gallatin there are now 16 teams in the city for the tournament, and, though some have already been eliminated it is hoped that none will leave 'till everything is concluded.

Bozeman streets present a rather gala day appearance filled as they are with color bedecked students. Badges, bearing the names of the respective schools, serve to introduce the teams to one another and in addition to this a large committee of the State College students is doing all within its power to see that the boys are having a good time.

CREAMERY SCHOOL CLOSES TOMORROW.

The annual four weeks creamery course, offered by the college every year in order to prepare the students to be expert butter makers, which has been in operation at the agricultural building, since last Feb. 4, will be completed Saturday noon. This completes the short courses offered at the college this winter. The regular school of agriculture students will be leaving about the first of next month.

The course just completed has been successful beyond all the expectations of the faculty. Thriteen members enrolled in the work, but two of these took sick and could not finish up the course. This is a most satisfactory enrollment, when one considers that there were but three students registered for this work last year. The attendance was from several sections of the state, some from Miles City, Chinook and Choteau were represented and nearly every part of the Gallatin Valley, and there was one student from Washington.

The work has been chiefly along the lines of butter making and getting acquainted with the management of a creamery. The lecture and laboratory work has been about evenly divided. Aside from the regular butter making practice there were special lectures offered by Prof.'s R. W. Clark, H. P. Griffin. W. J. Taylor, and H. G. Bonebright.

THE WEEKLY EXPONENT

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Bozeman, Montana.

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CALENDAR.

March 3. Semi-finals in basketball tournament. Afternoon and evening. Drill hall.

March 4. Scholastic extemporaneous speaking contest. Assembly hall, 10 a. m.

March 4. Finals in basketball tournament. Drill hall. Afternoon.

March 10. Student music recital. College hall, 8:30 p. m.

July 4. Sophomore-Junior basketball game. Can they come back? Jeffries couldn't.

MAKING IT A SUCCESS.

The time of going to press finds the college and the city of Bozeman in the midst of the pleasant but extensive task of caring for the largest gathering of athletes ever held in the city, the competitors in the first annual interscholastic basketball tournament. In connection with the tournament is the speaking contest ,adding to the number of visitors, increasing the interest of the affair and enlarging the scope of the progressive step.

If there is any member of the faculty or student body who is not working in some way or other on this event, that one has probably only escaped the notice of the management. There is yet time and any who have superfluous time to spend are likely to find profitable use for it by applying to the committee who are in general charge. Through all the hurry and bustle the knowledge that it is all for a good cause, and is likely not only to result in much pleasure and enjoyment to the high school students competing but also in placing the college in even better relations with these secondary institutions, the knowledge of these results which are inevitable makes the work distinctly worth while.

It is too early yet to predict the outcome of the meet. The speaking contest is also an uncertainty. The principal aim now is, and should be, to insure the proper treatment of the visitors, to guard against any oversight in their entertainment and to see that they have ample opportunity for becoming acquainted with the city and the college.

"COLLEGE COCKTAIL" WELL MIXED.

Public comment on the play given under the joint auspices of the Regimental band of the college and the local lodge of Elks last Friday and Saturday nights seems to be all favorable. The specialties were well conducted and highly successful. The parts were taken almost entirely by students, a few former students and some girls from the high school being the only others implicated.

To single out any particular one of the cast for approbation would be unfair to the rest, all deserving praise in about equal measure. All did the best possible and much better than might be expected of amateur players after a short preparation. Financially, the play was also a success, considering the drain that has been operating on the purses of Bozeman people of late.

The college and the city of Bozeman may well be proud of the showing made and of the talent displayed in the production. Future productions of the kind, in which the members of the cast of the one just past will appear, are certain to attract additional attention because of their part in this one.

The tireless fiedelity of all concerned in the "College Cocktail" in perfecting themselves for the parts and in making the business arrangements for its production is certainly commendable. College life is made doubly rich by just such forms of "charity work."

MARVELOUS INTEREST DISPLAYED IN DEBATE.

Truthfully speaking, that was an enthusiastic gathering which listened to the first inter-society debate at Assembly hall last Tuesday evening. Just two seniors in evidence, only three members of the faculty and those judges, and a total attendance of eighteen; that should be an inspiration to any speaker to extend himself.

Probably the error, or obstacle, or whatever prevented the attendance being normal was in the fact that this is too busy a week for events outside of the tournament. However, that may be it appears to be up to the senior class to redeem itself at the first opportunity.

ORGANIZATION FOR TOURNAMENT IS PERFECTED

The final steps in the perfection of the plans for the first interscholastic basketball tournament were taken early this week and those upon whom the duty falls have been working overtime clearing away the details. Last Friday the season tickets were distributed to the students, much of this work carrying over into this week. Saturday several delegations of students were busy delivering the tickets pledged for by the business men down town.

At the time of going to press the financial success of the big affair seems assured. Prof. A. A. Atkinson has taken over the financial executive work, Prof. Patterson having been called out of town on important business. Prof. J H. McIntosh has been buried in work these past few days, having the responsibility of the head of the general committee. Prof. Tallman as head of the committee on entertainment has found plenty to occupy his time and Prof. Schermerhorn of the reception committee reports to the same effect. Prof. W. F. Brewer, who has entire charge of the arrangements for the extemporaneous speaking contests, reports that there are thirteen entries for that event and that at least one more is expected.

The following committees have been appointed for taking care of the different delegations. They are responsible for meeting and arranging for their teams.

Anaconda.—Prof. Thaler, Haines, Booker, Chambers, Higbie.

Big Timber.—Prof. Snow, Pound, Solberg, Esp.

Billings.—Prof. Atkinson, Sheriff, Annin, Wilkin.

Butte.—Prof. Cobleigh, Blinn, Wharton, Lannin, Vestal.

Choteau.—Prof. Currier, Hodgskiss, Luther, Jones, Froebe.

Deer Lodge.—Prof. Mollett, Whitworth, Schurze, Edsall.

Dillon.—Prof. Kneale, Willey,, Hansen Burfiend, Dahling.

Glendive.—Prof. Schoppe, Gordon, Seamans, Wolpert.

Great Falls.—Prof. Swingle, Millegan, Bussey, Rubottom.

Kalispell.—Prof. Whipple, Bancroft, Halcker, Leinard, Brook Hartman.

Lewistown.—Prof. Brewer, Peck, Taylor, Lewis.

Livingston.—Prof. Dearborn, Hill, Jones, Urbach.

Missoula.—Prof. Griffin, Forbes, Willis, Roberts, George Cook.

Philipsburg.—Prof. Spalding, Tremper, Degenhart, Kaiser.

Red Lodge.—Prof. Duddy, Draper, Talmage, Duffield.

Townsend.—Prof. Ham, S. A. Williams, Keene, McGuire.

A general reception committee has been appointed to insure the proper entertainment of the college's guests at the closing reception and dance, which will be held to-morrow evening at Elks' hall. The following compose this committee:

Clinton Booker, Hugo Dahling, Wm. Vestal, Wm. Edsall, Wm. Chapman, Chas. Hansen, Dave Higbie, Chas. Draper, Fred. Gordon, Frank McGuire, Brooke Hartman, Harold Lockhart, Joe Soper, Court Sheriff, Carter Rubottom, R. B.Williams, Clyde Stieb, Sam Pound, Ed. Ellis.

ARENA WINS FIRST INTER-SOCIETY DEBATE.

The first of the inter-society debates on the subject of the debate with Utah was held last Tuesday evening under the auspces of the Arena. At that time the Arena debated with the Agricultural Society, the former upholding the affirmative side of the question, Resolved that the federal government should exercise direct control over the development of water power. Horace Davis opened the argument for the affirmative. He was followed by Noble Donaldson on the Negative. Will Winter was the second speaker for the Arena, and J. Edward Hodgskiss for the Agricultural Society. Each of the four speakers had five minutes' rebuttal. The argument on both sides was logical, but the affirmative had the best of it on delivery. The judges, Prof. E. A. Duddy, Mrs. U. B. Herrick and Prof. Alfred Atkinson, gave the decision to the affirmative. The winners of this contest will next debate with the Engineers. While the judges were consulting, Miss Alma Bancroft played a piano solo. The debate was a very good one, and deserved a larger attendance than it secured. Besides the speakers and judges those present were Frank McGuire, president of Arena; Merl Bromley, Mrs. Winter, Mildred Eckles, Myrtle Alderson, Will Shovell, George Cook, Leroy Willey, A. L. Lewis, Kyle Jones, Will Hodgskiss, Leslie Crouch, Roy Spain, George Morgan, Chas. Draper, Fred. Gordon, Guy Millegan, David Higbie, F. B. Leinard, and James Bell.

"POLLY OF THE CIRCUS."

After years of effort, a success has finally been achieved in the attempt to reproduce on the stage of a theatre a three ring circus in active operation, and local theatre-goers will be treated to one of the theatrical sensations of recent years when "Polly of the Circus" comes to the Bozeman Opera House on March 14, where it will be presented in identically the same manner that attracted enthusiastic crowds to the Liberty Theatre, in New York City, for one solid year. Never before has so elaborate and successful an attraction been brought here, and "Polly and the Circus" already promises to establish new records for attendance.

Inter-collegiate Notes

The University of Chicago has granted 5,895 degrees since 1892.

New York University is free from debt. They recently burnt a $500,000 mortgage.

Five hundred University of Missouri students enjoyed a barn warming and husking bee recently.

The women of the university of Minnesota have started a campaign to secure the right of voting in the Athletic association elections.

Columbia boasts of thirty-nine Chinese students, whose expenses are being paid out of the Boxer indemnity fund from the United States to China.

The senior class of Indiana university may publish the college annual this year. The annual has been published by the juniors heretofore.

Dr. Cyrus Northrup, who has held the presidency of the University of Minnesota for a long term of years, has resigned and Professor George E. Vincent succeeds him.

During the rest of the year at Wellesley college a serious study course in votes "for women" will be conducted for the students and faculty by the Wellesley Equal Suffrage league.

We speak today rather in awe of Berlin's enrollment of 8,000 and Columbia's 7,000, but it is interesting to note that 600 years ago the University of Paris had 30,000 students.

A wireless telegraph station has been installed by "The Daily" at the University of Washington, by means of which the paper will receive news from the entire Pacific coast region.

The Yale-Harvard baseball games this spring will probably show the strange sight of two brothers filling the same positions—first base—on the rival teams. The two are Charles and Tom McLaughlin, the former captain of Harvard.

The popularity of college extension work is indicated by figures furnished by Dean Russell, of Teachers' college, Columbia University. The past year the extension courses in Teachers' college were attended by 4119 students of whom 1541 were candidates for degrees and 2032 were non-matriculants. Out of 2375 requests for teachers, 662 were supplied during the year.

Cornell will erect a new fireproof infirmary with all modern and sanitary conveniences.

Men pledged to the Indiana Senior honorary society wear a distinctive head gear. It is called the "Jaw-Bones" hat, and is made up of the colors of the society—red, orange, yellow, green, blue, violet and purple.

A board of information is to be established at Michigan at which the whereabouts of students and faculty members during recitation hours may be learned. The schedule of all members of the university will be kept on file.

The receipts o fthe Kansas-Missouri football game held at Kansas City on Thanksgiving day were the largest ever taken in at any game west of the Mississippi. The total receipts were $33,823, of which each team received $15,220.

The number of foreign students at American institutions of learning is rapidly on the increase. There were enrolled in 1909, 940 foreigners at six eastern universities—Pennsylvania, Columbia, Cornell, Harvard, Yale and Princeton—as against 540 in 1905.

Kodaks, Films & Paper

Gallatin and M. S. C. Pennants

Local View Post Cards

Rose Drug Co.
The Rexall Store



SPRING NOVELTIES
in neckwear, collors, shirts, etc, are here a-plenty, and most of them you will not be able to find anywhere else.

THEY ARE FURNISHINGS
that will appeal to your good taste and to your desire to dress like other men who know. Come and make your selections.

The Vogue
3 GRADE-SYSTEN CLOTHIERS

Leaders in
STYLE, QUALITY , LOW PRICES

Commercial National Bank
of Bozeman, Montana.
Capital Stock $150,000.00
Surplus and Profits - $100,0..

Take Care of the Dollars
And later the Dollars will take care of you. A savings account in the
Gallatin State Bank
Earns 4 per cent. interest, compounded twice a year.
Capital and Surplus, - - $100,000.

WE DELIVER BAGGAGE TO ANY PART OF THE CITY.
PROMPT DELIVERY GUARANTEED
HEADQUARTERS—Rose Drug Co.
WOOSLEY & FREEMAN

Remember that you can always get the choicest flowers of any kind at
LANGOHR'S GREEN HOUSE
315 S. Tracy — Both Phones

For Professional Barbering, go to
THE TUXEDO BARBER SHOP
C. A. McIntyre, *Prop.* — Michigan Building

The Pioneer Insurance Office
of the Pioneer Fire Companies
Lots and blocks of lots, also properties for sale, on the iustallment plan
J. M. LINDLEY
Room Five, Bozeman Hotel Annex



YOU'LL LOOK FAR

Before you'll find a more up-to-date or superior
SODA FOUNTAIN
Now is the time to try our Hot Soda—served piping hot and deliciously flavored—We know you'll find it th best drink for cold weather.
Every flavor—every up-to-the-minute mixture at our fountain to please the particular.
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SATURDAY MONDAY, TUESDAY and WEDNESDAY. Everything in white.
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Buy your Dairy Products of
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Cows tuberculin tested. — Up-to-date Sanitary Methods Used
Daily Delivery. — Phone 12 red.

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European Plan
Special attention given to students.

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Black Avenue, Bozeman

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In
Soft and Stiff Hats of Mallory and Stetson makes for
$3.00, $3.50, $4.00 & $5.00
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The very newest in
Box Papers
Cranes Paris Colors in Paper and Correspondence Cards. We have a special sale this week of Box Papers in white at
25 cents
Phillips' Book Store

The Basketball Tournament

I Will undoubtedly be a great success for the reason that everyone connected with it has given his time and best efforts. I have given my time and energy to MADE-TO-ORDER TAILORING for many years and believe that you can get more up-to-date styles and better fitting suits at my shop than at any other place in town. My prices are generally conceded to be the lowest. I want to make your Spring Suit,

H. R. HARRIS

College Notes

Mrs. H. T. Swain, of Dillon, spent the week end at Hamilton Hall.

Miss Beulah Caldwell, of Judith Gap, is entertaining her parents at Hamilton Hall, during the basket ball tourna ment.

Mr. and Mrs. Randolph of McHenery, North Dakota, spent Wednesday night at Hamilton Hall, visiting with Mrs. Randolph's sister, Miss Alberta Borthwick.

Miss Harriet A. Dunning, of Dillon, spent Friday, Saturday and Sunday visiting at Hamilton Hall. Miss Dunning spoke to the high school students Friday afternoon.

Jack Taylor, '12, is entertaining his parents, Mr. and Mrs. L. B. Taylor, of Chinook. They have been regular attendants at the high sshool games at the college drill hall.

Mrs. U. B. Herrick entertained at dinner Sunday in honor of her daughter, Miss Dunning, and Mrs. Swain, President Hamilton and Miss M. A. Cantwell were the invited guests.

Mrs. Clara Chapman, of Dillon, is spending the week end as the guest of Mrs. Abbie Hanson. While here she will be shown around the college by her son Bill Chapman, of the junior class.

A number of the students who were members of the cast in "A College Cocktail," were pleasantly entertained at luncheon in different homes of the city after the show Friday and Saturday nights.

Owing to the recent storms and cold weather the street car schedule has been rather badly disarranged. It is to be hoped that better weather will enable a resumption of the regular time table.

Miss Harriet Dunning, of the State Normal at Dillon is one of the most enthusiastic boosters of the college band in the state. It was largely through her individual efforts that the band has been enabled to include Dillon in its spring itinerary.

Grace Kirk led the Y. W. C. A. Tuesday noon in a song and praise service. Miss Kirk gave a short account of the circumstances under which each song was written, which made the meeting very interesting. Miss Bessie Dawes gave a vocal solo.

THERE ARE TWO WAYS OF DOING A

RETAIL SHOE BUSINESS

We have chosen the latter method and are making money by it. Your confidence is worth more than the pennies of profit and before we sell a pair of shoes they must come pretty near to being perfect shoes.

Good leather, good fit, good service.

PEEP IN OUR WINDOWS.

NICHOLSON'S SHOE STORE

WE FIT THE FEET.

Shown in our window the

BASKETBALL

used in the first match game ever played in Montana.

STOP AT

GLEASON'S CIGAR STORE

Big sale of Gingham and Lingerie Dresses

This offering is for a few days only and consists of mostly Misse's sizes, elaborately styled and veryhigh classed, Values up to $10.00

SALE PRICE $5.00

Large assortment of Women's New leather hand bags on sale while they last, Values up to $2.00 Now on sale at $1.19

Values up to $2.50 now on sale at $1.49.

The Suit Shop

Bozeman's Exclusive Store for Women. - - 120-122 W. Main

Mrs. C. W. Hill, of Livingston, paid a short visit to her son, Lewis, a sophomore in mechanical engineering, last Saturday and Sunday.

Ruth Flager, '10, arrived Wednesday evening from her home in Red Lodge for a short visit with Bozeman friends, and also to witness the big tournament.

Lester Cowan, who attended the college several years ago, returned last week from California where he has been spending the greater part of the winter.

Carl Widener, '08, was practically the only member of the college alumni who was able to assist in giving the visitors their first introductions to Bozeman.

Mrs. W. J. Taylor and Mrs. J. H. McIntosh entertained the faculty Tuesday evening at the home of Mrs. Taylor. The form of entertainment was guessing of advertisements. Mrs. Schoppe captured the lady's prize for guessing the most advertisements, and Prof. Griffin won the gentleman's prize. Delicious and abundant refreshments were served.

The lower hall of the main building has been somewhat improved since last week by the placing of five views of different buildings about the campus on the walls. These photographs were donated by the college, and belong to the set recently taken by Schlechten. They show views of Hamilton Hall, Chemistry, Biology, and Agriculture buildings and one of the College hall.

The members of the girls' basketball teams wish to extend, through the columns of this paper, a vote of thanks to Dave Higbie, manager of the team. Mr. Higbie has made an efficient manager and coach for the season. He retained his interest in his team the entire time, and has proved one of the most faithful managers that this branch of athletics ever had. It was entirely due to his efforts that the practice hours for the girls were obtained, and the team has shown very marked improvement under his coaching.

Frank Wight enjoyed a visit this week from his mother, Mrs. R. G. Wight, of White Sulpnur Springs. Mr. Wight had been sick for a few days but is now about again.

President J. M. Hamilton made a hurry up call to Helena last Tuesday where he did considerable work in support of the appropriations and other bills which are of interest to the college.

Court Sheriff was called to Fridley last Wednesday, where he is staying with Walter Smith, ex-'10, who has been suffering about a year with spinal trouble, and who at present is in a very serious condition, and very little hope is given for his recovery.

A letter has recently been received by the Pharmacy Dept. from the "Meyer Bros. Druggist," St. Louis, Mo., asking for news items concerning the pharmacy department, and pharmacy throughout the state. They also made the students a special rate on their journal.

Mr. and Mrs. Shirley Van Voast left Tuesday for Lewistown, Montana, where they will make their home. Mr. Van Voast has accepted a position in the abstract business at that place. He was a member of the class of 1910 here in its freshman year and was at that time a member of the college band.

Alumni and Ex-Students

Mr. and Mrs. Wilbur Robinson were up from Manhattan last Friday to attend the "College Cocktail."

Cyril Kennedy, '10, who has been employed at the Butte sub-station since last June has recently been transferred to the Madison River Power plant, near Norris, Mont.

Clarence Jeffers, a student at college in its early days, and an enthusiastic football man, was in Bozeman last week and incidentally attended the "College Cocktail." Mr. Jeffers returned to his home at Jeffers, Mont., on Monday.

Joe Brown, of Birney, Mont., who attended college two years ago was married on Feb. 22 to Miss Nellie B. Powell, of Utica, Mississippi. The marriage took place in Utica. Mr. and Mrs. Brown returned to Montana last week to make their future home in Birney.

Maud Hawley, ex-'14, who was obliged to leave school on account of illness, soon after her registration, is much improved in health, and now has a position in the telephone office at Choteau, Mont. Miss Hawley expects to enter college next fall for a four years' course in Home Science.

Herman L. Waters, who is professor of electricity and physics in the California Polytechnic school, located at San Louis Obispo, is at the same time proctor of the dormitory, having charge of the discipline.. Mr. Waters attended M. S. C. for three years and it is gratifying to hear of his success.

Several Bozeman people last week received announcements of the marriage of Will Throm to Miss Ethel Whitcomb, of Simms, Mont., which took place on Feb. 16, at Simms. Mr. and Mrs. Throm will be at home to their friends in Fort Shaw, where Mr. Throm is in the Government Service. Mr. Throm was a member of the class of 1909 for two years and has many friends in college who extend congratulations and best wishes.

This week Prof. Ham received a communication from Mr. Burle Jones, '04, who has charge of the Orangewood Nursery at Phoenix, Arizona, in which he spoke of his interest in the development of the college and of how he kept posted by means of college publications. Mr. Jones has been very successful in his work and it is good to know that our busy Alumni still retain an interest in affairs at the college.

Raymond Love, who recently accepted a position with the Havre Drug Co. at Havre, Mont., writes that he is well pleased with his position. Mr. Love will probably return next year to resume his studies.

BUSY BOOSTERINES PERFECT PLANS.

At a meeting of the Boosterines Tuesday noon it was decided that the girls should appear in the parade Thursday, wearing the boys sweaters. The reception to be given to the high school boys Saturday night was discussed and it was moved that the president appoint two committees, one to see about refreshments and the other to help in decortaing the Elks' hall for the occasion. Mr. C. T. Booker came in and spoke to the girls about what they were expected to do for the reception.

MUCH WORK DONE ON WATER ANALYSIS.

In the last biennial report of the State Board of Health is a complete report on the work the college has been doing in water analysis. Profs. W. M. Cobleigh and D. B. Swingle have analyzed over 500 samples of water from all parts of the state, free of cost for the State Board of Health. The Yellowstone is the only river of which a thorough sanitary survey has been made so far.

This work results in much good for the users of river water for domestic purposes and in a few weeks a bulletin on water will be ready for distribution. The work will probably be carried on for several years to give more detailed information in regard to the waters in all parts of the state under varying conditions.

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We guarantee ASEPTOLIN CREAM to be BETTER than other face creams We refund your money if you don't think so. Price 25c.

GALLATIN DRUG CO.

The Drug Store on the Corner.

College Pennants Reduced from $1.50 to $1.00 for a week.

Here is a chance to get one of those pennants with the College picture painted on it for two thirds its price.

For one week.

"Bill" THE NIFTY TAILOR

Let me press your suit

Coal

Coal from the Maxey mine on Trail creek is not excelled by any coal handled in Bozeman. Lump for the furnace and egg size for the range. All well screened. Quantity, quality and price right.

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Our line of Poultry Foods is now com complete. We sell none but the highest grades. So if you want two eggs where only one was laid before ask for STERLING BRAND.

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Plumbing. Steam and Hot Water HEATING.

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4 suits pressed, shoes shined at any time for $2.00 per month. Reserved seats for ladies. 18 E. Main Street

F. E. DAVIS

4 Chair Barber Shop

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Corner of Main and Black

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PHYSICIANS AND SURGEONS

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Bozeman, Montana.

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Physician and Surgeon.

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Drs. DAVIDSON & GALBRAITH,

Dentists and Oral Surgeons.

10 per cent discount to students.

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DR. W. E. MOXLEY,

Dentist.

Golden Rule Blk, Bell Phone 97, Blk.

The Montana Bakery

D. P. Doughtery, Prop.

Fancy Pastry a Specialty.

17 West Main St. Both Phones.

W. J. FRANSHAM

Up - to - Date

Livery Coal & Wood

Both Phones Number 25

Gallatin Valley Railway Co.

Cars leave office 10 minutes after the hour for College, returning from College at 25 minutes to the hour.

Cars meet all day trains except 1 and 2.

Tuxedo Billiard Parlor

Cigars, Tobacco and Cigarettes

Orders taken for Cut Flowers

Michigan Block C. C. Slutter, Prop.

ATTENTION

Boys, while you are showing the visiting Basketball Teams the College--- Don't overlook

THE HUB

Ed. and Lou. Howard — Bozeman

We Have Just Received Another Shipment of the Beautiful White and Gold China. It's open stock, so you can get any size Set you should need.

SEE .THOS. H. REA & CO.

D. D. SMITH.

Furniture, Rugs

Trunks and Bags

CO-EDS HAVE TWO FAST GAMES

First Freshmen Beat Preps. Then Freshmen-Juniors Defeat Sophomore-Seniors.

The first regular game of the co-ed series for the interclass basketball championship took place at the college drill hall last Monday evening, when the freshmen undertook to put the preps. in the background and succeeded. The final score was 10 to 2. The first year regulars had things their own way after the preps made the first basket, and played a very good game. Vie Valleau was the star of th game and made the majority of the points for the team. Georgia Cullom also did excellent work.

The line-up was as follows:

Freshmen:—Cullom, forward; Olsen, forward; Valleau, center; Pool, guard; Harmon, guard. Preps.—Brennan, forward; Distad, forward; Moore, center; Wells, guard; Robeson, guard.

On Thursday afternoon at four-thirty teams composed of the girls of the Freshmen-Junior and Sophomore- Senior classes played the fastest game of basketball yet witnessed in the co-ed interclass series. The game was replete with rough play on the part of both sides, and vigorous rooting for both sides was a feature of the game. The game ended with a score of six to ten in favor of the Freshmen-Junior aggregation. Georgia Cullom, Inez Deusenberry and Vie Valleau starred for the Freshmen-Juniors, while Rhoda Dawes and Ruth Hartman were the shining lights of the Sophomore-Senior team.

The line-up:

Junior-Freshman.—Georgia Cullom, forward (1); Vie Valleau, forward (1); Inez Deuscnberry, center (3); Flo. Pool, guard; Ella Harmon, guard.

Sophomore-Senior.—Ruth Hartman, forward (2); Grace Kirk, forward; Leta Snider, center; Alda Smith, guard; Rhoda Dawes, guard (1).

—o—

Lost:—A pair of glasses between Third Ave., and Main St. Return to Courier office.

—o—

Word comes from Missoula that Mrs. M. K. Hall, one of the ardent friends of the college and for many years connected with it, has just accepted a responsible position with the Daily Missoulian.

—o—

The first college to adopt a standard flag authorized by its corporation is Pennsylvania, whose new flag consists of two red and one blue vertical stripes, with the Pennsylvania arms on the blue stripe in the center of the flag.

Military Collar Shirts

ARE THE FAD FOR SPRING

These shirts appeal to almost every class of men.

To the man who wishes to be correctly dressed because they are approved and worn by the best dressers east and west.

To the man who desires to be comfortable, because they eliminate the stiff, starched collar.

To the man who wishes to save on his wash bills, because they require no special appliances or skilled labor to launder.

We show military collar shirts in men's and boy's sizes, at $1.25 to $3.50.

The Willson Co.

CHAMPIONSHIP TO SOPHS

Completely Outplayed Juniors to Surprise of Public.

By beating their rivals, the juniors, and at the same time springing a great surprise upon the whole student body, the sophomores annexed the interclass championship last Monday afternoon. The game was one of the fastest played on the drill hall floor this year and though the score, which was 18 to 10, would seem to indicate a quite decisive victory, such was not the case. To the contrary every point was most hotly contested and it was only by a superb exhibition of absolute sticktoitiveness that the lighter team of the lower class was able to annex the coveted victory.

At the beginning of the first half the sophomores showed wonderful speed and quickly took a substantial lead. The greater strength of the juniors, however, began to tell before the first session was ended and the latter team almost overcame the advantage which their ambitious opponents had gained. The score at the end of the first half was 14 to 10 in favor of the sophs.

In the next session of the contest both teams came on the floor determined to capture the championship, but the policy of close guarding which the lower classmen adopted proved too much for the juniors. In this half the ball was for the most part in the territory of the juniors but in spite of this fact they were unable to add to their score. The victors were somewhat more fortunate and during the latter half of the game managed to get away with two neat field baskets.

A large crowd of students and faculty witnessed the contest and all pronounced it by far the fastest and most interesting game of the interclass series. Some went so far as to say that this game was a better one than the majority of the regular college series. The rooting was lively from start to finish.

Both classes had a share of the regular college team within their number and these were distributed as follows: Sheriff, Donaldson and Wilson with the juniors; Brabrook and Hartman to aid the sophomores. With these men to build about both teams had quintettes which would be no disgrace to the college.

Sheriff and Pound as forwards for the juniors, were even in the scoring honors with two field baskets each. Wilson at center annexed another basket for his team. This was the total of the juniors' scoring. For the sophomores Hill at center was the high man with four baskets. Hartman was a close second with three and Blinn did the rest of the scoring by tossing two pretty ones. None of the guards on either team was able to connect with the iron ring, but this was accounted for by the general closeness of the guarding as evidenced by the comparatively low score.

This victory for the class of 1913 supplements that which they gained over their rivals of the 1912 class a year ago. At that time the present champions ran against a snag in the form of the five representing the class of 1910, the latter class carrying away the championship last year.

With Monday's game the interclass championship series was completed but it is possible that after the interscholastic tournament is ended there will be a game between the sophomore team and an all-star quintette chosen from the remainder of the students. Barring this possible game the basketball season here is now over, due to the flunking out of the Missoula aggregation.

The lineup in the junior-sophomore game was as follows:

Juniors	Position	Sophomores
Sheriff	forward	Hartmon
Pound	forward	Blinn
Wilson	center	Hill
Donaldson	guard	Brabrook
Hodgskiss	guard	Chambers

Score—18 to 10.
Referee—Annin.

—§—

FOUR OPENING GAMES.

(Continued from page 1)

weather and Nash each found the net for one. Cotter was not in on the scoring but played a close guard.

For Carbon, Beall, at center, was the high scorer, having tossed a field basket and made two good chances for free throws. Hasterlink and Logan each scored two points for the boys from the Carbon city.

The result of the game was the qualification of Townsend for the semi-finals. Just how the Broadwater boys will show up against the other teams in the semi-finals cannot be predicted in view of this contest.

The teams lined up as follows: Broadwater—McCarthy and Brisbin, f; Nash, c; Starkweather and Cotter, g.

Carbon—Hasterlik and Logan, f; Beall, c; Price and Barclay, g.

Billings 44, Powell 12

The second preliminary game of the tournament was between the Billings and Powell county high schools. The game was far from a walkaway despite the fact that the final score was 44 to 12 in favor of Billings. Both teams began at the referee's whistle and played a fast and snappy game all the way through. The game was clean and though fast but eight fouls were called throughout the game—three on Billings and five on Powell. Todd, who played center, was the star basket shooter for the Billings quint making twenty of the forty-four points made by that team. Mann, of the guards, also did fine work slipping up from his position and adding ten to the score of his team. For Powell Matteson played a fine game winning eight points for his team. He was the center of all the team work and a wonder in dribbling the ball without fouling.

Several changes were made in the lineup of the two teams during the game although no apparent difference was made in the playing of either by the changes. Both teams showed splendid team work although Billings had the best of the game at every stage.

The lineup was as follows: Billings—Eddy and Hagerman, f; Todd, c; Mann and Chryslar, Beerman, g.

Powell—Matteson and Shiplett, Evans, f; Ward, Shiplett, c; Evans, Beck and Albee, Ward, g.

Todd made four free baskets out of a possible five; Matteson made two out of three.

Anaconda 16, Beaverhead 14

The closest and consequently the most exciting game of the first afternoon of the tournament was between the Anaconda and Beaverhead county high schools. At the end of the second half the teams were tie with the score 14 to 14, but Anaconda won out after a sensational eight minutes of additional play. The final score was made by Kelly on a sensational toss after one of the Dillon players had raised the crowd to its feet by a very narrow miss of the coveted deciding basket.

From start to finish these teams were evenly matched and the result might have been in favor of either team. Both worked to the limit for the victory and the score during the halves see-sawed back and fourth with never a lead for either team of over two or three points. The result was the wildest interest on the part of the big crowd of spectators and it was with the utmost difficulty that those standing about the margin of the floor could be restrained within the lines.

Fast work and brilliant plays, coupled with close guarding on both ends of the field, was so essentially prevalent that a detailed account of the contest would be a constant succession of superlatives.

The line-ups were:

Anaconda.—Hanson (1) and Sullivan (1), forwards; Burnett (1), center; Griffith, and Kelley (3), guards.

Beaverhead.—Gosman (3), and Stewart (1), forwards; Wilcomb (2), center; Willey and Watson, guards.

Gallatin 17, Missoula 1.

The last game played yesterday afternoon was between Gallatin and Missoula.hohu gT11imfiE2efi tin and Missoula. Though the Missoula boys were game and played hard the Gallatin team outweighed them and the final score was 17 to 1. Griffith started the game off with a field goal and a basket on a free throw and the Gallatin boys were able to elude the quick Missoulians, making the score at the end of the first half 15 to 0. All the Gallatin boys played a good game. no particular man doing all the basket tossing.

The second half brought the game little Missoula boys out with a new determination and they played on the defensive covering their men and holding Gallatin down to a single basket. During this half Cummins, of Missoula, succeed in connecting with the basket on a free throw.

Though the game was somewhat slower than the preceding games the boys fought all the time and the plucky little Missoula team is to be congratulated on its gameness.

The line-ups were:

Missoula, Cummins, forward; E. Prescott, foreward; C. Prescott, center; Lansing, guard; Ahart, guard.

Gallatin.—Griffith, forward, (1); Widener, foreward (3); Jolley, center, (2); Gatton, guard, Street, guard (2).

Griffith made one free throw out of three and Cummins made one out of the same number.

Will Hartman, '08, and Prof. L. G. Schermerhorn acted as umpire and referee of the afternoon series. Entire satisfaction with their work is expressed on every hand.

—o—

PARADE IS REVELATION.

(Continued from page 1)

a mass of color. Next to the high schools, led by Misses Edna Hagerman and Irene Piedalue, carrying a large banner in the college colors. came the Boosterine Society, about 70 strong. Behind them were to be seen Horace Davis and Selmer Solbery, bearing a huge banner with the legend, "THE WEEKLY EXPONENT, The Best College Weekly in the Northwest."

The Boosters brought up the rear, some of their number having been delegated to bear a banner of blue with "MONTANA STATE COLLEGE" in gold letters. Yell leader Chapman was much in evidence and led some rousing cheers for the visitors and for the college.

Expressions of astonishment and pleased surprise were heard on every hand from the lips of the many who crowded the sidewalks on either side of the str et. Few of them had before been brought to realize the importance to the city, as well as to the college, of the gathering.



COLLEGE QUINTETTE, 1911.
Winners for sixth consecutive time of state intercollegiate championship.

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RYE BREAD,
CAKES and COOKIES,
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Gives the people of Bozeman and vicinity the best work and service. Let us call for your next bundle.

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PENNANTS

Get the swellest pennants in town at the

POST OFFICE NEWS STAND

BAND SHOW SPLENDID EFFORT.

On the evenings of last Friday and Saturday, Feb. 24, and 25, the college band and the local order of Elks in conjunction put on one of the best home talent shows even seen in Bozeman. "The College Cocktail," under the management of Lou Howard and Gene Quaw was a distinct hit. The two houses were not quite up to what was expected they would be but in spite of this fact the band received a substantial boost toward their spring advertising tour.

Every member of the cast came in for a good share of credit in the success of the play and the faithful hours of rehearsal that took place during the two weeks just preceding the presentation were evidenced by the smooth manner in which the piece was staged, was in the main made up of present college students or those who had recently attended the institution, and in addition to these a few friends of the college and Elks lodge assisted. The cast was as follows:

Jimmy Cavandish, a rah-rah boy, Tom Quaw; Tad Cheseldine, a college cut-up, Gene Quaw; L viticus, the ace of spades, Ned Chambers; Major Kilpepper, the head of the military, Hugo Dahling; Prof. Senacharib Popp, the chair of Philology, Jim Annin; Scotch McAllister, the football captain, Court Sheriff; Shorty Long, the ubiquitus freshman, Will Chapman; Billy Van Dorn, on the glee club, Harold Lockhart; Dr. Twiggs, on the faculty, Sam Pound; Miss "Jim" Channing, the girl from Dixie, Miss Edna Hagerman; Marjorie Haviland, the College widow, Mrs. Carl Spieth; Mrs. Bagsby, "Ma" a popular landlady, Miss Alice Chisholm; Miss Jane Cavendish, of Wall Street, N. Y., Miss Helen Fisher; Mrs. Cleopatra Popp, a faculty type, Miss Vera Buell; Mrs. Styles, a honeymooner, Miss Frances Reed; Miss Twiggs, a relic of other days, Miss Eva Cline; Mrs. Twiggs, a motherly old soul, Miss Harriett Kinney.

The college boys were Riley Bradshaw, Clyde Steibe, Sam Pound, Arthur Wade, Lawrence Wylie, Meade Campbell, Wallace Fisher.

The pony ballet was composed of Phoebe King, Mildred Cline, Mary Elsom, Edith Bull, Dorothy Gatton, Marjorie Quaw, Aimee Piedalue, Della Kindler, Anne Sackett, Gelia Buell.

Those in charge were: Lou Howard, General Manager; Gene Quaw, Director of Specialties; Mrs. O. E. Myers, Director of Orchestra; Walter Fox, Stage Manager; and J. L. McGraw, Electrician.

—§—

Prof. F. B.Linfield is expected in from Helena today, having remained there to the closing hours of the legislature, in the interest of the college.

SPRING STYLES



Won't you come in some day soon and look over the spring styles in Mens Headwear

Our color and shape range is extra good this season and we feel sure you will be interested Prices $3.00 & $3.50

Chambers = Fisher Co.

Bozeman Montana

THE WEEKLY EXPONENT

Monthly Supplement

Vol. 2. BOZEMAN, MONTANA, FRIDAY, MARCH 3, 1911. No. 23.

Electrical Engineering

Description of Apparatus and Course Offered by M. A. C.

This course provides a thorough technical training in electrical engineering The rapid development of electrical engineering is largely due to the use of sound theory in the solution of commercial problems. For this reason the theoretical subjects, and the application of theory to the solution of practical problems are emphasized.

The course is designed to teach students the scientific laws and principles forming the basis of the profession, and the application of these laws and principles to commercial problems. The general training consists of courses in mathematics, physics, chemistry, drawing and shop work. The electro-technical work consists of lectures and recitations on the theory of electrical phenomena, and on problems in the design, construction and operation of electrical machines and apparatus. Conventional methods are used in drawing and designing, and the experimental tests made in the laboratory are essentially similar to the tests made by large manufacturing companies. The apparatus and instruments used are of modern commercial types.

A limited number of electives is offered during the sophomore, junior, and senior years. Students may choose their electives by consultation with the head of the department.

The course is supplemented by an annual inspection trip to some of the large power plants of Montana, and by lectures by prominent electrical engineers.



Irving Mountjoy, '08, when in college always took a prominent part in student activities and had his share in all of them. He was especially active in raiding the domestic science department when something good was known to be in waiting. Since graduation Mr. Mountjoy has progressed rapidly in the profession. He took the apprentice course under the General Electric Co., of Schenectady, New York which he completed last June and was immediately retained in their employ.

The electrical engineering department occupies a two-story stone building, 36x52 feet. The first floor contains the dynamo laboratory, the machines for testing the strength of materials and a steam engine. The second floor contains a class and drafting room, an arc light room, a battery room, a photometer room, and an office. Steam and electrical power are obtained from the main power house

The equipment of the electrical laboratory is very complete, with apparatus of modern type. There are two double current multipolar generators capacity 15 K. W. These machines may be driven by the 40 H. P. engine or by the laboratory motor, and may be used as direct current dynamos, as alternators, single, two or three phase as synchronous motors or as rotary convertors.

The two machines are also used for practice in synchronizing, and furnish alternating current for the induction motors, and for the mercury arc rectifier. For direct current work the laboratory contains in addition to the two generators, one Excelsion 15 light arc dynamo, connected to eight series-arc-lamps, arranged for testing purposes, one 15 H. P. Northern Electric Co. motor, one 10 H. P. Siemens and Halske motor and one 16 H. P, Western Electric Co. bipolar motor. Each motor is provided with a friction brake and other auxiliary apparatus for complete tests of the armature and field resistances of the megnetic distribution and leakage, and of the efficiency and regulation at different loads; one 6 K. W. Excelsion dynamo may be used as either a shunt or a compound machine and is driven by the 10 H. P. motor and arranged for testing purposes.

For alternating current work the laboratory contains, in addition to the two generators, one mercury arc rectifier, capacity 30 amperes at 110 volts; one 2 H. P. single phase Westinghouse induction motor with phase splitter, provided with a pony friction brake for efficiency and regulation tests at different frequencies and at different voltages; one 6 H. P. three phase General Electric Co induction motor, also provided with auxiliary apparatus for testing purposes.

A 150,000 volt testing transformer is used to test insulators for high tension transmission, and to test the insulation resistance of insulating materials.

There are six transformers, with capacities from 1 to 1½ K. W. and with different ratios. The transformers are arranged for testing the core losses, the copper losses, and the efficiency and regulation at various frequences and voltages. They are also used for practice in transformer connecting for different purposes.

A General Electric Co. Oscillograph, with photometric and tracing table attachments. is provided for investigating the wave forms of alternating and oscillatory elecro-motive forces and currents.

For general testing the laboratory contains one stationary lamp bank of 136 incandescent lamps, with a current capacity of 130 amperes at 110 volts; the lamps are arranged so that the current can be regulated within a small fraction of one ampere; four portable lamp banks of ten lamps each, arranged so that the lamps can be connected either in series or in parallel; one 900 Ohm iron wire resistance and five iron wire resistances for heavy currents, besides a number of rheostats, switches and circuit breakers.

The laboratory contains twenty-nine electrical measuring instruments, including nine voltmeters; one Whitney 150-300 volts; one Whitney 15 volts; one Weston 150 volts; one Weston milli-voltmeter; one Weston 75-150 volt A. C.; one Westinghouse 150 volts switchboard voltmeter.

There are eight portable ammeters; one 5 ampere D. C. Weston, three Whitney ammeters, capacity 10, 25 and 50 amperes, D. C., respectively; two Hoyt's A. C. ammeters, 10 and 30 amperes respectively; one G. E. ammeter with series transformer, 120 amperes A. C.; and one Westinghouse ammeter, 120 amperes.

The department has four portable wattmeters; one Westinghouse, with series transformer, capacity 100 am-

Continued on last page of Supplement

History of Electric Club

Oldest Student Society of the College---It's Object and What it Has Accomplished.



In May, 1907, a branch of the American Institute of Electrical Engineers was established at the college but as this did not necessarily include all those registered in the Electrical Engineering course, a society was organized in connection with the branch, the membership being composed of students enrolled in the Electrical department. This society was given the name of "Electric Club."

The obect of the society as taken from the constitution, "shall be for the advancement of the theory and practice of Electrical Engineering and the maintenance of a high professional standing among its members." The membership of the society is designated as active and Honorary members, an active member being a student regularly enrolled in the Electrical Engineering course, and an honorary member a person of acknowledged eminence in the profession.

Mr. Irvin Mountjoy was the first president of the Electric Club and the membership was 40. Since the club was organized it has always been very active, at one time being the only society in the institution that held regular meetings. The membership of the club is now something over 100. Among those who have addressed the club from time to time are such prominent men as Mr. Rosenblatt, of the Westinghouse company, Mr. H. H. Cochrane, of the Butte Light and Power Co., Mr. Siegfried ,of the Missouri River Power Co., and Mr. Chas. Zahm, of the Interstate Independent Telephone Co.

It is customary for the club meetings to be thrown open to discussion at close of the lecture. In this way the meetings are made of double value Besides these lectures, one meeting each year, usually in the spring, is given over to a visit to the Madison River Power Co.'s substation. Mr. Livingston, the local manager, very kindly extends us this privilege besides sending an engineer along to explain the apparatus.

Now that the Gallatin Valley Electric R. R. is completed we also have opportunity to visit its boosting station east of the city. A visit to these places is of much practical value.

The Electric show, which has been a yearly occurrence since 1908, is held under the auspices of the Electric Club. This event is an exhibit of the apparatus of the department besides demonstrations of interesting electrical phenomena in general and many electrical novelties. The first show was held in May, 1908. Two shows have been held since then and all three have been brilliant successes and all who have devoted their time to the desired out come have been amply repaid for their efforts. Both Mr. Livingston and Mr. Spieth, of Bozeman, deserve a great deal of credit for their part in making these shows possible in the way of loaning apparatus, etc.

This much of the year 1910-1911 has been one of much interest to the members. The first meeting of the year was given over to reorganizing the society under the new officers, and such other business that came up. The second meeting listened to a lecture on the "Economics of Engineering Promotion" by Pres. Hamilton, which was a very interesting and instructive address. At the next meeting Prof. Perrine presented an interesting article on "Telephone Systems of To-day and Some of Their Properties." Prof. Thaler was the speaker of the day at the last meeting. The alloted time was given to a demonstration of "High Voltage Phenomena" and every one went away with a much clearer conception of the causes of some of the freaks of lightning discharges and how they are guarded against by power companies.

An Ancient Enemy.

"Say, Charley, there is no use talking, I'm for selling this old power plant and starting in new again at our old business. We are offered a pretty fair price, that is, for a plant that isn't making a red cent of profit."

"No, it is not a good price, John; but I guess we are getting to old to run the business right. Either that or else—John do you think there is anyone tapping our lines? I have thought of that lately. It looks to me as if we are generating much more power than we are being paid for."

"I have thought of that, too, Charley, but I hated to speak of it."

'Well, I'll tell you what we had better do. Read this advertisement. He handed his partner a copy of the "Engineer." The ad. he referred to was a small block in the center of the page which read:

ERNEST G. WILSON,
Specialist in Power Plant anagement.
A Detective of Lost Power.

John read the ad. and said: "That's a good idea, Charley. We'll just get that fellow here and see if he can locate our trouble. 'A detective of lost power'—that's what we need Charley, I believe."

So they notified Mr. Wilson of their trouble and requested that he visit their plant. A few days later he arrived; a strong, quiet looking young man, who immediately inspired the respect of the owners of the plant.

As soon as he reached the office he expressed his willingness to begin at once and stated his terms. They were accepted and John told him of the condition of the power plant.

"Our profit has been gradually decreasing, notwithstanding the fact that we have been doing more business than ever before. We are merely making expenses now. Charley and I have come to the conclusion that someone is either tapping our lines directly, or has tampered with our meters. That is what we want you to find out."

"Very well," Wilson replied. "I suppose you have the ordinary testing instruments. That is all I shall require at present. Today I shall simply make a general survey of your works."

The partners were well pleased with

Continued on last page of Supplement

PROF. THALER

Head of the Electrical Engineering Department.

Prof. J. A. Thaler is a graduate of the University of Minnesota, having taken the degree of Electrical Engineer with the class of 1900. After graduation, he was elected to the chair of assistant professor of mathematics at his Alma Mater. This position he held for one year when he chose to cast his lot with the Montana State College as assistant professor of mechanical engineering. After serving one year in this capacity he was granted a leave of absence for a year, during which time he was connected with Purdue University. In the fall of 1903 the leave of absence expired and Prof. Thaler returned and took charge of the Electrical Engineering department, the position which he now holds. Prof. Thaler is associate member of the American Institute of Electrical Engineers, Member of the Society for the Promotion of Engineering Education and a member of the Montana Society of Engineers. The present high standing of the course in Electrical Engineering is due in no small measure to his untiring efforts.

Prof. Thaler is one of the most popular members of the college faculty. He is always ready to enter into the spirit of a joke and can appreciate a good one even though it be on him. He says he was a "rah rah" boy himself once and that, no doubt, has something to do with his good natured disposition.

Prof. Thaler has held the position of



president of the Bachelor's Club for a number of years but found it necessary to resign from that office during the Christmas holidays owing to the blossoming forth of a matrimonial idea that had taken root, unnoticed, in the secret recesses of his brain. On the 29th day of December last, the words were spoken that caused Miss Mabel Thorpe of the city to become Mrs. J. A. Thaler. Mr. and Mrs. Thaler are now living in their cozy little bungalow on third avenue. The Prof. has that smile that "will never come off" allright enough.

—o—

R. B. Barnard and Chas. Henderson who are taking the apprenticeship course at the Westinghouse Electric Co., write that they are still alive and able to go some. Last fall the boys sent their regards to the bunch in the shape of a box of Pittsburg stogies. They are well pleased with their work and from time to time send papers on different kinds of apparatus to be read before the Electric club.

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Those who had charge of the editing of this issue of the Supplement take this opportunity of expressing their appreciation of the valuable suggestions offered by the editor of the Exponent, Mr. Chas. H. Draper.

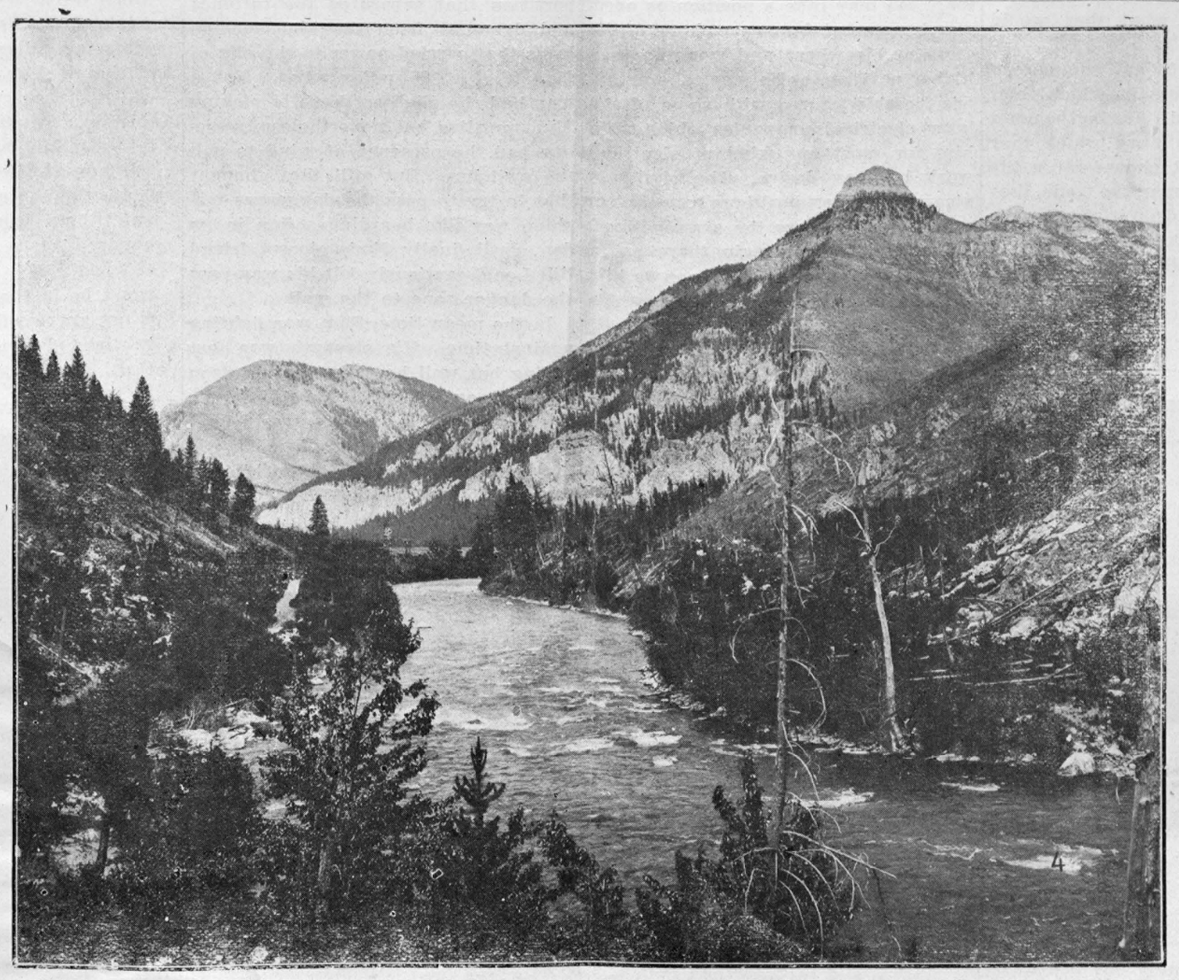
—o—

Earl Wilkin, ex-'11 is now enrolled in the apprenticeship course at the Automatic Electric Co.

—o—

A LAY OF ANCIENT ROME.

Oh, the Roman was a rogue!
  He erat was, you bettum;
He ran his automobiles,
  And smoked his cigarettum;
He wore a diamond studibus,
  And elegant cravatum,
A maxima cum lande shirt
  And such a lovely hattum.
He loved the luscious hic, haec, hock,
  And bet on games and equi;
At times he won, at others, tho',
  He got it in the nequi.
He winked quo usque tandem
  At puellas an the Forum,
And sometimes even made
  Those goo goo oculorum.—Ex.



On the West Gallatin Near Bozeman.

The Weekly Exponent
Monthly Supplement

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THE PROBLEM OF THE ENGINEERING GRADUATE.

One of the difficulties encountered by the engineering graduate in making a decision as to his life work is that the conditions are not very definitely understood. The case may be likened that of a high school graduate were he to try to decide what elective work he should choose all through his coming college course. He does not know the meaning of the different subjects. It is the experience of many young men who have chosen a graduate apprentice course in a manufacturing company to find after a year or so that their ideas undergo a very considerable change . They discover new fields of interest and of value of which they had had scarcely a conception. They assign new values to knowledge and to experience. Matters which had seemed of small moment they find are being given first consideration by men of mature experience. One young man told me recently that he thought two years ago an apprentice course was the thing to take if he could get nothing else, and so he took it. But now he considers it fortunate that no more alluring prospects greeted him upon graduation. The difficulty was that he did not understand concretely what such a course really meant and was unable to put a proper value on a post-graduate course in practcial service, where at the same time he could work, learn and progress.

Some graduates take a post-graduate course to get an advanced degree; others accept fellowships and devote themselves to research. The courses offered by large manufacturing companies are somewhat similar in being post-graduate courses, but they are courses in practical affairs in which the man does not aim to acquire more theory, but comes in contact with a great variety of commercial apparatus which he studies from the standpoint of design, of construction, of performance and of application. His theoretical training is not made the basis for higher abstract theory, but for understanding the operation of commercial apparatus and for studying at first hand the products of the foremost engineering minds. This useful technical knowledge, combining both the theoretical and practical, becomes a substantial basis for his future work in whatever department of his profession he may enter. Furthermore, among the actual surroundings of manufacturing and commercial life, he is learning to do by actual doing. This course bridges over the chasm between school life and practical life often pointed out by men of mature experience, but rarely comprehended by the student.

Each of the large electric manufacturing companies, with its course, including hundreds of graduate students, is affording a training in electrical engineering which in amount and importance is contributing more than any engineering school in the country towards the development of electrical engineers. The importance of such a course is becoming better understood both by the companies themselves and by the professors of electrical engineering and by the graduate students. To some, such a course with its somewhat strenuous requirements and its lesser pay than can at times be secured elsewhere, is looked upon as a hardship to be avoided, but on the other hand the better students are coming to look upon it as an opportunity which they cannot afford to miss.

The necessity of reproducing in the training course itself the typical conditions of the professional and commercial life for which it is a preparation is well illustrated by an analogous condition referred to by Dr. Geo. Kerschensteiner in an excellent paper on "The Continuation Schools of Munich" presented in the auditorium of the Engineers' Society building in New York, on December 8, 1910.

"I am told that there is a swimming school in a certain city where youths are taught to swim without going into the water, being repeatedly drilled in the various movements which are necessary for swimming. When one of the young men so trained was asked what he did when he got into water he laconically replied "sunk." The story happens to be true; were it not it would seem to be a fable mede expressly for the purpose of typifying the ethical relationship of school to society. The school cannot be a preparation for social life excepting as it reproduces, within itself, typical conditions of social life."

CHAS. F. SCOTT.

(Taken from the Electrical Journal.)

—o—

TO THE HIGH SCHOOL STUDENT.

When a student graduates from high school, he seldom has a definite and clear idea of what he is going to do in the future. A great many have an idea they would like to attend college. For some this is a hard proposition, not only financially but also in regard to what they would take at college.

A great many follow commercial work or the business in which their fathers are engaged. During summer vacations many do work which they probably would not choose for a life work, but after learning the trade, they feel they could not drop it after graduation from high school to put in four or five years at college. If, however, they do decide they would like to go to college, the question arises what course to take.

In all probability they will decide on engineering or agriculture, because they are the best developed courses to be found in this state, and which they understand perhaps more clearly than most any others.

After graduation from high school the student will probably pick up a college catalogue, copies of which are sent out to all high school students, and glance through it. Aside from pictures, the courses outlined are practically meaningless to him. If he should decide on Electrical Engineering and look over the list of subjects in the four years' work, he would have a very vague idea, if any at all, of what he would be fitted for upon his graduation from college.

This is what the course in Electrical Engineering is designed to do. Not to make him an expert engineer upon graduation, but to give him the training that he may fit himself for such a position.

During the first two years of his college course he has very little to do with electrical subjects. But he is given Chemistry, Physics, Trigonometry, Analytical and Descriptive Geometry, Calculus and English, and other minor courses which are fitting him for his next two years.

He is also given two years of work in the shops, including wood, forge, foundry and machine work.

In his junior year, he will take up direct currents. He will be in the laboratory making practical tests on the direct current machinery. Then he will also be required to make designs of direct current apparatus, in order to put his class room work to test.

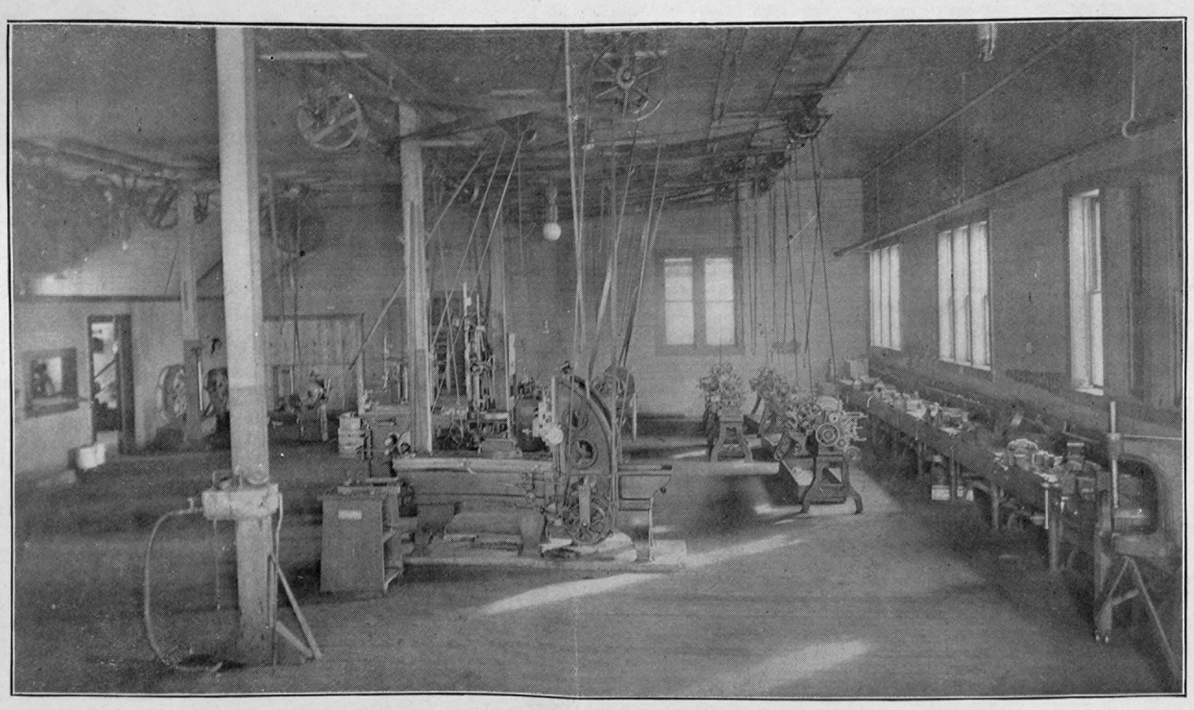
In his senior year he will take up alternating currents, with design and laboratory work. Besides this he will be required to complete a thesis or a certain amount of original investigation work. He is also given economics and a short course in business methods.

Now the question after explanation of the course is what does it fit him for? He may take a position os operator in some of the power plants of the state or elsewhere and work up to a higher position, or he may take an apprenticeship course with some of the large electrical companies which train him for most any kind of electrical work he may desire. The civil service offers many positions to technical graduates who pass the examinations.

But one thing certain there are a great many opportunities open to him that he could not secure without his college training.

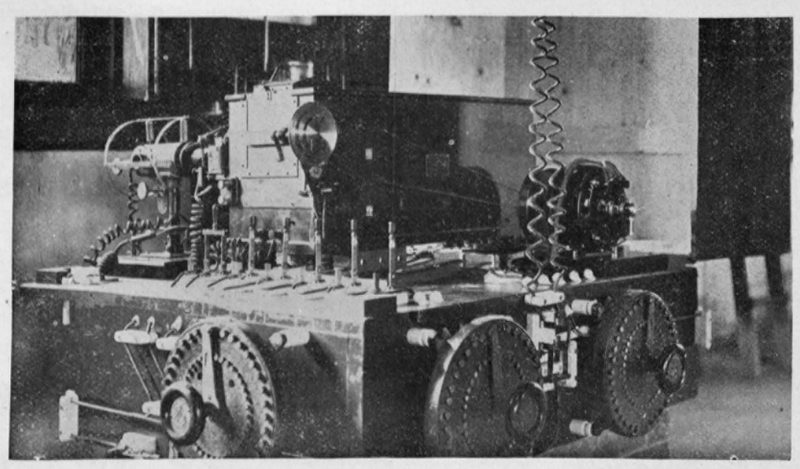
There are many high school students who feel they could not take a college course without working for their board or part of their expenses while at college. To these we might say that the college and the town people are very good in securing work for students and that a number of students are placed in such positions every year. He may also be sure that he will not be looked down upon for doing it, because he will find many more in the same boat with himself. During the summer vacations of his college career, he will probably find work along his line, as the different departments have many calls for students to work during the vacations.

This work gives him practice that will go hand in hand with his studies during the rest of the course.



The Machine Shops.

No college or university of the west has a better equipped Mechanical Engineering department than the Montana State College. This picture shows the machines used in metal work. In a cut on another page is shown the forge room. The students of the Electrical department have the privilege of selecting any work along this line, in addition to that which is required, that they may choose. This is an advantage our graduates have over the graduates of many other institutions. The wood working department is also well equipped, all of the machinery being strictly modern.



The Oscillograph.

The General Electric Co.'s Oscillograph is one of the most valuable pieces of apparatus in the laboratory. It is the only instrument of the kind between St. Paul and Seattle. Its use is to show the curve or wave form of an alternating current or E. M. F. as it passes through different circuits, as in transformers, alternators, induction motors, transmission lines, etc.

In this way it makes a very useful piece of apparatus for the engineer or one who is doing investigation work, such as is done in a thesis. This year a number of the Seniors will use it in their thesis work,

—o—

"SLIM JIM."

The men of the day shift at the big power house of the Mills River Power Co. were just sitting down to "mess" when a tall, slim youth entered the shack. He was of course told to sit down and have supper, a request that needed no repeating, for Jim Bartle had left home early that morning, and while he had been fortunate enough to get a ride part of the way on a farm wagon, he had hoofed it about 15 miles.

As soon as he had finished supper he enquired for the boss. Upon being made acquainted with that personage he lost no time in stating his business which was nothing less than a request for work. The first answer was an emphatic "no" but he put up such a plea that at last the boss consented to give him a week's trial although he was reluctant to do this. It goes without saying that Jim did his dead level b st to please and show his usefulness. At the end of the week he received no notice to call at the office nor did he get any encouragement from that direction.

At the end of two weeks he was still at work, but had been switched to the night shift. He had also become so popular with the men that they dubbed him "Slim" Jim." His popularity was due to the fact that he was always ready and willing to do what ever task was set before him and also because of his ready wit which kept the men in good spirits whenever in his presence.

On this particular evening, the night shift had just gone on duty when an accident occurred that made every man's hair stand on end. From the direction of the turbine room, came a terrible ripping sound as if the roof was being raised. Of course, all the men rushed there to see what the trouble was and they found out. One of the 5,000 horse power water wheels had gone wrong tho' not a man of them, save one, but was afraid to venture within ten feet of the monstrous machine. Well might they be afraid too because who could tell when it might fly to pieces and kill or maim for life. But Slim Jim, in the impetuosity of youth, saw an opportunity to do what he considered to be his duty, so plunged in, bent on shutting off the water that turned the wheel. He had barely given the valve wheel a turn when something struck him with such violence that he was thrown over the partition that separated the turbines and dynamos from the high tension leads that carried power to the city of ....., 25 miles away. Not a man had the slightest hope of picking Slim up alive but nevertheless, someone had the presence of mind to pull the switches. But still they thought that to try to pass the dangerous machine was like bearding a lion in its den, until finally Jim's closest friend Bill Long, cautiously felt his way past the danger zone to the wall.

In the mean time, Slim was fighting against time. His strength was fast failing but well he new that to drop meant an awful death. He yelled time after time but he could scarcely hear himself in such terrible din. He felt his fingers slipping and drew himself together for a final effort. Then everything turned dark.

Three hours later when he regained consciousness, he was surrounded by the day crew and the boss was sitting on the edge of the bed. As soon as they saw that he had awakened, they gave a rousing cheer.

Quite naturally Jim could not at first make out what it was all about but senses soon returned enough for him to remember something of what he had been through. Besides a few bruises, he sustained no ill effects from his experience. He is still at work at the same old stand, and is the most valuable man on the job with the exception of the boss, but his nick name has stuck with him through it all.

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ELECTRICAL FACTS.

What five cents worth of electricity will do at the rate charged in Bozeman. It will:

Saw 500 feet of lumber.

Run an electric clock for five years.

Warm your shaving mug every morning for a month.

Pump 100 gallons of water to a height of 50 feet.

Keep the coffee pot warm every morning for a week.

Heat a chafing dish for an hour.

Heat a pint milk warmer and food heater for 1 hour and 40 minutes.

Heat a quart food warmer for 50 minutes.

Heat a coffee percolator for 1 hour and 50 minutes.

Heat a 6 inch stove for 1 hour and 14 minutes.

Heat a 9x12 broiler for 25 minutes,

Heat a curling iron for 65 minutes.

Heat a heating pad for 82 hours.

Heat a 3½ pound flat iron for 1 hour and 40 minutes.

Heat a six pound flat iron for 50 minutes.

Heat a 7inch frying pan for 50 minutes.

Heat a waffle iron for 45 minutes.

Heat a tea kettle for 45 minutes.

Heat a 2 pound soldering iron for 45 minutes.

Heat a doctor's sterilizing apparatus for 25 minutes.

Heat a bathroom radiator for 25 minutes.

—o—

THE LIGHTNING AGE.

What's the world a'comin' to, a feller'd like to know,
When they're makin' ice to order an' manufacturing snow;
And now as if to vex us something new we hear—
They's makin' rain in Texas without a word of prayer.
The cities—they're gone out o' sight, it feels just like a dream,
For when they have a cloudy night they run the stars by steam!
And here's the lightnin' with a song procliamin' man is boss,
And all the street cars skimmin' 'long, without a mule or hoss.
And here's that ringin' telephone which never seems to tire,
But takes a man's voice free of charge across six miles of wire.
And here's the blessed phonygraf, which makes your memory vain,
An' like a woman, when you talk, keeps talkin' back again!
I 'd: how the world is movin' on beneath the sun and moon!
I can't help thinkin' I was born a hundred years too soon.
But when I go—praise be to God -it won't be in the night,
For my grave will shine like glory in a bright el ctric light.

—F. L. Stanton in the Electric City.

Electrical Alumni and ex-Students

LEE WILLIAMS, '02.

Mr. Williams is county surveyor of Powell county and city engineer of Deer Lodge, Montana.

W. F. SLOAN, '03.

Mr. Sloan has an important position in Wisconsin, being electrical inspector for the state railroad commission and W. B. S. A. of Wisconsin, at Madison, Wis.

CLYDE C. PENWELL,

'06 in Mathematics; E. E. '07.

Mr. Penwell completed the appretice course of the Westinghouse Co. and is still in their employ. After graduation he took a graduate course in Cornell University.

HAROLD BAKER, '07.

Since graduation Mr. Baker has been in the employ of the Butte Electric and Power Co. He is now night foreman of the Butte sub-station.

HAROLD FLAGER, '07.

Quite a number of our graduates have gone to the Pacific Coast and Mr. Flager is one of the number, being electrical engineer in Seattle, Wash., at the present time.

WARREN GRIFFITH, '07.

For about three years Mr. Griffith has been in the employ of the Washington Water Power Co.

FLOYD LORENTZ, '07.

After completing his work here Mr. Lorentz went to Pittsburg for one year where he took apprentice work. He then returned to Montana and until recently was employed by the Butte Electric and Power Co. He is now electrical engineer in charge of the Keating mine at Redersburg, Mont. Last Spring Mr. Lorentz presented a thesis, "The General Equation for the Design of Transformers," which was accepted and he was granted the degree of E. E.

CLYDE W. PENWELL, '07.

Mr. Fenwell is half owner of a telephone company in Larned, Kansas.

IRVIN MOUNTJOY, '08.

Mr. Mountjoy completed the two years apprentice work of the General Electric Co., at Schenectady, N. Y. last spring and since then has been in their employ.

CHAS. FISHER, '08.

After leaving the Montana State College Mr. Fisher took graduate work at Cornell University. Upon completion of that work he accepted a position with the Washington Water Power Co., of Spokane, Wash.

O. S. PETERS, '09.

Mr. Peters graduated from the department of electrical engineering at M. S. C. and the following year was elected assistant in E. E. at his Alma Mater. This position he held for one year at the same time doing some graduate work. Last spring he passed a civil service examination and received the appointment in June of assistant physicist in the Bureau of Standards at Washington, D.C. He still holds that position.

DONALD BUTTER, '09.

Mr. Butter is another one of our graduates who went west upon leaving school. He is connected with the Washington Water Power Co., at Spokane.

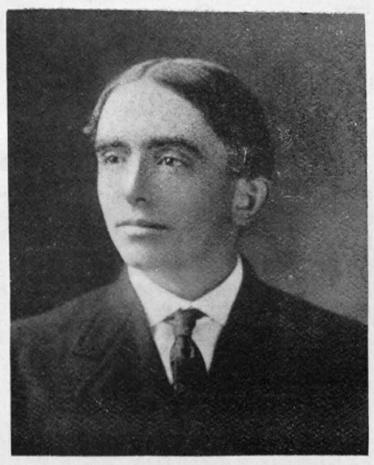
BERT S. HINDS, '09.

Before entering college, Mr. Hinds was in the employ of the Madison River Power Co., and went to work for them again when he graduated. He is now superintendent of the Company's Madison River plant near Norris, Mont.



College Power House.

J. C. Parks is the engineer at the college power and heating station. The Mechanical and Electrical engineers are required to take a semester of Power Plant Practice under his instruction. The name of the course is somewhat deceiving however, as it simply means shoveling coal and tending to the engine and dynamo. However Parks is a good fellow and a good man in his line of work and makes the course as interesting as is possible. Whenever the thermometer goes below zero, Parks gets lots of evertime work, but he always manages to have the buildings warm.



O. S. PETERS.

O. S. Peters, '09, was one of the most conscientious students that ever enrolled for college work. He entered when his class was in the sophomore year, having taken work in Highland Park College, Des Moines, Iowa. He made himself prominent in such college activities as the Exponent, oratory, etc. Was editor of the Exponent for two successive years and of the '09 Junior Annual.

That he has made good is self evident from the following letter:

The following is a letter which Prof. Thaler received from Mr. O .S. Peters, '09, who holds a position in the Bureau of Standards at Washington, D. C.:

Washington, D. C., Aug. 16, '10.

Mr. J. A. Thaler,
Bozeman, Mont.

Dear Sir:

It is about time for you to return from your eastern trip so I will scratch you a few lines to let you know how I am coming on. I arrived here on July 1st, and went right to work and have been at it pretty steady since.

In company with a few other people I am working on the electrolythic effect of stray currents on water pipes, reinforced concrete, gas pipes, etc. We are also working on corrosion of reinforcing steel in general, and I am the concrete man. We have abstracted all the articles on the subject of electrolytic and other corrosion that bear on the particular subject in hand along with a number on the chemistry of electrolysis, etc. It is also my job to outline the experiments for beginning the tests and design the cases to hold them. The apparatus is not ready yet and the bosses are all away so the experiments will not be started for a time. I am reading up on concrete in general just at present.

The Bureau of Standards is quite a scientific institution when a fellow gets up here where he can take a close look at it. Some of the apparatus is wonderful to behold. The buildings are not large, two of them are 60x160—4 stories and basement, one about the same floor area, 3 stories and basement and one about the size of the stone building at the college, where the low temperature work is done The two larger buildings contain the physics, chemistry and testing materials while the next smaller holds the power plant, machine shop, instrument testing and photometry. Everything is right up to the mark with very elaborate electrical connections, brine pipes, heating facilities, etc., in each building. About 165 people are employed and 80 to 85 per cent of them are technical graduates and university men. The place has much the atmosphere of a college about it.. Graduate instruction in various subjects is given by lecturers from John Hopkins University, the Bureau and other places and the work is accepted at Harvard, Yale and such institutions toward Dr. and other higher degrees.

I am thinking of taking up a course in either the Mathematical Theory of Electricity and Magnetism, or Theory of Functions. Both courses are given two hours per week and the tuition is about $25, for what corresponds to a college year. Dr. Rosa, of the Bureau gives the lectures in Electricity and Magnetism.

We work seven hours per day and have Saturday afternoons off in the summer time. The bureau is located about four and a half miles from the center of the city to the northwest, and is in a quiet forrest with nothing to disturb the stillness. Washington would be a nice place to live if there were less "niggers". Every other person is anywhere from pale yellow to coal black. They are not very arrogant though, so I don't think I'll have to shoot any o fthem. At least I haven't shot any so far. They have a habit of crawling through windows after dark so it's hard to tell what will happen.

My appointment is probationary of course and I may get kicked out on January 1st, but I am going to sit on it as long as I can. Dr. Rosa is my main chief and he seems to be a pretty nice man to get along with. Promotions are reasonably rapid here so I guess I will stick around for some time. A fellow has a show of working up to $3,600 per year if he has the backbone in him, and a man can't do much better than that anywhere. People are coming and going here all the time.

I have been around some but most of the buildings are closed when I am off duty so I haven't gotten clear around. Have been anxious to go to the top of the Washington monument but it is never open when I am free.

Well, I will close for this time.

Sincerely yours,

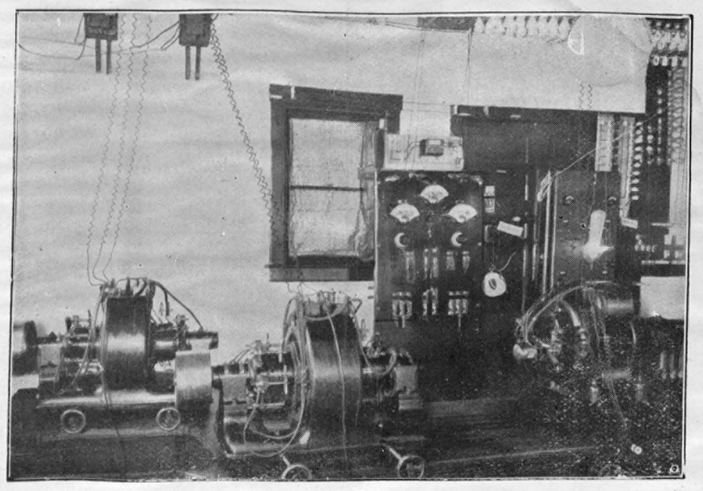
O. S. PETERS.

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INTER-SOCIETY DEBATES.

Last fall Prof. Duddy of the public speaking department, in order to increase the interest among the students along the line of debating, proposed that the different societies of the college should hold debates before the first of March and in this way decide the winning team.

The proposition met with the entire approval of all the societies and the engineers, the Arena and the Agricultural club, agreed to enter teams in the contest. Owing to the fact that there are two distinct engineering societies, the Electric club will debate the Civil Engineers' society and a team chosen from these two societies will represent the Engineers against the winners of the Aggie-Arena debate. The electric club will be represented in the debate with the Civil Engineers by Mr.Selmar Solberg, of Big Timber, and Mr. Alton Webster, of Bozeman, both being debaters of no small renown. The Electric club is sure of making a splendid showing with such men to uphold its honors. The subject of the debate is "Resolved that the Federal Government Should Exercise Direct Control Over the Development of Water Power," a subect of special value to the engineer.



Alternaters and Switchboard.

M. S. C. Branch of American Institute of Electrical Engineers

The American Institute of Electrical Engineers is the national society of the electrical engineering profession. Its object as stated in the constitution, is the advancement of the theory and practice of Electrical Engineering and the Arts and Sciences connected with the production and utilization of electricity and the maintenance of a high professional standing among its members.

In years the institute is the youngest one of the national engineering societies, being organized in 1884, but numerically it is the largest one, having over 6,000 members and in progressiveness the institute is among the most active ones of the national organizations; it has been an important factor in the advancement and development of electrical industries, and in the training of electrical engineers.

The headquarters of the institute are in New York City in the new Union Engineering building erected recently at a cost of $1,500,000 donated by Andrew Carnegie. The institute has sections in 24 of the large cities of the United States and Canada. and branches at 36 colleges and universities, our college included.

Regular meetings are held in New York and at the different sections and branches. Copies of the papers read at any meeting may be discussed by any or all the sections and branches, and such papers and discussions as the editing committee selects, are published in the monthly proceedings of the society.

The affairs of the institute are managed by a board of directors, assisted by a number of committees and perhaps the briefest way to indicate the scope of the society is to name the committees. The standing committees are similar to those of othe societies, viz.: Executive, Finance, Library, Meetings and Papers, Editing, Board of Examiners, Sections, Standards, Code and Law. The special committees at the present time are: Railway, Educational, Electric Lighting High Tension Transmission, Industrial Power, Telegraphy and Telephony, Electro-Chemical, Power Station, Conservation of Natural Resources, Membership, Intermediate Grade of Membership, Historical Museum, Relations of Consulting Engineers, Edison Medal, and the International Electro-Technical Commission.

The institute takes an active interest in engineering education. College students may enroll as student members of the institute and receive the monthly proceedings at a nominal rate. Both teachers and students are benefited by the discussion of institute papers at the college branches.

The organization of the Montana State College branch was authorized by the board of directors of the institute in May 1907 and the M. S. C. Electric club was organized including all electrical engineering students, since only juniors and seniors were student members of the institute.

The Montana State College branch is the only branch of the American Institute of Electrical Engineers in the States of Montana, North and South Dakota, Idaho, Wyoming and Utah.

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"What are they moving the church for?"

"Well, stranger, I'm mayor of these diggin's, an' I'm fer law enforcement. We've got an ordinance what says no saloon shall be nearer than 300 feet from a church. I give 'em three days to observe the law."

To promote interest in the reading and discussion of engineering subjects, the X. X2, X3 and Railway Clubs are organized and hold regular meetings. The club also manages excursions to the various plants, mills, mines and factories in the vicinity. A tennis club aids in recreation, and a game room, library, reading and lounging room afford good opportunities for passing away the time.

The life of the apprentice is on the whole not a bad one and the time passes quickly away, leaving him a varied store of experience that makes a splendid complement to his technical education.

F. S. LORENTZ, '07.

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"OTT WIRZE."

"Watt-hour you doin' there?" asked the boss.

"Eating currents" replied the apprentice shamefacedly.

"Anode you'd catch me at it.'

"Wire you insulate this morning anyway?" demanded the boss.

Leyden bed."

"Wouldn't that jar you? Can't your relay-shunts get you up mornings?"

"Amperently not."

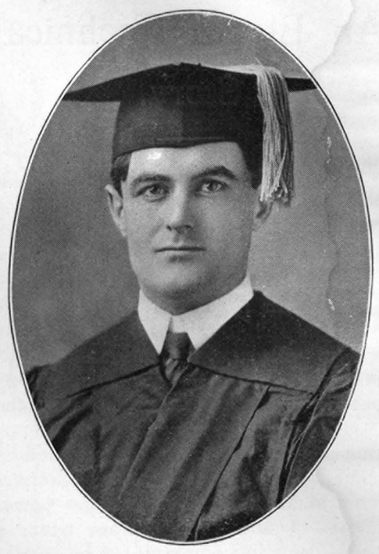
"Fuse going to do that every day you can take your hat and go ohm," replied the boss, and the circuit was broken right there.

Ambling Ike.—"Lady will you please give a gent something to eat?"

Lady.—What kind of work can you do?"

Ambling Ike.—"I am a lineman for a wireless telegraph company."

The electrical engineering students at Purdue University have recently completed a 200 000 volt transformer. The material used in its construction is part of that employed in the famous "million-volt" transformer exhibited at the Louisiana Purchase exposition in 1904 and later acquired by Purdue University.



BERT S. HINDS.

Bert S. Hinds graduated from the Electrical Department in 1909. He has since been employed by the Madison River Power Co., at their plant near Norris, Mont. Last summer Mr. Hinds was promoted to the position of foreman of the entire plant at Norris.

Before entering college he did a great deal of general electrical work. This made him an excellent practical man. During his college course he was one of the best students and was for one year President of the Electric club. Most all of the Machinery in the Electrical laboratory was installed and wired up by Mr. Hinds. Bert was always known as a good fellow and took a leading part in many student activities, one of which was Chief Goat Tender at the Annual Stag Parties. While in college Bert was known among the girls as an expert fusser. Last year he decided he could no longer live alone, so he acted accordingly. The Electric Club wishes him the best of luck and hope he wont forget his Alma Mater.

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ALUMNI AND EX-ELECTRICAL STUDENTS.

LISLE C. HENDERSON, '09.

Mr. Henderson is with the Missouri River Power Co., and is located at Canyon Ferry, Mont.

GUY W. KIRSCHER, '09.

At the last election Mr. Kirscher was elected county surveyor of Broadwater county. His office is at Townsend, Mont.

ARCHIE S. BROWN, '10.

The first three months after graduation, Mr. Brown was in the employ of the Minneapolis Transit Co. He is now doing construction work for the company of which his father is president. His work at this time is near Portland, Oregon.

R. B. BARNARD, '10, and CHARLES HENDERSON, '10,

Are in apprentice work for the Westinghouse Electrical and Manufacturing Co., of Pittsburg.

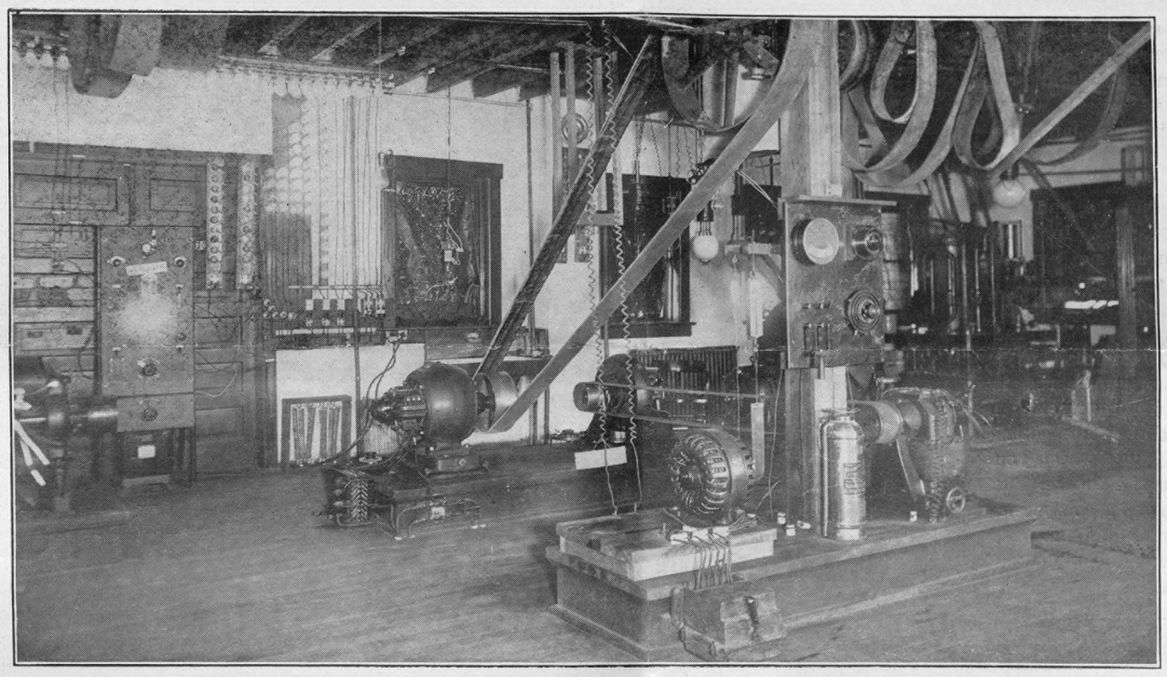
C. C. KENNEDY, '10,

Has been with the Butte Electric and Power Company, in Butte, until recently, when he was transferred to the company's plant on the Madison River, near Norris, Mont.

Ralph Boyles, ex-'07 is foreman of the repair division of the Pacific Electric Co. of Los Angeles, Cal. Mr. Boyles did not graduate although he practically completed the required amount of work.

Annis McLean, ex-'13 is now manager of the Norris-Bozeman Telephone Co., with his headquarters at Norris, Mont.

Jas. Wood, an ex-College student is an engineer at one of the mines in Radersburg, Montana.



A Corner of Electrical Laboratory.

The above cut shows a corner of the Electrical laboratory of the Montana State College. Another cut to be found in this issue shows another view of the laboratory and equipment. This is only a small part of the apparatus of the department. Up stairs is to be found the photometer room with its complete equipment for determining the candle power and distribution of light, the high tension transformer, a cut of which is shown elsewhere, the storage batteries, a mercury vapor lamp and wireless telegraph apparatus, a periodical case containing all the standard magazines of the Electrical profession, besides the drawing and class rooms.

A Course for Technical Graduates.

(From '08 Exponent.)

The apprentices with the Westinghouse Electric & Manufacturing Co. commence their course by reporting at the office of Mr. Downton, the foreman of apprentices. From here, after the customary red tape, the office boy takes them to their assigned places in the shop, where they are given a time-check, a few brief instructions, or probably none, and all is ready for actual work.

Usually an apprentice is placed as a helper to some regular workman, under whose direction he is set to work hammering, chipping and filing iron and steel castings, stacking transformer laminations, soldering connections, wrapping tape, making coils, winding armatures, wiring switchboards and assembling electrical apparatus of all descriptions, from switches to turbo-regular "hunkey" work and very disagreeable to the fresh graduate who is accustomed to nothing harder than "Alternating Current Phenomena," etc., while other parts of the work are highly interesting and instructive. The departments he passes through in doing this work are, street railway motors winding and assembling, small dynamo and motors winding and ascembling, locomotive cab assembling, turbo-generator, winding and assembling, induction motor winding and assembling, controller winding and assembling, wiring, transformer mounting and assembling, locomotive cab assembling, switchboard wiring and detail assembling. The time in each department varies from four to six weeks, so there is variety enough to keep even the disagreeable work from growing monotonous, and summing up the shop work as a whole the apprentice gets in a comparatively short time a wide and varied experience.

About three months of the course are spent in some part of the office: engineering, research, correspondence, or record and sales department. Here the apprentice learns the principles of design, the application of theory, investigates and makes demonstrations of new ideas and pieces of apparatus, and gets an insight into the manner of handling orders and the system by which a great company manages its work.

The last half of the course is spent on test. This consists of detail, sheet steel, fly-wheel, high-tension, bed-plate and dynamo test. This is the best and most instructive and interesting part of the work, and when it is done the course is finished and the apprentice is ready to go out on the road.

Incidental to the work of the course is the Electric Club which furnishes both social and intellectual diversions. It gives dances, smokers, concerts and entertainments, and has glee, mandolin and banjo clubs much the same as a college does and provides in a social way, as well as intellectual, a college atmosphere that is quite homelike. For the intellectual training it provides a lecture every Monday night by some engineer of the company on the subject of his specialty, e. g. switchboards, transmission, induction motors, etc.

An Irish soldier took sick and was reduced to a skeleton before he was allowed to return home.

"Well, I see your back from the front," remarked an old acquaintance, whom he met.

"Is that so?" queried the Irishman. "I knew I was awful thin; but I didn't know I was as thin as that!"



One Hundred and Fifty Thousand Volt Transformer.

The 150,000 volt transformer in the laboratory is used principally to test the dielectric strength of insulators and insulating compounds. The Butte Electric Co. used it to test a number of insulators made by different manufacturing companies, in order to find the best insulator for their use. The high voltage obtained subjects the insulators to the conditions under which they are to be used. The picture above shows Mr. Bert Hinds, '09, now foreman of the Madison River Power Company's plant at Norris, Montana, testing an insulator.

An Electro Technical Story.

One evening, in a western power house, I was operating the "grave-yard" shift after a strenuous two-hour peak load run, which taxed the capacity of the plant to its limit, and which kept me in a strained nervous state for fear of lightning or a breakdown.

As I sat in the lazy back chair, facing the switch board, soothing my nerves with the thought that the trouble was over, a sound of conversation reached my ears, and seemed to come from the direction of the exciters over at the other end of the power house. I got up and went over; a voice from the commutator of exciter No. 1 complainingly said:

"My fever is going up. The brushes bear too hard on me and they are not in the neutral zone."

I fixed the trouble and wondered if I were crazy, when exciter No. 2 spoke up and said:

"That generator over there thinks it is the whole plant, the two phased, inefficient thing don't pay interest on its cost, and uses twice as much wire as I would if I were in its place."

The big AC generator, No. 2, roared out:

"You children should be seen and not heard."

"Don't get excited," was the retort.

"How can I help it if you keep running on as you've done."

This silenced the exciters, but the two big generators began talking. No. 1 said:

"Why did you make such a fuss about going into the synchronous dance with me this evening? You I most threw me off my bed plate, and my laminations are humming yet with the jar you gave me."

"I don't like such fast company," was the reply. "Your speed was too high and the number of cycles you went through in a second made me dizzy. I could not keep up with you." Two of the arc lamps up near the ceiling winked at each other and chuckled.

"Well, I am not to blame for being swift. It is my governor's fault; his allowance is too liberal. You had better scold him instead of me."

"Say, do you notice how tight my exciter laces her belt?" said No. 2. "It will ruin her bearing besides keeping her in poor health. She has such a high fever nearly all of the time."

"Speaking of conduct, do you notice how well behaved those transformers are? Never a word of complaint, even when overloaded and probably boiling inside—they don't make a sign. They do as much work as we do and don't make half the fuss. Well, it takes all kinds of machinery to make a plant. Even lightning arresters—the spiteful things—if they did their duty, would save us a lot of trouble. Didn't it make you hot the other day when they let a discharge hit your transformers? It made the circuit breakers swear, and tho' they were quick to resent, being overloaded, they are very patient under ordinary conditions."

"Yes; it made me hot and I am afraid I ruined the insulation of some of my coils, because they are short-circuited now and are getting hot. If it should happen again I would have to go out. Say, which one of the operators do you like the best?"

The two generators and the transformers held a whispered conversation for a minute, then two of the transformers disconnected their high tension wires and grabbed me by the ears.

I saw lightning flashes, stars and comets for an instant and then woke up to find that I had been asleep and that the foreman and the floorman had connected my ears to the terminals of a testing magneto and had tried to ring the bell. That was the last time I slept at the board. —I. M., '08.

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AN ANCIENT ENEMY.

Continued from page 1 of Supplement

their detective. They were of the old fashioned type of self-made engineers. They had started out as small contractors and by their honesty and straightforwardness, had built up a considerable business. Then they had seen their opportunity in the building up of the electrical industry, and had invested all their savings and all the loans they needed in the building up and equipping of their steam power plant. The design of the electrical portion of the plant had been put in the hands of an expert; their own knowledge of electricity being only elementary. They attended the construction of the plant, and after it was fairly in running order undertook the management. They had built up a large business and with the exception of a few times when special machines had gone wrong, they had not employed an electrical engineer.

Now, after three years of steady running, the plant had begun to fail them, hence, the "detective."

At the end of the first day of general inspection, Wilson reported at the office. "I think I am on the trail of your power thief," he said. "I now desire that you give me entire control of the operating end of the plant. You attend to the business end. In about a week I think I can promise you that your business will be paying you a good profit again."

The partners rather doubtfully consented to put the operation of the plant in his hands. Wilson then continued: "I shall need another man or two to help me with the testing I am going to do. If I find any of your employees implicated I shall of course replace them."

"There is no danger of your finding any of them dishonest," he was assured by the partners.

Wilson at once set about a thorough test of the plant beginning with the boilers and engines, and ending with the consumers' meters. The boilers were cleaned and the engine valves reset. The comutators and slip rings on the generators were looked after and all the contacts in the switchboard and machines received careful attention.. Every meter in the plant was tested. One fireman was replaced for incompetency. In ten days Wilson had detected every leak, but he had not found the line "tapped." In fact, after the first day he had not expected to find anything of that kind.

At the end of the tenth day he reported at the office. "You will find that the plant is now running at a profit," he reported, "but there is room for much more improvement. I have made out a list of faults which I have corrected and points which you will have to watch in the future. But I would advise you to get a competent electrical engineer to handle this part of the work. You have built up a good business but your load is not distributed right. Only an engineer with you permanently can help you with that."

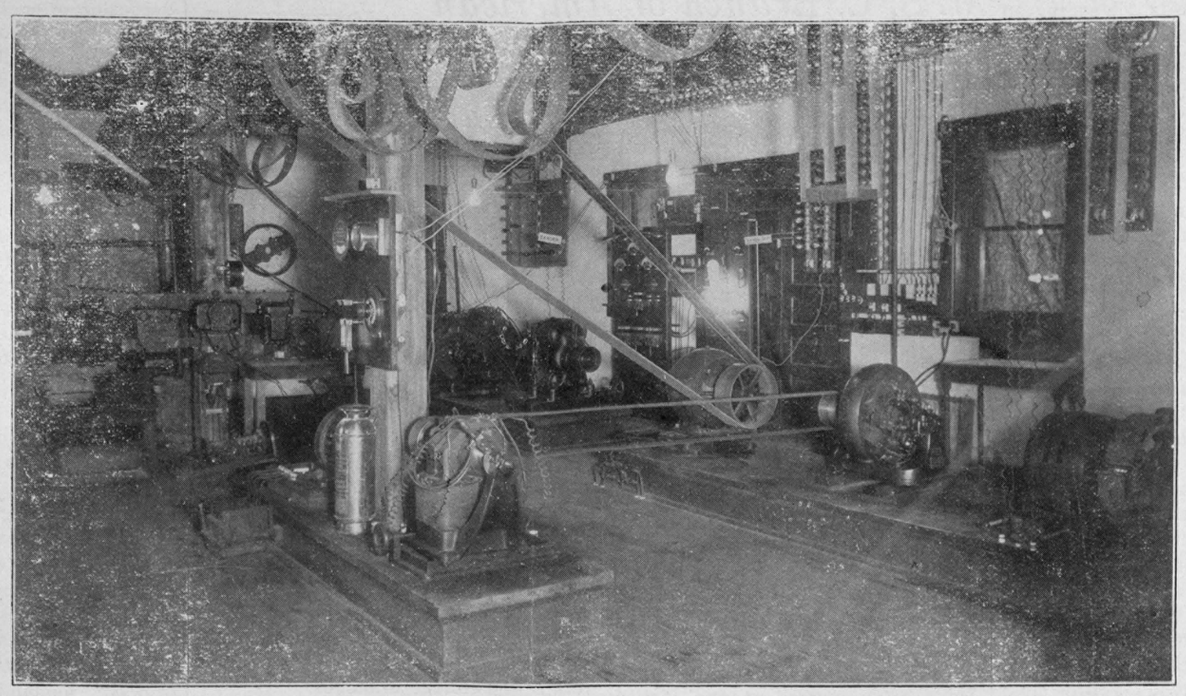
The partners listened carefully. When he had finished they exclaimed: "But didn't you find the thief? We thought—" "Yes, your power was being stolen—but it was by that ancient enemy of engineering—inefficiency." W. T. H., '11.

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HAPPY THOUGHTS.

Don't give up hoping when te ship goes down,
Grab a spar or something—just refuse to drown.
Don't think you are dying just because you're hit,
Smile in face of danger and hang to your grit.
Folks die too easy—they sort of fade away;
Make a little error and give up in dismay.
Kind of man that's needed is the man of ready wit,
To laugh at pain and trouble and keep up his grit.

—Louis E. Thayer.



View of Electrical Laboratory.

Electricity.

(From the "Electrical Year in Cartoon.)

January.

Electric shows are all too good to last,
Their fleeting brilliancy dazzles and is past;
But let all profit while the chance presents,
For else we are back numbers—times change fast.

February.

Old winter ushers in the virgin snows,
Alas! "The Beautiful", how black it grows.
The hyperberean mantle is defiled—
Unless electric power interpose.

March.

Soon some of us must wrangle over rent!
This month the arguments we should invent.
Electrical improvements pay their way,
And lessor and lessee are content.

April.

In these warm days the steam exhaust is waste—
Electric power should be installed in haste.
That money eating engine plant should go!
Economy demands it be replaced.

May.

The modern housewife smiles at memories grim,
Of struggles, past, to make her home look trim.
And 'Hubby" chortles in relief and joy
Remembering what "Spring Cleaning" did to him.

June.

When earnings barely serve to meet expense,
Commercial profits cannot be immense.
The small electric plant thrives ill at best,
And this is understood by men of sense.



You will readily discover from this picture that it does not trouble the electrical students "to become men among men." The man in "Wall Street" attire is "Slim Booker", one of the seniors, doing duty in the power house for the benefit of a little practical knowledge in the handling of steam engines and boilers. Clinton is by no means a slouch with a shovel either, as you can see from the pose.

July

The torrid heat of summer is a ban
That saps the vigor of the city man.
But what a blessing just to turn the switch,
And have a sea breeze from th' Electric fan.

August.

The comforts that make home a pleasant place
Are sadly missed when we're away a space.
And most of all, electric luxuries—
Ah! Could we have them, 'twere a different case.

September.

In that great school which all of us attend,
The school of life, wherein our lives we spend,
Promotion's quickest if we will apply
Electric methods to attain each end.

October.

Sometimes when ordinary routine cloys,
Electric novelties are like new toys,
Fit for the jaded of maturer years—
You know, the greatest men are just big boys.

November.

Athletic sports are roughest in the fall
When chill November witnesses football.
Some applications of electric heat
Might well be used to comfort one and all.

December.

In Christmas joy the year should terminate,
And Santa Claus will please "get up to date."
To young and old this principle applies:—
Electric gifts both please and educate.

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ELECTRICAL ENGINEERING.

Continued from page 1 of Supplement.

peres at 200 volts; one Hoyt, capacity 1500 K. W.; one Weston, with multiplier, 2 amperes at 2,250 volts; one G. E. Co. wattmeter, capacity 10,000 watts.

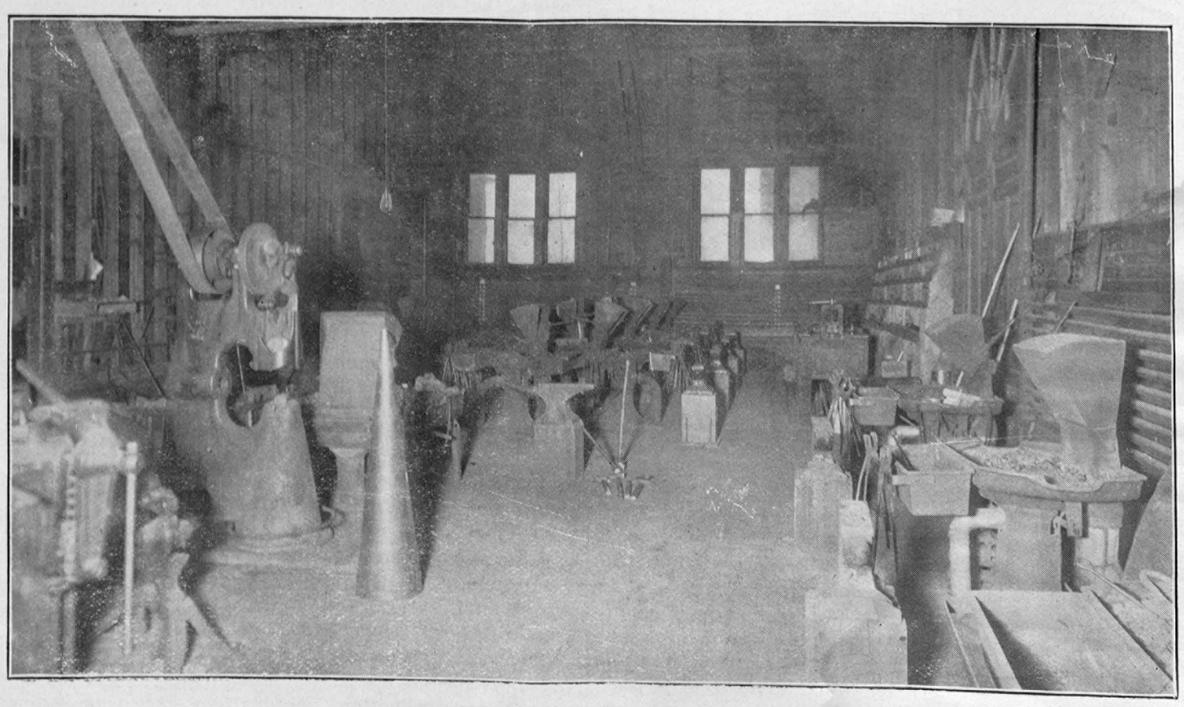
There is one Leeds potentiometer with standard cell and standard resistances for calibrating instruments; one Kelvin standard balance for calibrating watt meters; one Weston portable galvanometer; one Jacobi testing set for measuring resistances; and four integrating watt meters, potential arc lamps of different types, arranged for testing.

The arc light room contains eight series-arc-lamps and five constant potential arc lamps of different types, arranged for testing.

In the photometer room is a Willyoung station photometer with universal rotator and bunsen screen for testing the candle power, distribution of light, and the efficiency of incandescent lamps.

The battery room contains a storage battery of 56 cells at 60 ampere hours capacity, of the following types: 10 chloride accumulators, 10 National Battery Co.'s unit accumulator; 10 Willard cells and 10 American cells. The batteries furnish current for calibrating instruments and are also avaliable for testing purposes.

In the office is a 700-candle power Cooper-Hewitt mercury vapor lamp apparatus for calibrating instruments and wireless telegraph apparatus.



Forge Room

Thesis Subjects for Senior Electrics

This year there will be eight graduates from the electrical engineering department which is the largest class from that department in the history of the institution. Below is a list of the students and the thesis which each has chosen.

Each thesis must be satisfactorily passed upon by a faculty committee before the student is recommended for a degree.

EVERETT HAMILTON AND WILLIAM EDSALL.

"Comparison of the Mercury Arc, and the Electrolytic Rectifiers."

Among the other pieces of apparatus in the laboratory is a General Electric Mercury Arc Rectifier for changing alternating current into direct current. This will be investigated and the results compared with the like rectification by means of Electrolytic rectifiers constructed by the students.

ARTHUR WADE AND CLINTON BOOKER.

"The Design and Construction of a Three Phase Transformer."

paratus does not include a transformer for three phase, the several transformers all being single phase. Wade and Booker will make a complete design and from this design construct a transformer in the foundry at the college. The capacity of the transformer will be about 5 K. W.

SIDNEY A. WILLIAMS.

"Electrolytic Deposition of Copper."

It is known that a great deal of ore is of such low grade that it cannot be profitably refined by the usual methods. Mr Williams will make a scientific investigation of the refining of copper by means of electricity and determine if the method will be practical enough to warrant its use by the big companies.

H. S. PECK.

"Hydro-Electric Development of Mystic Lake."

About fifteen miles from Bozeman near the top of the Bridger range is a body of water known as Mystic Lake. At presentt the water from the lake is used during the summer for irrigation. However, the use of it to develop electrical energy has been the subject of considerable discussion. Mr. Peck, together with Mr. R. B. Williams of the civil engineering department, will determine the amount of power available from the several sources at hand, and make a complete report on the proposition including an estimation of the cost of development.

WM. HAINES.

"Investigation of the Rotor Current of an Induction Motor."

Mr. Haines will make an investigation of the wave form of the alternating current that drives the induction motor. This work will be carried on by means of the oscillograph, the description of which will be found in another part of this issue.

EDWARD M. ELLIS.

"History and Construction of the Storage Battery."

Mr. Ellis will take up the history and construction of all the different makes of storage batteries to be found on the market at the present time.

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ENGINEERING BUILDING WILL BE BUILT.

There is a bill before the legislature this session that bids well to become a law, for an Engineering Hall. The Senate committee reported favorably upon the bill and there is said to be very little opposition. Such a building has been needed for some time and all those interested in the welfare of the institution feel sure of a favorable outcome.

The specifications call for a $60,000 building. At present the plans call for an electrical laboratory on the first floor or basement, to be 35 feet by 70 feet, besides the water power laboratory which the electrical students who elect water power development have the use of. The two floors directly above will be devoted exclusively to class rooms and offices with the exception of a large assembly room to be used by the different engineering societies. This room, however, will be divided by a rolling partition by means of which it may be readily converted into class rooms.

The top story will be the drafting room. This floor is particularly well adapted for the purpose for which it is to be used on account of the skylights.

The electrical students are especially in need of a new laboratory and class rooms. The building which is at present used by the department besides lacking a great deal of being an imposing structure, is not nearly adequate. The apparatus is badly crowded and the most efficient instruction can not be given under such adverse circumstances.