

The M. A. C. Record.

VOLUME I.

LANSING, MICHIGAN, TUESDAY, JUNE 2, 1896.

NUMBER 20.

SPECIAL STUDIES FOR YOUNG WOMEN AT M. A. C.

MARY A. MAYO.

Since the inception of Michigan Agricultural College a few young women have been in attendance each year. As there has been no special course for them, they have bravely taken what was offered; pursued the regular course, with slight exceptions, and graduated with honors.

There has been a sentiment among the farmers, growing stronger each year, that the College should offer to their daughters just as good a chance for a practical education as to their sons.

The scope of the College has been and is to give to young men such a practical education as shall be the means of helping them to meet life and its work and meet it successfully. Just such an education has been desired for young women.

The action of the Board at its last session, in planning for such a course, has fulfilled the wishes of very many of its friends; broadened its plans for usefulness; and added, we believe, to its increased prosperity.

What shall be the special work for the young woman who may accept the advantages offered?

We believe that Abbot Hall as designated by the Board should be made a home for them, where a home life as largely as possible would be followed, with a competent matron who shall teach them how to become strong, wise, broad-minded women.

Let them have the regular course with a few changes. In place of agriculture, let Domestic Economy in all its branches be taught. Household Management, and the keeping of house accounts should be a part of the plan. The sewing for a family, including making of bedding and mending, might with profit be added.

Horticulture and Floriculture and Landscape Gardening, as parts of the regular course, are especially desirable for young women, while Dairying should be a main feature.

Painting, vocal and instrumental music, should be elective. The need is that all shall be practical, with the one idea of fitting them for life by teaching them how to live. Education is not a pouring in, but a bringing out; developing latent talent. Some times we find students full of knowledge but without the ability to apply it to any of the practical concerns of life that they have to meet. Such a fund of knowledge, aside from personal gratification is useless. Let our girls have a well developed mind, a strong body, every faculty trained to its best, a firm will and a skilled hand that shall do good service wherever they may be placed, coupled with a moral nature whose love of right and justice and adherence to all that is highest and holiest, gives to womanhood its crowning glory. Let this be something of the plan for our girls at M. A. C.

FOREIGN STUDENTS AT M. A. C.

At present no less than six European and Asiatic countries have representatives at M. A. C. Most of the young men who are here from foreign countries have come for the purpose of taking advantage of our superior educational advantages, and after completing their studies they will return to their native countries.

From Japan we have Frank Yebina, who graduated here last year and is now taking post-graduate work in dairying. Readers of the RECORD will remember his article on Farming in Japan, which appeared in two March numbers.

Vadim Soberninkoff comes from Siberia. He has been taking the mechanical course and has nearly completed his work. He has made a careful study of American machinery and when he returns to his home he will introduce there many improvements in this line. He has also contributed to the RECORD an excellent article, Russian Peasant Life.

John M. Barnay is a sophomore in the mechanical course, and a member of our editorial staff. Last term he contributed an article to the RECORD on Spending a Vacation. He comes from Austria-Hungary. Budapest being his native city.

Last term Francis E. Masson, a native of Athens, Greece, entered our College. Mr. Masson was born in

1878, of English parents. His father is in the insurance business in Athens. He first attended a private American school in Athens, then the Greek high school, and lastly the Greek college, preparatory for the university. He is somewhat of an athlete and would have entered the Olympian games for the one-quarter mile run had he not come to America. After spending two or three years in school here, he will go to France for a time and then return to Athens.

Herman Nelson is from Christiana, Norway, a graduate of the Christiana high school in '91. He entered our mechanical course at the opening of the present term.

Haratune Karamanian is an Armenian, and a graduate of the Bardizag American high school near Constantinople, class of '91. He has come to America to improve himself and, after completing his course of study here, will return to his country for useful work. He became a student in our agricultural course at the beginning of this term.

WHAT NOW SHALL BE DONE WITH OUR FORESTS?

ARBOR-DAY ADDRESS BY DR. W. J. BEAL.

[Concluded.]

Some years ago I expressed surprise to a citizen of Minnesota, that so young a state should make an annual appropriation of \$200,000 for the support of her university. How did you bring it about? Oh! we appealed to State pride, and told our people to see what Michigan had done for the cause of education. That appeal brought the money so much needed.

What shall we do or what should the citizens all over Michigan attempt in the interest of forestry?

1. Let us appeal to State pride. See what Wisconsin and Minnesota have done in attempting to save some of the young trees of their remaining forests.

Taxes may be burdensome, but when it looks as though a little money judiciously spent in caring for the forests of the State, would return or give to the State 50 to 100 times its value, it is folly to withhold a small tax.

2. By all honorable means, attempt to arouse an interest in the subject. No doubt it would be easier to interest farmers, had we been favored with much less timber when the State was new. Our timber then would have been more highly appreciated.

3. Let us work for the organization of a State forest commission, or some other association with money to support it well. Such a great work in various parts of our State needs a head to manage it. What can such a commission accomplish?

a. It could begin in the older portions of our State by carrying out a good suggestion of our Governor, viz.: That we cannot grow a good crop of timber and at the same time raise feed for cattle on the same land. Live stock of all kinds should be kept out of the woods if the farmer has any regard for the future welfare of his wood lot.

b. In the newer portions of the State, especially where pines and other cone bearing trees grow well, persistent efforts should be made to induce the clearing up of tops, and refuse timber, that the rubbish be not left till dry as tinder, to burn everything clean within its reach. This will prove no easy task, for the owners will claim that it is impossible and too costly. They want to be left alone, to get what they can, and leave the neighborhood to look out for itself. Back fire strips or roads in time of safety from fire.

c. Experience in many states has demonstrated that forest fires cannot be properly looked after without a well organized system of fire wardens. A forest commission with fire wardens is no longer an experiment. Its efficiency has been well shown in many countries.

d. Such a commission could see to it that the subject was properly presented at every farmers' institute in the State, for some time to come.

e. A commission would keep the subject before the country schools of our State. Prizes would be offered for the best essays bearing on topics pertaining to our forests. The proper celebration of Arbor Day would be encouraged.

f. Numerous notices for the press of the State would be prepared, bulletins issued and sent to those interested, or to those who should be interested.

g. The commission could encourage the location of

numerous forest reserves about lakes, the sources of streams, and other suitable places. Large quantities of stump lands which have reverted to the State for taxes are now in many instances burned over every year or two, and are becoming less and less valuable. A commission would most likely be able to prevent most of these fires and leave the lands to increase in value by growing trees.

h. Among other things, perhaps an energetic forest commission might induce the Agricultural College to introduce a short course, or a long course, on the subject of forestry and in the same connection create a demand for men educated in these lines. Young men here stand ready to pursue such a course just as soon as they can see money at the end of it.

In this connection, it may be well to call attention to the fact that M. A. C. is doing something to improve her forests.

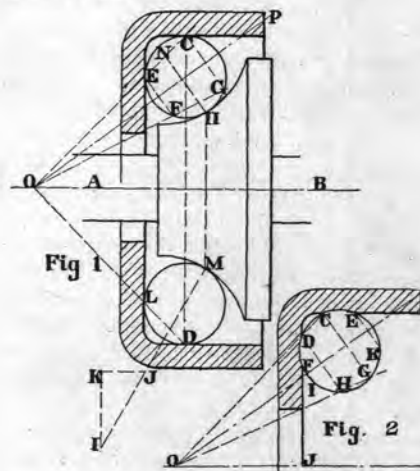
Intimately connected with this subject is the increase in numbers and good management of parks in the vicinity of every city and town, the improvement of highways by constructing a good roadbed and, by looking well to the trees, shrubs and other objects along the road side. In the same connection, permit me to call attention to the importance of improvements in planting and management of rural cemeteries. And finally, as our native trees and shrubs disappear, as the thickets are browsed by cattle, or killed by fires, as our swamps are ditched and plowed or burned over, a larger proportion of the most intelligent population exhibit a lively interest in forests and their care. No agricultural student of this college should be permitted to get far into his course without having his attention forcibly called to some of the most important problems connected with the forests of the State and nation.

A PROBLEM IN BALL BEARINGS.

A. L. WESTCOTT.

A correspondent of the American Machinist, discussing a ball bearing of the form shown in Fig. 1 in the issue of Oct. 17, 1895, stated in substance, that exerted by the ball on its bearing at C, and that, there-trolled by that point where the greatest pressure was exerted by the ball on its bearing at C, and that, therefore, slipping would occur at point E.

This statement is wrong, as the following analysis of the problem shows:



In Fig. 1 the ball is tangent to its bearing at points E and C. Through EC let a line CEO be drawn, intersecting the axis AB at O. Draw OP through the center of the ball, EF and CG perpendicular to OP, OFG, CD perpendicular to AB, and O D.

In OCG and OCD we have the projections of two cones that will roll together since they have a common vertex at O, and therefore the frustrum EFGC will roll on the frustrum ECDL. The bases CG and EF have rolling contact respectively with the bases CD and EL. Since the circumferences of CG and EF lie in the surface of the ball, it is evident that the ball will have the same motion in its bearing as that of the two frustra referred to. The ball then has pure rolling contact at both E and C, and rotates about axis OP.

The cone shown in contact with the ball at H will have pure rolling contact with the ball, as will appear if planes are passed through H perpendicular to the two axes AB and OP. These planes will cut circles

HM and HN from the cone and the ball respectively, which have a common tangent at H, and since these circles will both roll upon this common tangent, they will roll upon each other.

The pressure of the cone upon the ball is transmitted in the direction of the common normal, or along MJ. The diagram JIK shows JI, JK and KI as representing the relative pressures at points H, E and C.

This bearing will work with pure rolling contact, as shown, except the sliding between the balls, until the bearing becomes worn, as in Fig. 2, when sliding friction appears. Supposing the ball to roll in its bearing at points C and D, there will be sliding along the arcs CE and DE. At E the amount of sliding for each rotation of the ball is equal to the difference in length of the circumferences of circles CG and EK. At F the amount of sliding for each rotation is equal to the difference between the circumferences of circles DH and FI, multiplied by the ratio $\frac{FJ}{DJ}$.

Mechanical Department.

DJ

STANDARDS OF LENGTH.

C. E. MEYERS, '96 M.

Man, from the earliest times, has been accustomed to measure extensions. Every school boy knows the arithmetical table which begins with the line "three barleycorns make one inch," and from this he reasons that a barleycorn is one-third of an inch. But not everyone knows that nearly 600 years ago Edward II of England enacted that "three barleycorns, round and dry, placed end to end, shall make one inch."

It may be interesting to some to glance over the development of minute measuring, to see how such crude standards as the human foot and hand and the inch of Edward II grew into more exact determination from scientific research.

However good these crude standards may have been for practical use in former times, they are certainly useless in this day of exactness, when mechanics are often required to produce work which is accurate to the ten-thousandth part of an inch. Moreover, all measures derived from the above named standards were purely arbitrary, and, although sanctioned by law, no one of them if lost could be restored by reference to any of the others.

About 1670, Huyghens conceived the idea of using the pendulum as a means of obtaining a standard of length. Picard, in 1671, proposed the pendulum beating seconds of mean time as a unit, thus endorsing the plans of Huyghens. In 1669, Picard deduced the value of a degree to be 68,945 miles, by measuring the meridian arc between Paris and Amiens.

A unit consisting of 1-6000 part of a minute of a great circle of the earth, which would be nearly equal to our foot, was recommended by Cassini in 1718.

Talleyrand presented a proposition to the Assembly of France in 1790, in which he proposed the appointing of a commission to consult with a similar commission from the English government, to consider the subject of a uniform international system of metrology. He favored the length of the pendulum as a unit in preference to one obtained from a quadrant of the earth's meridian.

During the same year, Thomas Jefferson, as Secretary of State, was called upon by Congress to recommend a plan for establishing the uniformity of the currency, weights and measures of the United States.

He recommended the adoption of the second's rod of five feet, known as Leslie's pendulum rod, because of the liability of too great variations in the measurements of the previously mentioned pendulums and quadrants.

The exact length of Leslie's rod is 58.72369 inches. He proposed dividing this into five equal parts, calling each a foot, and each foot he would divide into ten equal parts to be known as inches.

The French commission, appointed in 1790, gave to the world, and to science, one year later, the length of the meter as 39.37 inches.

Just 500 years after Edward II made the standard of length to be equal to three barleycorns, George II declared that the yard stick of Bird should be adopted as a unit. Parliament passed an act on June 17, 1824, legalizing this standard. It reads as follows:

"Section I. Be it enacted that from and after the first day of May, one thousand eight hundred and twenty-five, the Straight Line or Distance between the Centers of the Two Points in the Gold Studs in the Straight Brass Rod, now in the Custody of the Clerk of the House of Commons, whereon the Words and Figures 'Standard, 1760,' are engraved, shall be and the same is hereby declared to be the Extension called a Yard; and that the same Straight Line or Distance between the Centers of the said

Two Points in the said Brass Rod, the Brass being at the Temperature of Sixty-Two Degrees by Fahrenheit's Thermometer, shall be and the same is hereby denominated the 'Imperial Standard Yard.'"

Section III of the same act provides for the replacement of the rod in case of destruction or injury. This was certainly a wise provision, for the first ten years after this it was destroyed by fire. It was replaced by comparison with five other standards. Its dimensions are, length 38 in., width 1 in., depth 1 in. Composition, copper 16, tin $2\frac{1}{2}$, zinc 1.

There is still another natural unit which has been suggested for a standard. It is the length of a ray of monochromatic light. No doubt this unit could be relied upon for small measurements, but for a practical standard of length, the multiplication of such minute units might produce errors in the total greater than is likely to occur from any of the other methods spoken of.

AT THE COLLEGE.

Prof. Holdsworth's father is making him a visit.

Mrs. P. M. Chamberlain is visiting in Three Oaks.

Miss Fay Wheeler has been on the sick list for a week.

Prof. Woodworth's sister Gertie is visiting at the College.

Mrs. Clinton D. Smith is in New York on a visit of a few weeks.

Applications for the stock advertised in the RECORD last week are coming in.

Mrs. M. L. Dean is visiting her mother in Grand Rapids for a couple of weeks.

Messrs. Newell and Hoyt visited the U. of M. machine shops on Friday of vacation.

A new case with 252 pigeon holes for RECORD exchanges has been put in the reading room.

Profs. Taft and Wheeler will deliver addresses before the State Horticultural Society at St. Joseph, June 10.

The Farm Department is putting in a "patch" of sunflowers to feed chickens and to put in the silo for cattle feed.

The Farm Department cut alfalfa for silage and hay May 23—four weeks earlier than usual. It yielded $1\frac{1}{2}$ tons per acre.

The State Board will meet next Monday evening in Kalamazoo and the following day will visit the South Haven sub-station.

The new visitors' register in the Museum has received about 175 names since May 15, although many visitors fail to register.

Miss R. M. Proud returned to College on Monday, the 25th ult., after a visit of four weeks with Mrs. Jessie Baker in Chicago.

Dr. Kedzie has presented to the Alumni Library a copy of Elements of Agricultural Geology, by Prof. Wm. K. Kedzie, '70, deceased.

Mr. G. H. True visited Northville last week to examine the Clover Condensed Milk factory and the pasteurizing plant connected with it.

Miss Miller, sister of our student, Geo. De Vere Miller, on her way from Ann Arbor to her home in Cadillac, visited at M. A. C. last week.

Ripe strawberries and green peas are earlier by four weeks than their usual season. Strawberries were ripe on the "Hort" May 20, and peas were picked May 27.

Hen house: 9:30 p. m.—seventy lively chicks inside, weasel outside; 6:30 a. m.—seventy dead chicks inside, weasel out of sight. This is the record of one night on the farm.

Field 16, that has lain in pasture for many years, is now plowed and cleared of rubbish and stones. It is partly planted to corn. A few acres on the west end will be sown to millet.

Church services at the College last Sunday were conducted by the Rev. H. S. Jordan. The Presbyterian male quartette and Mrs. Bush, organist, furnished very fine music for the occasion.

The grounds about the herdsman's house, occupied by Mr. Fulton, have been graded, seeded and planted with trees and flowers, at the suggestion of a member of the board to "make the place a dandy."

Last Friday evening Mr. and Mrs. C. S. Brooks gave a pleasant little party in honor of L. C. Brooks, '92 m, and Thorn Smith, '95. Games, music and refreshments were the features of the evening.

Prof. Barrows received notice a few days ago of his

election to membership in the *Societe Zoologique de France*. Fewer than half a dozen scientists of the United States have been admitted to this society.

Mr. C. F. Wheeler, with the assistance of two members of the sophomore class, is testing the recently published conclusions of Brefeld, regarding corn smut. Seven plots of corn have been planted for this purpose on the College farm.

H. W. Mumford represented B. A. Bowditch at the last meeting of the M. I. A. A. directors in Jackson. Several matters of minor detail were attended to. One thing which savors of improvement was the vote to exclude tin horns from the noise-making apparatus.

Mr. Brooks has just put 100 chicks in a brooder for a feeding experiment. They are divided into two lots of fifty each and will be fed different rations throughout the season to test best kind of food, expense of raising, and profit, if any, when sold at the end of the season.

The commencement contestants are as follows: Orator, L. D. Sees, Hesperian, P. West, Columbian, N. M. Morse, Olympic; debaters, B. A. Bowditch, Phi Delta Theta, L. S. Munson, Union Literary; declaimers, Miss Sadie Champion, Feronian, C. D. Butterfield, Eclectic.

The Michigan Engineer's Annual for '96, just published, contains some 25 papers on engineering topics, this College being represented in an article on the Mechanics of a Cream Separator by Prof. Vedder, and a discussion of Highway Bridge Construction by Instructor Pashby. The publication records the proceedings of the Michigan Engineering Society, and is edited by Frank Hodgman, M. A. C. '62.

The destruction of corn in field 6 offered an opportunity to call attention to the insects destructive to corn to the sophomores. Dr. Barrows kindly consented to explain to the class on Thursday, in student labor hours, the differences between the various species of insects that prey on corn, with the life history of each. On Friday, Dr. Beal spoke for a few minutes on rusts of wheat and rye. One of the features of student labor for the sophomores will be these short talks on topics which become important as the season progresses.

The College has received five diplomas from the World's Columbian Commission for exhibits at the World's Fair, as follows:

Models of fruits and vegetables.

Exhibit of Michigan soils.

Exhibit of fertilizers.

Exhibit of roots and Indian corn.

Collective exhibit of grains, grasses and seeds.

There is also a bronze medal awarded to each exhibit, and there are more diplomas and medals yet to come, which have been awarded to the College.

Memorial Day was appropriately observed at the College. After the military parade and review, the battalion marched to the chapel where services were held. The rostrum was occupied by President of the day, I. H. Butterfield, Rev. F. L. Thompson, and veterans of the late war, who were at one time students at M. A. C., whose war and College records will be published in the next issue of the RECORD. The orator of the day was Hon. Geo. A. Farr, '70, who was followed by Judge M. D. Chatterton, a member of the first class at M. A. C. Judge Chatterton related several incidents connected with the establishment and early history of the College. We hope to be able to give the address of Mr. Farr in full in our next issue.

An interesting experiment is now running for the third year on the farm. Two years ago J. W. Simcock, '96, began an experiment with two plots of orchard grass, each two rods by four rods, to see whether the greater yield could be obtained by pasturing or by cutting for hay. On one plot the grass was cut as often as there was sufficient grass to cut, and on the other it was gathered as hay would be. He found that the latter plot yielded more than twice as much as the former. This year the experiment has been reversed by cutting for hay on the plot formerly used in imitation of pasturing. Again the hay plot yields more than twice as much as the other. From an economic standpoint this would seem to argue against pasturing.

On Thursday, Mr. Norwood Bowers, of Stephenson, Menominee county, visited the College. He was the prime mover in organizing the farmers' institute in his county last spring. He speaks in unmeasured praise of the good effects of that institute, and the one which followed it last fall, on the agriculture of the county. He says it is little less than a revolution. Farms which heretofore did not pay expenses now

yield a surplus. Butter was a poor article and rejected by the stores. Now the quality of the butter is so much improved that it meets with ready sale in Chicago. Fruit raising was carried on before without spraying and at a loss. Now the farmers are treating their orchards intelligently and reaping the consequent reward.

AS OTHERS SEE US.

HEADQUARTERS, MICHIGAN MILITARY ACADEMY, }
ORCHARD LAKE MICHIGAN, MAY 20, 1896. }

President Agricultural College, Lansing, Mich.:

My Dear Sir:—I extend warm congratulations over the class of students you send out to play base ball. Your team met ours on the home grounds here yesterday, and we have never witnessed a more gentlemanly and manly game. Although not the victors, your team won a signal victory in the way of exemplary conduct and gentlemanly behavior that did credit to your school and is an honor to all who engage in the national game.

With kind regards, I am,

Very truly yours,
J. SUMNER ROGERS,
Superintendent.

At the opening chapel exercise President Snyder read the above letter, commenting upon which he said that it pleased him to have the boys play winning ball, but while they had not always won he was very glad they had at all times shown themselves to be gentlemen.

JUNIOR ANNUAL.

It has been decided that the class of '97 will publish an annual, and if the plans made are carried out it will be worthy of their best efforts. Among the many good things planned for in this annual the following are of interest: History of the College with views of the grounds, by Dr. Edwards; short biographical sketches of all members of the faculty and of the instructors; a picture, roll, and history of each class; a picture, roll since organization, and history of each literary society and fraternity; sketches of all College organizations; M. I. A. A. and local field-day records, and many other items of interest, besides a deal of mirth. The Board of Editors are as follows: E. Dwight Sanderson, editor-in-chief; W. R. Goodwin, business manager; I. L. Simmons and John Goodrich, assistant business managers; C. B. Laitner, society editor; S. J. Redfern, athletic editor; L. S. Munson, class editor; Elwood Shaw, literary editor; J. A. Elliot, humorous editor; C. D. Butterfield, local editor; S. H. Fulton, historical editor; F. W. Kramer, illustrator.

NOTES ON THE A. S. M. E. MEETING.

P. M. CHAMBERLAIN.

The regular meeting of the American Society of Mechanical Engineers was held May 19th to 22nd in St. Louis, Mo. Among the professional papers presented possibly those of paramount interest to the readers of the RECORD were as follows:

"Strength of Cast Iron," by Mr. Wm. J. Keep, Detroit, Mich. Mr. Keep has for several years been carrying on experiments with cast iron, to determine if possible the relation between the physical and the chemical attributes. The strength of cast iron is so variable with different mixtures of ores, sizes of casting and conditions of pouring, as to have driven the engineer when designing for strength into using either wrought iron or steel, as an excessive factor of safety if cast iron is used.

Silicon is, according to Mr. Keep's observation, the primary element in determining the character of cast iron, increasing the strength of small castings and decreasing the strength of large ones.

"The Efficiency of a Steam Boiler. What is It?" by Wm. Kent, New York City. This paper was brought out by another presented a year ago by Mr. F. W. Dean, at the Detroit meeting, criticising the society's standard code of reporting boiler trials. The objects of a test are to enable the owner of the boiler to know how much steam he can produce per pound of coal, as well as to compare the results with other tests, thus determining whether his boiler is working to its best advantage, and the comparative value of the coal for his use. The difficulties which these papers discussed are those which arise in getting results which are strictly comparable with previous tests made, with different percentages of moisture in the coal and different qualities of coal in different localities.

"Tests of a Four Cylinder Triple Expansion Engine

and Boiler," by A. H. Eldridge of Ithaca, N. Y. The test was reported in detail with photographic illustrations of the plant. The actual water evaporated per pound of coal was reported at 8.15 lbs and 1.902 lbs of coal per indicated horse power per hour of the engine when developing 476.1 horse power.

"A New Form of Steam Calorimeter," by Prof. R. C. Carpenter, of Ithaca, N. Y. Prof. Carpenter, so well known to all old students of M. A. C., is without doubt one of the largest contributors to the literature of mechanical engineering. The calorimeter described has been in use for about a year in the laboratories of Sibley College, for determining the quality of steam. The accuracy of the instrument was discussed and conclusions regarding the accuracy of calorimetry practice were drawn by the author from his experience.

"Superheated Steam," by Dr. R. H. Thurston, of Ithaca, N. Y. Prof. Thurston presented a long article in which he collates the opinions of authorities on the subject and treats the historical side of the question. In his summary he places the gain by superheating at from 10 to 50 per cent, averaging about 25 per cent. In conclusion he asserts that "this is today, the greatest of all problems presented the designing and constructing engineer, with the possible exception of that of finding a system of effectually rendering the interior of the working cylinder non-conducting. * *

"Hollow Steel Forgings," by Mr. H. F. J. Porter, of Chicago, Ill. Mr. Porter described the process of making hollow steel forgings as practised by the Bethlehem Iron Works of Pennsylvania, and illustrated the processes with a stereopticon. The process in brief is to cast an ingot, then bore or punch out the core where impurities gather, then insert a spindle or internal anvil and forge under a very heavy hammer or hydraulic press.

The local committee on entertainment made the occasion one long to be remembered. The sessions were held in the grand parlors of the Southern Hotel, and that quiet might obtain, the adjoining street was covered with tanbark to deaden the clatter on the pavement. Every possible attention was paid to the comfort of the visiting members. Excursions were arranged for the ladies of the party during the professional sessions and excursions for the entire party were made, one over the city by trolley cars to the beautiful parks, where carriages were in waiting to carry the party through. An excursion on one of the great river steamers to the new water works, Chain of Rocks. A dress reception by the citizens of St. Louis, at which was served a banquet. An excursion to inspect the system of Cupples Station, where more freight is handled than in any other one station in the world.

Last but not least was a visit to the Anhauser-Busch Brewery, where in addition to showing the visitors their magnificent plant, the owners set forth a sumptuous lunch, not however entirely of their own product.

Mechanical Department.

A VALUABLE SUGGESTION.

That our graduates are quick to make practical application of any chance circumstance will be readily seen from the following letter, from a well known alumnus, to Prof. Smith. This gentleman, when a student here, was remarkably free from annoyance by the festive fly; we judge so, at least, for he used to sing most vociferously, "There are no flies on us." But now it seems he has discovered a method of exempting himself from a similar annoyance while milking. He writes as follows:

"Dear Sir:—As an old student of the College, and being very much interested in everything that relates to the subject of agriculture, I write you.

"While a student I thought a great many times that in agriculture we did not receive as practical instruction as might have been given. Prof. Johnson told us all about how to ditch land, but of what practical value has that been for a number of years back? Prof. Davenport told us all about Lawes and Gilbert's feeding experiments, but last winter we fed just what we could get.

"Now, my dear sir, I have lately discovered something that I think will aid you in your future instruction. It is, how to keep cows from switching their tails in warm weather while milking them. It is very simple indeed. It is this, to have them born without tails.

"Last week we had a cow give birth to a heifer calf without a tail. Do you think this is caused by de-horning?"

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We gratefully acknowledge the reception of a copy of the report on the Agricultural College, made to the Superintendent of Public Instruction of the State of Michigan by the Board of Visitors for 1896, Messrs. C. A. Gower, of Lansing; R. M. Bates, of Hastings, and F. H. Stone, of Hillsdale. The committee has been earnest, conscientious, and deliberate in its work, and the report, an able, impartial, and thoroughgoing one, should be read by every citizen of the state.

With this issue THE RECORD makes its bow to a thousand or fifteen hundred new readers, whose addresses have been sent in to us by the beneficiaries from our seed-offers of some months ago. We greet you heartily, friends, and hope that our acquaintance may be long continued and mutually beneficial. Frankly stated, our object in sending you our paper is to interest you in the work of the College. You have sons and daughters to educate; we have a large, thoroughly trained, and enthusiastic teaching corps, an equipment unsurpassed among the educational institutions of the State, and courses of study carefully planned and accurately adapted to the ends you have in mind in the education of those boys and girls of yours. The State has provided all this for you; is it not the part of wisdom at least to make an effort to discover whether the provisions made do not meet your needs? To enable you to do this, THE RECORD has been established. It will come to you for a time free of charge, but to insure its visits forty times during the year, send fifty cents to the Secretary of the College. The articles contained will surely be worth many times that amount to you; but outside of that, you will get a clear, comprehensive view of the manifold influences and activities at work at the College to mould and equip your son or daughter for successful, happy, helpful life on the farm, in the shop, or in the home.

While there have always been a number of lady students in attendance at M. A. C., yet there has never been until the present, a course of study specially arranged for them.

The College now offers to the young women of Michigan a course of study which will doubtless meet with very general approval. This course gives a moderate amount of mathematics, a strong course in English and literature, and a very thorough course in the sciences. The peculiar feature of the course is the time given to domestic science and such allied subjects as will prepare the student for appreciating and administering the duties of the ideal home. During the freshman year will be given a very full course in cooking. Plain sewing, cutting, fitting, and household economy will take part of the time of the sophomore year. During the junior and senior years students will have the privilege of selecting courses in floriculture, fruit culture, kitchen gardening, poultry raising and dairying. It has also been so arranged that students can elect courses in music and painting. While giving a good broad liberal education this course will afford a preparation for life which is offered by no other schools in the State, and by very few in the country. It is thoroughly practical throughout. At the same time it is strong along the lines of general culture. It is based upon the assumption that most girls will at some time have the management of a home; that this will be their vocation whatever avocation they may have, and that the education which will best fit them for the active duties of life is the most desirable.

The arrangement of the studies is such that the one year's work will give a very valuable amount of knowledge, which will be brought into use in the ordinary affairs of life.

THE DATE of the last number of THE SPECULUM was November 15, 1895, which was Volume XIV, No. 4—whole number from the beginning 91. In a certain

sense that publication is now merged into THE M. A. C. RECORD.

THE SPECULUM was begun by the students with a little aid by a few members of the faculty, on August 1, 1881, nearly fourteen years ago, and was issued quarterly till April, 1888, after which it was a monthly during the College year. The first board of editors consisted of L. H. Baily, Jr., editor in chief; L. W. Hoyt, Exchanges; Dr. W. J. Beal, Sciences; J. W. Beaumont, Literary Articles; O. C. Howe, Personals; H. W. Collingwood, Business Manager; Prof. S. Johnson, Treasurer.

One of the subjects first discussed was co-education, by John F. Evart, '82, urging that ample provisions be made for the accommodation of women. "Women do possess as much common sense, at least, as men. In addition to sciences and other studies, they should have added a course of instruction in cooking and household economy. Suitable labor in the kitchen and in the gardens would probably be made compulsory."

On the cover, designed by Will S. Holdsworth, '78, were represented fifteen students anxiously looking into a large mirror to see what THE SPECULUM contained of interest to them.

In the background was an ordinary bicycle, and still beyond Wells hall. Two mottoes appeared on the corner: "It is only by labor that thought can be made healthy."—*Ruskin*. The memory of our College days shall never pass away."

The leading editorial contained these words: "But THE SPECULUM is not an advertisement of the Agricultural College. It is a student's paper, organized and entirely controlled by them—in the hands of five societies—Natural History, Delta Tau Delta, Phi Delta Theta, Union Literary, and Eclectic. The general character of THE SPECULUM will be a reflection of the institution of which it is the organ. It is strictly a College paper. Were it not for you, the alumni, THE SPECULUM would never have had an existence."

DOES IT PAY TO GET A GOOD EDUCATION?

In numerous instances we have heard people who had not enjoyed the privilege of high school and college take the ground that it was not worth while for a young person to make the effort to acquire a good education. It is very much easier to find excuses for dropping out of school than it is to secure money and muster the courage to complete a hard course of study.

We give some of the objections that have been heard and venture some brief comments on the other side of the question:

1. "Such an education as our fathers had is good enough for their children."

But this is a progressive age and to keep up with the best we ought to possess more knowledge, greater mental strength, and manual skill than our parents were able to acquire when at our age. Most parents work hard that their children may enjoy greater advantages than they themselves enjoyed when young.

2. "If I am going to be a farmer or mechanic, the best way is to get at the business at once; begin to learn the trade and earn something as I go along."

M. A. C. is unlike the old-style college, however good that might be. The training does not consist merely in knowledge gained from text books and lectures, but the course is made practical in an eminent degree by many hours of work in laboratory and shop, on farm and garden, in learning by practice as well as by theory. The two courses for men give an education and the elements of a trade at one and the same time. With the sharp competition of these times the one best equipped stands the best chance of success.

3. "It will take four years or more right out of the prime of one's life, and life is short at best. I cannot spare the time."

The experience and testimony of nearly all college men is to the effect that by a good education a person does not lose four years of time, but actually gains from six to ten years in his life; i. e., the college training enables a person to win success in business six to ten years sooner than he could by engaging in business without the education.

The four years spent in college is capital and equipment of the best kind.

4. "It will cost considerable money and I am now poor."

Any young person of good intellect and habits, in the enjoyment of health, and not under obligations to aid in supporting others, can by diligent effort and economy earn enough to pay his own way, usually taking five or six years to complete the course.

5. "What good will it do to spend four years in college and after that have to spend still more time in learning some business?"

As previously stated, at M. A. C. one learns much of the trade of a farmer or mechanical engineer while learning the sciences pertaining thereto.

6. "A college education will spoil a person for work. He will feel above the other members of his family."

The success already attained by nearly all graduates of M. A. C. controverts the statement that an education spoils a person for work. As a rule, they find plenty of associates and do not spurn the rest of the family.

7. "Look at S—; he is not a success in business and he went through college!"

The records of many years past fully show that only a very small proportion of persons meet with even fair success in any business conducted by themselves. If now and then a college man fail, every one's attention is called to the fact.

8. "And there is C—, another college man who turned out to be a rascal!"

There are some mental and moral traits that even a college course may not always be able to change. If one per cent or less of the graduates of any college goes to the bad, gossip spreads the fact far and wide, while people fail to think much about the twenty per cent or more of those who, taking no course in college, become a menace to all that is inspiring, true and noble.

9. "There is a large family of us and father cannot spare the money to give us all a higher education."

When of age, begin to save money and use all the surplus for six years in getting an education.

10. "I shall soon be 25 (in some instances even 30). I am now too old to begin."

Many good examples are on record at M. A. C. where persons at least 30 years old took a course of study and thereby largely improved their chances for success, and considered the time and money well spent.

11. "Father offers me, if I will go onto it, that 80 acres across the creek on which there is a very good house with other improvements, and I think I had better accept his offer."

If one is in a great hurry to marry, and has a farm offered him gratis, and after considering fairly both sides of this question, finds that he has not force enough to undertake a college education, it may be best for him to accept the farm at once. As Dr. Boise many years ago said at the University of Michigan, that it was not worth while for every man to study Greek, so in agriculture and mechanical engineering, it may not be best for every man to aspire to a college course.

With an extensive acquaintance among college men and women, we do not remember ever to have heard a person regret having completed a course in college. On the contrary, the course has uniformly given them great satisfaction, while those who failed for any reason to complete a course once begun, universally express regret.

The opinion of those who have not attempted such a course should not be worth as much as that of graduates who have experienced both sides of this question.

A FEW EYE DON'TS.

After long experience with eyes that were far from strong, we can confidently recommend every one of the following, which are worthy of a place among the declaration of purposes of every person who is pursuing a course of study or who cares much for the enjoyment of clear vision:

Don't allow a cold wind to strike the eyes.

Don't try to do eyework with the light shining in the face.

Don't have colored shades on the lamps; use white or ground glass.

Don't go directly from a warm room into a cold, raw atmosphere.

Don't open the eyes under water in bathing, especially in salt water.

Don't let any strong light, like that from electricity, shine directly into the eyes.

Don't strain the eyes by reading, sewing or any like occupation with an imperfect light.

Don't bathe inflamed eyes with cold water; that which is as warm as it can be borne is better.

Don't sleep opposite a window in such manner that a strong light will strike the eyes on awakening.

Don't, above all, have the children sleep so that the morning sun shall shine in their faces to arouse them.

Don't expect to get another pair of eyes when these have been destroyed by neglect or ill use, but give them far treatment and they will serve faithfully to the end.—*Good Housekeeping*.

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THE NEW LENOX.

We wish to call your attention to the two latest and handsomest Shoes brought out this season—the new Stiletto and new Lenox—as illustrated above. Made in Patent Leather. Vici Kid, Fine Calf, Wine, Russet and Russia Leather, at prices ranging from \$3.00 to \$5.00 a pair. Kindly allow us to show you these goods when you are in need of shoes.

MAIL ORDERS will receive prompt attention and goods will be sent subject to approval.

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BUCK sells Furniture Right.

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Best Woven Wire Cots - \$1 25
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WE SELL EVERYTHING.

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Come in and Examine our Goods and Get Prices. They will
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208 Washington Ave. S., Lansing, Mich.

NEWS FROM GRADUATES AND STUDENTS.

Miss Mary E. Green is again in college.

E. R. Austin, formerly with '98, has returned and will finish with '99.

W. G. Amos, formerly with '96 m, has returned to college to complete the course with '97.

C. T. Cook, '91, graduates from the Law Department of the U. of M. this year and will practice in Owosso.

It is rumored that ere many weeks roll by A. H. Kneen, '91, will wed one of the accomplished teachers of Mt. Vernon, N. Y.

Henry F. Lake, '95 m, is prospecting for gold; address, Gunnison, Col. He expects to devote some time to the study of political economy, logic and psychology.

La Verne Heesen, with '93 m, is spending a few days at College. He is connected with H. Bower & Co., of Tecumseh, manufacturers of brick and tile machines.

William Caldwell, '76, is farming at Commerce, Mich. He made the College a visit a few days ago and expressed himself as much pleased at the numerous improvements.

C. H. Robison, '95, visited at College last week. He has been elected principal of the Smyrna schools in place of Clay Tallman, who takes charge of the Saranac schools next year.

We are in receipt of a very neat announcement of the Montmorency County Summer Normal and Teachers' Training School, of which H. B. Fuller, '92 is principal. The school opens July 13 and continues six weeks. Mr. Fuller is principal of the Lewiston schools and commissioner of Montmorency county—one of the hustling kind.

Lewis B. Hall, '82, is in the insurance, loan and real estate business in Belding. He likes the RECORD and says: "May M. A. C. continue its good work through this its LIVING ORACLE. Dame fortune has been leading me in very pleasant paths since leaving M. A. C. Here's to Old M. A. C., the institution of the State which lays the best foundation for a useful life."

"Clarence Smith writes us that Washington is a pretty big town with lots of big people in it, but he hopes to keep right side up with care and maintain his equilibrium. He visits Congress nearly every day and is astonished to discover that all fools are not yet dead, but manage to get into exalted stations, and he is scratching his head and thinking of coming home long enough to run for Congress and save the nation."—*Otsego County Herald*.

"One must learn to adapt himself to his environment, and make the best of any position in which he may find himself situated. No one should sit supinely down and accept his present condition as being the life allotted to him, without an effort to better it. Neither should the other extreme of chafing and worrying about our lot in life be indulged in, but use a little philosophy, be patient and cheerful, and ever alert to, little by little, change the conditions. To do this properly is perhaps the greatest problem of life."—JAY SESSIONS, '74, at the Institute of Clinton County.

FOR YOUNG HOUSEKEEPERS.

W. S. HOLDSWORTH.

Among all the subjects suitable for deep and careful study which we see around us, there is one that is not at this time receiving its proper share of consideration. We refer to the development of that class of persons who are always sure to be with us, so long as the human heart is susceptible to the tender passion—the recently married man. We use the term man advisedly. We might have said young man, had we not paused to reflect that while some are so young that their sheep skins have barely had time to acquire any stiffness of curl as they repose in some sequestered nook, others have been out of College so long as to have been almost given up as matrimonial timber. Others occupy uncertain intermediate positions.

These men form a very interesting subject for study and observation. As you see them from day to day please note some of the little changes in their personal appearance and manner.

Very much depends upon whether the subject has gone to housekeeping or is boarding. We feel sorry for the young man who starts married life as a boarder, or is unfortunate enough to have a hired girl in the house—especially if the girl is a good cook.

The only way for a newly married couple to begin life is to settle down to housekeeping with no third party to interfere, even if their quarters are small and crowded; in fact so much the better. There is no other true way of getting at each other's oddities, eccentricities and general character. This is the only right way to the ins and outs of matrimony.

We will suppose the apartments all furnished, ready for the happy pair, for, if there is one occasion when a newly married couple should be free from observation, it is when they are purchasing their house-keeping outfit. We all know that he follows her around from store to store, at first exhibiting a proper degree of interest. If in the third or fourth round of shopping he seems to grow a trifle listless or to look worried, or in an unguarded moment emits a groan, it is nobody's business. These things are too sacred to be paraded before the public; besides he has not yet been given two or three samples of "goods" to "match" at the shops, or had a list of thirteen distinct articles poured into his ear just as he is frantically rushing around the rooms hunting for his hat that his wife has misplaced, and he is afraid he will miss the street car. See, he lacks discipline!

They decide not to put linoleum on the kitchen floor, and he says, "Just let her see how nicely I can paint it." So some Saturday evening he arms himself with a pot of paint and a brush and proceeds to paint the floor, watched for a time by his "little wifey," remarking that he could paint away there all night should she remain. They all insist upon being called some pet name, and none are so insistent as the large, fleshy ones. If she weighs in the vicinity of 200 pounds she insists all the more upon being called "little." Well, she grows tired of watching him, and proceeds to make herself easy in another room. After a time she is attracted to the kitchen by a sound like a cross between a class yell and a lawyer's final appeal to an Arkansas jury, and finds him back up in a corner with no means of exit but to walk across the painted floor backwards and paint his tracks as he goes. He has unwittingly given her a cinch upon him in future domestic complications.

Some day you see him at the grindstone in the woodshop with two or three carving knives, sharpening them up. Last Sunday in carving the rolled roast, the meat escaped from the platter and made a large spot the color of beef gravy on the best table cloth. He had madly attempted to carve through a skewer. With a few remarks appropriate to the occasion, he concludes that "if you can't keep the carving knife sharp I can," so here we find him at it. The next time he attempts to carve a rolled roast he sits down with an air of satisfaction and says, "Now let your uncle show you how to carve." There is a flourish of steel and one or two slices almost cut themselves off. Then there is a sound a good deal like an Apache war cry followed by muffled groans. "Why didn't you put the guard up?" He takes his hand away from his mouth long enough to exclaim: "Great Scott! What guard?" The guard is pointed out to him and then he slams the knife down with a remark something like "carve your own meat," and then goes to get some court plaster. You will notice a bit on his knuckle next Monday morning.

One evening he goes home to find that she has singed her bangs in lighting the gasoline stove. "It's queer you can't do a little thing like that without burning yourself to death and smoking the kitchen all up. Why didn't you pour a little alcohol into the pan under the generator? Just let me start that stove in the morning!"

So he gets up in the morning to start the fire and put over the oat meal. Presently she hears a thump, followed by an exclamation and a good deal of scuffling and rushes to the kitchen to find him gyrating around trying to beat out with a towel a large spot of blue flame curling up under the stove. This accomplished, he stands flushed and excited, muttering something about the "bottle rolling away from him, and raising a lump as big as a hen's egg on the back of his head where he hit it against the sink." All he gets for his incoherent talk is the question, "Have you salted the oat meal?"

You notice, he wears a more subdued expression these days.

"I know what the nights of labor are," said the mother of six boys, as she sat down to mend the pile of trousers and jackets.—*New Albany Owl*.

For dry, rather poor sandy land, the best lawn grasses for our locality are June grass and Bermuda grass mixed. For an illustration see the lawn next south of the armory.

STRICTLY FIRST-CLASS PHOTOGRAPHY AT
LECLEAR'S.

The Farm ...Department

Offers for sale the
following head of
live stock:

A Yearling Shorthorn Bull, out of Mysie 3rd, and by the prize winning Volunteer, 101205, a pure Cruikshank.

The Thoroughbred Jersey Bull, Rettas Averroes, 35119, bred by G. A. Watkins, Detroit, solid color, 4 years old. This bull is by Averroes who was a son of Matilda 4th and by Ida's Rioter of St. Lambert. His dam was Retta of Bloomfield (29520) who was by the famous bull Ramapo. No better bred Jersey bull exists today in the state.

Three Holstein bull calves, three months old or younger, all by Maurice Clothilde and out of the selected cows Oatka 3rd's Wayne, College Houwtje and College Pauline Wayne.

Owing to the crowded conditions
of the stables these animals will
be sold cheap.

Nine Yearling Shropshire Rams out of thoroughbred ewes and by a prize Shropshire ram.

Poland China and Duroc Jersey Pigs of both sexes.

These Animals will be registered,
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board cars at Lansing on
receipt of price, which will
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THE MAPES CLOTHING CO.

207 & 209 WASHINGTON AVE. S.

When young man's fancy lightly
turns to thoughts of duck trousers,
vacation, and all that sort of sunshiny
loveliness, he should direct his steps
towards our store, where we make a
specialty of

MID-SUMMER CLOTHING
AND BICYCLE SUITS.

DISFIGURING FENCES WITH ADVERTISEMENTS.

We have become so accustomed to seeing advertisements on the fences by the roadside, that doubtless some travelers begin to think that this is one of the excuses for building a fence. Read the following:

"Apropos to the remarks recently made in these columns concerning the lack of respect that advertisers have for the rights of the public in placing their great unsightly signs in what would otherwise be attractive landscapes, we find the following in a California paper: 'Riverside is making war on signs posted conspicuously about the city, and Marshal Wilson has a man employed whose sole work is to report against offenders of the ordinance and tear down signs. A rustling agent from Los Angeles was energetically engaged in posting bills of his firm on fences, vacant buildings, etc., when ordered to desist, but failing to heed the officer, was hauled up before the authorities and fined \$20.'—Michigan Cyclist.

SHORTENING DISTANCES.

"The home of the writer is three miles from the post-office. There was a time when it required an hour to make this distance with a small load. The sand was deep and horses were compelled to exert their full strength constantly on the way. The road was improved and the time of transit was cut in two. The electric car came and cut the time in two again.

"This same spirit of improvement must reach farther than the suburbs of the town. It must take in the farm communities. The L. A. W. Bulletin says that the distance a farmer lives from market is not a question of miles, but of the roads he must travel to reach there. How many hours and how many horses does it require to haul a load to market? When thus measured, ten miles of good, smooth highway are not as far as a few miles of mud and stones.

"A road over which one horse conveys the load is only half as long as it would be were two horses required.

"An impassable road is an impossible distance. The trotting road is not so long as the creeping road, and not near so long as the sticking road. The farmers are learning all of this.

"A colored man on being asked how far it was to a town replied, 'Ef you go by ox cart, hit's a mighty long ways, an' ef you walk hit's a right smart distance; ef you ride a horse hit aint near so fer, an' ef you go on the kyars hit's only jes' a little piece; but if you go by telegram hit's right hyar.' This is the whole matter in a nutshell.

"Any enterprising real estate man in laying out a subdivision to a city knows that the first thing to do is to provide good means for getting to and fro. Side-walks are built, streets macadamized and car lines established. The distance is measured wholly by the time needed in going to and from and the character of the transportation. Farmers should follow this same plan. They should lessen distance by building speedy, pleasant roads.

"A pleasant road is seldom too long. A bad road is never short enough."—HON. C. W. GARFIELD, '70, in Michigan Cyclist.

"Behave like a gentleman, and study like a student."—The Skirmisher, San Mateo, California.

In reply to a puzzled subscriber who wants to know the meaning of such numbers as '69, '74, '90, placed after the names of some persons given in the RECORD, we may say: The figures indicate the year the person graduated at M. A. C., or would have graduated had he remained with the class graduating on that year.

BUSINESS MEN

WILL FIND IT

A PAYING INVESTMENT

TO

Advertise in the Record.**DAVIS & CO.**

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DUCK SUITS**CRASH SUITS****DRESS SUITS**

WE SELL THEM AND RENT THEM.
WE CAN SUIT YOU IN EVERYTHING.

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NOTHING YOU CAN BUY

In the way of wearing apparel that will afford you the same
pleasure and comfort that you can obtain from one of

OUR LINEN CRASH SUITS

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Caps to match 50c extra.

NICE LINE PLAIN AND STRIPED

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From \$1.50 to \$3.00 per pair.

WOULD LIKE TO SHOW YOU SOME EXTRA VALUES IN

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You never saw the equal of the Shirts and Drawers I offer
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