The M. A. C. Record.

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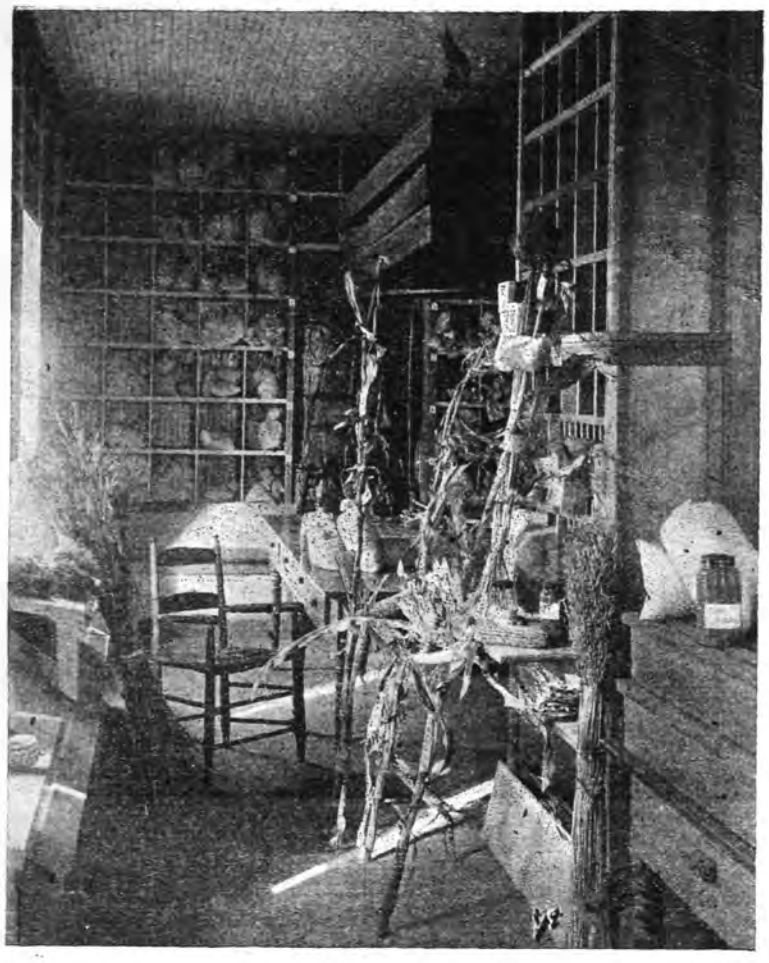

THE STUDENTS' SEED ROOM.

The illustration on this page shows a glimpse of the old seed room, now devoted largely to the use of students who are engaged in field experiments. To this room the students have access at all times for the purpose of getting seeds for study, putting away seeds they have raised, drying seeds or specimens upon racks made for the purpose, or sorting and cleaning seeds upon the spacious tables. Around the room are a series of pigeon holes or boxes reaching to the ceiling, each box numbered so that by means of index books hanging convenient the location of any kind of seed may be found. One section of these pigeon holes is devoted to seeds belonging to the "curiosity strip," another to corn, another to oats, etc. In autumn this seed room is a busy place, as the products of the year are brought in to be cleaned and put away for future planting, or in some cases to be neatly bunched an labeled for exhibition at some of the fairs. The injunction "Keep things well labeled and in their places," hangs upon the wall.

PAUL MELLEN CHAMBERLAIN, M. E.

At the close of the past College year P. M. Chamberlain, Assistant Professor of Mechanical Engineering, resigned and accepted a position as Professor at the Lewis Institute, in Chicago, where he will devote his time to work in machinery designing. Prof. Chamberlain was one of the first graduates of the M. A. C. Mechanical course, graduating in 1888; graduated from Cornell University in 1890; after graduating from Cornell, up to time of coming to M. A. C. as an instructor, was associated with the Frick Company of Waynesboro, Pa., and the Hercules Iron Works of Aurora, Ill. Prof. Chamberlain entered upon his work as an instructor at M. A. C in 1893, taking the position previously held by Prof. VanDevoort, and was active in the work of designing and building the foundry and blacksmith shop and remodeling the wood shops; for some time he attended mainly, to the supervision of shop practice, but his marked interest, and ability in designing led to the placing of the machine design work of the mechanical course in his charge, and in this work he obtained most excellent results.

Prof. Chamberlain is particularly well fitted by experience, both as a teacher and in practice, and through his education and ability to take charge of the work to which he has been called. The professor has a deep interest in M. A. C., and its welfare, and in a recent letter to the writer says: "As I realize that I am to live no more at the beautiful College Campus, among the many good friends, it makes me feel sad. Also the work of the department had gotten in such shape that it was a great pleasure."

Both Prof. and Mrs. Chamberlain will be greatly missed in the daily life of the College, and the associates, pupils, and many friends of the professor unite in wishing him an abundant measure of success in his new field of labor.

C. L. W.

ADVANCES IN AGRICULTURE.

DR. W. J. BEAL.

In 1876, Dr. M. Miles wrote for the *Country Gentleman* a brief account of Ensilage as a fodder, giving the results of experiments made in France. He says, "At the north, where it is desirable to provide some form of green cattle feed for winter use, the system of ensilage is perhaps worth trying. Will the advantages of green winter feed be sufficient to pay for the labor involved in this method of preserving it?"

Some years ago it was discovered that certain bacteria had much to do with the quality of butter. For a time no one suspected that keeping green fodder in a silo or introducing certain bacteria into the cream were matters of any practical importance for people who made their living from the proceeds of their farm. But today, the dairyman who ignores the use of a silo is looked upon with suspicion as a man hardly up to the times while in Denmark they purchase "pure cultures" of bacteria made by experts in laboratories and use a fresh supply every day or two in curing their cream.

For some years past, we have heard and read a great deal about microbes in the tubercles of legumes having the power of rendering free nitrogen available for plant growth. This fact is interesting, but who ever thought of making any practical application of it?

Those interested in this line of thought, we refer to a contribution in *The Contemporary Review* for August, 1896, by C. M. Aikman, on Nitragen: A New Advance in Agriculture.

"It is only a few months ago since an announcement was made to the German Agricultural Society that certain highly interesting experiments carried out by Professor Nobbe, of Saxony, had culminated in the production, on a commercial scale, of cultures of bacteria, for use in agriculture; and that arrangements had been made with one of the largest chemical manufactories in Germany to supply these cultures to any who might desire to use them. To these cultures the title *nitragen* has been given."

"It has been found that the organisms suitable for affecting the fixation of nitrogen for certain plants are not able to act in the same capacity for other plants.

"Professor Nobbe has prepared a large number of pure cultivations suited for the commoner leguminous crops grown. This preparation can be used to inoculate the seed before it is sown, or a watery solution of fine sand, or earth can be spread over the field and worked into the soil to a depth of about three inches."

For twenty years the writer has experimented more or less on blue and white lupines of Europe and has observed tests made by others, but in all cases the plants were too feeble to be considered of any practical value for Michigan. Five years ago, I began to wonder if the failure in this country was not due to the lack of proper bacteria in our soil. It would be a neat thing for some one, if not already done, to import some suitable bacteria from Europe and sow on land with the seeds of the lupines.

In the light of such facts of science and many others that could be given, what intelligent farmer of these times dare say that he has no need of science, or that he could not make any more money on his farm by having pursued a thorough course of study in lines pertaining to his business?

Botanical Department.

THE HELIOSTAT.

The "Heliostat," the class book of the Juniors, is before us. Without doubt this publication surpasses anything of the sort thus far attempted by students of the M. A. C. Both in size and composition it is unrivalled. It is now seven years since the last "Harrow"—our former annual—was issued, and abundant material, therefore, was at hand for the editors of the present book.

It was the frequent complaint concerning our former annuals that too young a class—the Sophomores—undertook their publication. In our opinion the precedent is commendable which requires henceforth that this responsibility rest upon the Juniors.

The "Heliostat" is generously, almost lavishly illustrated. Such a wealth of sketches, drawings and halftones would have been the despair of former editorial boards. Nothing so ambitious could have been attempted by former boards as the presentation of biographies and likenesses of the entire faculty and the members of the State Board not to mention the history and picture of each class and every society as well as a description of every other organization included within the college.

The work of chief literary note in the book is the history of the College by Dr. Edwards. This is the most complete history of the College known to us and its perusal rewards at once all previous interest in the volume. Vividly and thoroughly the early character of the college is discussed. The theories upon which it was founded, the early organizations and reorganizations of the institution, and the character of men who shaped its early course are adequately presented to us. The viscissitudes of college life witnessed by the College bell were hardly suspected until unfolded to us by Dr. Kedzie, whose years of service are so nearly contemporaneous with those of his subject. In the poetry and College jokes we find much resemblance to similar work in all year-books, hence only refer to them.

The "Heliostat" deserves the hearty support of all students and alumni of the College; a more perfect reflection of College life can be secured from it than, probably, from any other source, subsequent publications of like nature should be encouraged, and we speak for it warm sympathy and cordial support.

AT THE COLLEGE.

Miss Kittie McCurdy is again in College.

Mrs. G. V. Triphagen has again taken charge of Club A.

F. W. Lewis, formerly with '94, has returned to finish his course.

Instructor Westcott's mother has been visiting him during the past week.

Mrs. Gunson spent a part of last week visiting friends in Grand Rapids.

A. T. Cartland assisted in arranging the college exhibit at the State Fair.

Mr. M. W. Fulton visited his home near Detroit the first two weeks of vacation.

Prof. and Mrs. Noble returned from their vacation on Traverse Bay, last Saturday.

Mr. J. H. Steele, '96, *m.*, has been assisting in the office of the Director during vacation.

Mr. J. S. Conway spent a ten days' vacation at Decatur and vicinity returning on the 7th inst.

During vacation Prof. Holdsworth added several fine marines to his collections of watercolors.

The public parlors in Williams Hall have been partitioned so as to make two students' rooms.

Misses Florence and Nellie Greening returned to their home in Toledo the first week of vacation.

Dr. Grange attended the annual meeting of the U. S. Veterinary Medical Association in Buffalo, Sept. 1, 2, and 3.

Charles Fisher, a brother of Roy S. Fisher, '95, has entered College. He is reported to be a left-handed base ball twirler.

The State Board at its meeting in Grand Rapids last week appointed H. E. Smith, '96, *m.*, instructor in Mechanical Engineering.

The next meeting of the Sunday School for the children will be held Sunday, Sept. 20, at the usual hour—quarter to four—in the chapel.

The reputation of the butter made at the College dairy is very high in Detroit and the department has consented to supply some Detroit families by the year.

Lieut. H. H. Bandholtz, who succeeds Lieut. Lewis, arrived in Lansing with his family, last Friday, and will occupy his suite in the Terrace as soon as he can move in.

It was pleasant to see old Volunteer, who was so long identified with the College Shorthorn herd, take second prize at the State Fair although not in show condition.

Professor Wheeler went to Three Rivers on Saturday, the 12th, to investigate the poisonous plants in that vicinity, which are said to be causing sickness in horses, cattle and human beings.

Belle Sarcastic is again outdoing herself, having yielded 13,635 pounds of milk and over 500 pounds of butter since the first of March. The young heifer of Rosa Bonheur 5th has recently calved and gives promise of equaling her mother's record.

The meeting of the Y. M. C. A., Thursday evening, Sept. 17, will be in charge of F. N. Lowry.

On Sunday evening, Sept. 20, a meeting of special interest to new students will be held. (For time of holding meetings see official directory, page 6).

Those who camped at Bald Head Park, opposite Saugatuck, report an excellent time. Some members of the party were so taken up with the place that they now talk of building cottages there. Bald Head Park ought to be a favorite resort for M. A. C. people.

We notice by the London, Ont., *Daily Free Press* that Carl Jacobs of the Albion College team is pitching for the London league team. Of course playing with this professional team will not debar him from returning and taking part in purely amateur intercollegiate games next year.

The students who were so fortunate as to remain at College during vacation, united in an informal hop in the rooms of the Hesperian Society on Sept. 2. Pres. and Mrs. Snyder and guests, Prof. McDermott, Prof. and Mrs. Vedder, and Mr. and Mrs. Westcott, were present during the early part of the evening.

The farm department has purchased a Shropshire ram of the Altamont Stock Farm at Millbrook, New York, owned by Dr. G. Howard Davison. Also a Southdown ram from George McKerrow of Sussex, Wisconsin. These sheep are at the top as far as both breeding and individual merit are concerned.

Messrs Smith, Mumford, True and C. D. Thompson went to Toronto Sept. 1, to visit the Exposition. Finding the exhibits but partly placed on their arrival, they took advantage of the excursion to Niagara Falls. They report the Toronto Fair a huge success being especially strong in sheep, beef cattle, and dairy products.

During vacation the farm department furnished work to a dozen or more students. The large silos were filled, a ditch was put in from the lot east of the cow-barn to the river, a large share of next winter's wood supply was cut, the fence was finished, and a lot of experimental work and various odd jobs completed.

Prof. and Mrs. Frank Kedzie spent a delightful vacation in the Traverse Bay region. Good fishing is one of the attractions, and Prof. Kedzie now has a full stock of fish stories. Says he caught eighteen pickerel one day, the combined weight of which was eighteen pounds. Whopper! He saw two M. A. C. graduates while there, E. O. Ladd, '78, and F. M. Paine, '89.

Quite a number of important repairs have been made in the machine shops and boiler house during vacation. The shafting has been overhauled and relined; the engine has been partly and the large planer, two lathes, and one pump completely overhauled; the dynamo has been repaired; several other machines have been rearranged; and the tools in the wood shop have been sharpened and repaired. Complete new brickwork is now being laid around all of the boilers.

Hon. Franklin Wells, president of the board of agriculture, met with a very serious accident one day during vacation. While driving from his farm his horse became frightened, and Pres. Wells, in attempting to check it, broke the bit and the horse ran away. He jumped from the wagon, striking on his head and cutting a gash across his forehead. He was carried to a house near by and a physician summoned who dressed his wound. We are glad to learn that he is now nearly recovered.

Mr. H. W. Mumford was the very efficient judge of the mutton breeds of sheep at the State Fair. It should be said to his credit that most of the same sheep were shown in New York where they were judged by Thompson of Indiana, and Mr. Mumford placed the prizes in substantially the same order that they were given in New York. In the few cases where he differed the owners were heard to remark that Mumford's judgment coincided more nearly with theirs than did that of the New York judge.

The Sunfield Sentinel, published by C. J. Strang, '78, in advertising a farmers' picnic, contains in several different parts of the paper the following items, one in a place:

The picnic speaker is Prof. Clinton D. Smith of M. A. C.

Prof. Smith was reared on a farm and knows what he is talking about from the ground up.

Prof. Smith knows all about planting seeds and pulling weeds, but it's the seeds and weeds of the mind he will say most about on picnic day.

Prof. Smith is a rattling good orator.

Prof. Clinton D. Smith believes with the grange motto that the farmer is greater than his farm and should be first cultivated.

One of the best speakers in Michigan has been secured in the person of Prof. Clinton D. Smith of Michigan Agricultural College.

At one o'clock Prof. Smith will make his address, which will give ample time to settle your dinners and we hope will enable all to masticate and digest many inspiring truths that will nourish their famishing souls, and prepare them for the duties and pleasures of life.

On the morning of Saturday, August 22, we met the Professor on his way to the train, apparently not elated with the prospect ahead. Whether it was owing to the cloudy sky, or whether he feared he should not fulfil the high promises of the *Sentinel* we did not learn. We waited for the succeeding number of the paper with much interest and here are two paragraphs:

The band struck up and the multitude repaired to the grove to hear the speech. It was the 257th time Prof. Smith had addressed gatherings of farmers, and it was easy to understand his popularity from the start. His physique was commanding, his voice clear and resonant, his expression genial. From his opening remarks one might have imagined him a prominent divine.

In style the speaker was very pointed, and at times very epigrammatical, abounding in humorous anecdote. His discourse won him a thousand friends.

TRANSPORTATION.

COMMENCEMENT ADDRESS BY E. D. PARTRIDGE.

Shaler says, "The excellency of transportation may, be said to depend upon cheapness, capacity, efficiency, rapidity, and independence of the natural features of the earth's surface." Since the revolution, there has been a steady advancement in all the above requirements. The growth, though slow and almost unnoticeable at times, has resulted in more good to the nation, and greater advantages to the people than any political movement could have brought about.

Starting from almost nothing, it has grown, till now, in some respects, it is second to none in the world. The mails and freight traffic carried at first by horses or perhaps on wagons drawn by oxen, became so heavy as to require some other means. The large, clumsy, wagons, known as desert ships had served well, but their time was past. The old stage coach reluctantly and gradually gave up its claim on the passenger traffic. For, as farming increased, as manufacturing progressed, as the people turned their eyes westward and located at a distance from the center of civilization, as each community became less and less independent, it became plainer and more desirable that some regular means of transportation be established. This means has been established, but not without a great amount of time, knowledge and expense. Let us glance at the changes as they occur.

Probably the most important factor of transportation previous to the advent of the railroad, was the completion of the Erie Canal in 1825. Joining Albany and Buffalo with a line of passenger and freight boats, it soon became a great highway of commerce. But even here, all boats were drawn by horses or mules. In the large rivers rafts were built, loaded with freight, and floated down stream; but freight could not be taken up stream to any advantage. Thus, with a few canals, some flat boats, a number of stage coaches, and a multitude of horses and mules, our system of transportation was complete. Yes complete, as far as the needs of the first quarter of this century were concerned; but nothing short of railroads would answer the requirements of the next quarter.

So we might name the discovery and perfection of the steam engine, as the beginning and foundation of our transportation system. The birth of the railroad is perhaps best placed at 1831, when Steven's locomotive, John Bull, filled the world with wonder by making a record of 30 miles per hour. This queer looking affair, by doubling the previous long distance record, became the object of much attention and ridicule. We are not surprised at the prevailing opinion that railroads could be used only in transporting passengers and light freight, when we remember that the driving wheels were made similar to the wheels of a common farm wagon.

The first steam locomotive in America of which we have any reliable accounts, was built by John Stevens in 1825 at Hoboken, New Jersey. The running gear consisted of two heavy parallel timbers fastened at each end by an iron shaft, the ends of which protruded to support the wheels. The hubs, spokes, and felloes of these wheels were of wood. The source of power consisted of an upright boiler, with a little engine at its side whose crank was geared with a rack rail in the center of the track. The track itself was of wood faced with strap iron. The tender consisted of a water barrel and a coal box placed on the running gear of the engine. The passenger and freight cars differed little except that the former had two holes high on each side to admit air and light. It was but a little time, however, before the steam engine became the prime factor of all transportation. Steamships reduced the time of making a trip between New York and Liverpool, from six weeks to as many days. Boats were soon plying on all the large rivers, irrespective of direction of wind or current. The railroads, beginning by joining the large cities, soon spread a perfect network all over the United States. We might properly say, then, that by this time we have reached one of the requirements of excellency of transportation mentioned at first—namely: Independence of the natural features of the earth.

The efficiency of the first steam engines was very low, but it was increased by eliminating the faults, and by replacing the little awkward engines with heavy, durable ones. The discovery of a process for manufacturing soft steel soon did away with the use of cast and wrought iron for boilers, engines and tracks. Beautiful bridges were built where previously small ferry boats were used. At one time, rivers

were crossed by unloading all freight, baggage, and passengers into boats, and with a good deal of worry, labor and cost, they were ready, 12 hours later, perhaps, to leave a point two miles distant. Soon large ferry boats were built, reducing the time of change to from two to four hours, and the extra cost to nothing by carrying whole trains at a time. Today these difficulties are overcome, and the same places are passed in from one to five minutes without even stopping. Thus cheapness and rapidity were increased at the same time with efficiency, and we see that we have reached three more of the requirements of excellency of transportation.

In the remaining one of these requirements, capacity, there has been probably the greatest change. In place of the insignificant engines of the thirties which to do their best could hardly move three small coaches on a level track, we have the grand locomotives of today, weighing many tons and able to draw 40 or 50 times the load, passing from the bottom lands of the Mississippi, over the summits of the Rockies. In place of the box-like passenger cars with their bench seats, we have comfortable parlor chair-cars. In place of the small, dumpy freight cars, some of which were at one time drawn by a piece of leather strap, we have cars similar to those that carried the 185,000 lb Krupp guns to Chicago in 1893. Great expenditure of money has been made for this advancement. In some places, the cost of the road was equal to the amount required to lay silver dollars with their edges touching, the full length of both rails of the line. The amount of track of the Penn. Rail Road Co., is sufficient to encircle the earth and overlap from New York to a point in the Pacific 1,400 miles from Honolulu, in Hawaii. We are not behind any nation in water transportation. The Soo canal carries more commerce than does the Suez canal, and the Detroit river carries more perhaps than any other waterway in the world. It would seem almost as though all advancement that could be made, has been made. No doubt, however, the engineers of 1840-50 thought the same; yet see what has been accomplished! A comparatively complete mastery of the subject of Thermodynamics has brought the steam engine to its highest probable efficiency, yet there is a good deal of energy lost now.

It is hard to say just what line of development the future will follow; so let us leave the fuure, and look at a few of the needs for, and results of a good transportation system. It is this which has made it possible for our manufacturing and other industries to become what they are. Massachusetts is the great shoe making district of the United States; Pittsburg and vicinity have the great iron furnaces, while the great wheat fields are in the north and west. If fuel is the most important article, the factory can be built where fuel is the cheapest, and have the raw materials imported and the manufactured goods exported. If the raw materials are of such a nature as to be not easily transportable, the factories are built in the district producing the raw materials. The question of location is a very important one, and becomes more so as the scales of economy become more nearly balanced. What would be the result with respect to future industries? Since in manufacturing the cost of power is the most important item of expense, we should expect that many factories would be built near such places as the Niagara Falls, where thousands of horse-power of work, which have been idle for ages, are being harnessed to the shafts of factories, by means of a small copper wire.

The products of the farm are also greatly influenced by transportation facilities. Drawing the products by team for a distance of more than thirty miles, takes all the profit, to say nothing of the risk of entire loss by storms or delay of sale. It is claimed that with people located as at present 4-5 of the farm products must be transported; and Edward Atkinson has shown that the largest item of cost of a loaf of bread is the cost of transportation. To overcome the difficulties presented by food transportation refrigerator cars have been built with conveniences such that perishable products of the farm, garden and dairy can be transported hundreds of miles and yet incur comparatively little damage.

In large manufacturing cities, the transportation of the people has grown to be a very important matter. The local trains and street railroads make it possible for laboring hands to be supplied from a great distance. The most common means of city transportation, is electric and cable cars; the circumstances determining which one to be chosen. The average cost of a mile of electric railroad is $30,352, while for cable roads it is about $200,475. The running expenses of the latter are however, comparatively very low. As cities grow, the value of street space increases; hence in some places the companies have been forced to build either elevated or underground roads. Taking everything into consideration, the last is perhaps the best.

Another very important form of transportation is that by means of bicycles, whose value is very apparent of late. Ten years ago, to see a man on a bicycle, caused almost as much excitement as a circus. Today, to see a person without one causes almost equal surprise. In many large cities, there are more people who ride on wheels, than in buggies or street cars. There has been little change in the cost of wheels but competition has been the means of improving them from a straight stick resting on two wheels, propelled by touching the ground with the feet, to what we see today. High grade wheels are now made of the best material obtainable, and hence are very durable. The efficiency of the bicycle is almost a maximum, almost every improvement having been supplied. There was recently a patent taken out for a spring attachment that would store up energy while going down hill and use it again in going up hill.

A new use that may be made of the bicycle was suggested by a conversation between two old soldiers at the picnic here July 16. After introducing himself one of them said, "Where were you during the war?" The other answered, "I served for Michigan; where were you?" The one—"I was with the Ohio boys. I suppose you were at the battle of Bull Run?" The other—"Yes, I guess we will always remember that. We did not run but we took up a pretty lively walk." The one—"I'll tell you just what's the matter. I would have given $500 for a bicycle if I could have ridden as well as some of these young fellows."

Before closing, let us step upon the hill of knowledge and review the advancement in methods of transportation. Away back, almost lost in the distance, we see Columbus landing upon the shores of America. "The red man has possession of the land. The squaw carries her papoose on her back; and the brave is returning laden with game." The whites begin settling up the country. They introduce rafts, ferry and rail boats. One division of the people moves westward with wagons loaded with spinning wheels plows, etc. As the ox teams wend their way farther from civilization, their place is taken by horses and stage coaches. Boats, laden with heavy cargoes, float on many new canals. Way down in New Jersey we see a great commotion. Upon looking more carefully we see the first steam locomotive, puffing away, apparently conscious of the importance of its existence. Other locomotives follow and soon the new tracks are literally dotted with different kinds of cars. Now we see great heaps of freight awaiting their turn at the depots. The baby locomotives puff diligently away; but with their light tracks and miniature cars, cannot possibly do the necessary work. Soon all old tracks are torn away and replaced by heavier and more durable ones. The baby locomotives run screaming to the depots to avoid being crushed by the large ones as they come. A great roaring is heard away off toward the Atlantic. We look just in time to get a last glimpse of a great iron steamship plowing away toward England. The view dazes us and we sink back to recover our senses. We nerve ourselves for one last look. We see that Progress did not stop: for we find the whole eastern part of the United States almost covered with tracks, several lines of which stretch out to the west and reach the Pacific. Steamboats of all sizes are moving to and fro on all rivers, lakes, and seas. The people all over the country are busy trying to keep up with the movement of the age. We borrow a bicycle and try with them.

THE "CURIOSITY STRIP."

A. R. ROGERS AND J. W. RIGTERINK.

(Continued.)

SACALINE. (*Polygonum Sachalinense.*) This plant is a native of the island of Saghalin, off the east coast of Siberia, from which it was introduced into Europe by the Russian botanist Maximowicz. Its botanical name indicates its place of origin, and also the fact that it is related to the yellow dock, smartweed, and rhubarb, which belong to the genus *Polygonum*. Its seeds resemble those of dock and rhubarb. The plant has been grown to a limited extent in Europe for more than thirty years, chiefly for ornamental purposes, but within the past few years attention has been called to it, mainly in France, as a forage plant. It was tested in this country several years ago by one of our leading seedsmen as an ornamental plant, but was not considered worthy of being introduced. During the past year it has been extensively adverised in the United States as a forage plant of remarkable productiveness, especially adapted to dry situations. Last spring we obtained seeds and roots and started them in a greenhouse March 20. The roots died, but the seeds germinated readily and the young plants, to the number of 50, were set in the open ground when about two inches high, being placed four feet apart each way in a rich loamy soil. They were given good cultivation throughout the summer and made a continuous growth, reaching a height of three feet by the end of the season, with several branching and spreading stems to each plant. In September about half of the plants blossomed abundantly, but set only a few seeds which ripened about the middle of October. The plant is said to last for 50 years, which seems quite possible. At the Iowa Experiment Station it is reported that a plant of sacaline has grown in one spot for 12 years, and at this Station a plant of a closely related species, *Polygonum cuspidatum*, has been growing in one place for more than 15 years, throwing up numerous woody stems each year about six feet in height. Sacaline spreads and renews itself to some extent by means of underground shoots, though but few of these were produced on the young plants raised here this season. The stems are woody, but the leaves and smaller branches are succulent when young and were eaten readily by horses and cattle. We have not seen as yet much reason to recommend this plant for agricultural purposes. It seems much less productive than Indian corn, and is poorly adapted for preserving in a dry state, besides being likely to prove difficult to eradicate when the land is wanted for some other crop.

JUTE. (*Corchorus capsularis.*) Six rows were planted ten inches apart May 23. It is claimed by seedsmen that this plant needs no cultivation, but our experience is different. The plants seem quite delicate when small but stood the drouth well. They did not blossom this year however. In Bengal the fiber of this plant is used for making sacks in which coffee and sugar are packed. Jute is cultivated quite extensively in the East Indies, China and Japan for the same purposes as hemp.

HOPS. (*Humulus luplus.*) These plants were set last year and were in a condition to make a good growth. Hops are propagated by means of the rootstocks, a piece containing one node or joint being able to serve this purpose. During the fore part of the season the plants made a remarkable growth, growing some days as much as seven inches. Then there was a slight frost which checked growth for some time. The vines finally obtained a length of about ten feet and produced a few cones of hops but no seeds. Upon examination it was found that no male plants were present to furnish pollen, which accounts for the failure to produce seed.

CYTISUS PROLIFEROUS ALBUS. This is a new African fodder plant recommended for dry soils. Of all the seeds sown only one plant came up. This grew to a height of two feet. Its stem and leaves are pubescent, giving it a grayish appearance. The plant is a shrub and its round black seeds resemble those of okra. [It died the following winter.]

TOBACCO. (*Nicotiana tabacum*) On April 4 the seeds were sown in the greenhouse. The plants were transplanted into the field directly after a rain, about May 22. This rain was followed by warm dry winds and only six plants survived. These did well during the summer, some of the leaves attaining a length of 30 inches and 10 inches in width. The plants blossomed but ripened no seeds this year. Last year the tobacco worm did considerable damage but this year none made their appearance.

HEMP. (*Cannabis sativa.*) The seed was sown May 23 in rows ten inches apart. On July 2 the plants were about two feet high and had begun to blossom. Hemp is dioecious, one set of plants bearing staminate flowers and no seeds and other plants pistilate flowers and seeds. The plants bearing the staminate flowers had few leaves and died soon after the flowers had withered, while those bearing the pistilate had numerous leaves, which were of a dark green color. The first seeds were ripe Sept. 8.

PEPPERMINT. (*Mentha piperta.*) This is the mint most extensively grown for oil, and of which large areas are planted in Kalamazoo, St. Joseph and other counties of this state. Plants were set in the curiosity strip May 23 and grew nicely from the start.

(Concluded next week.)

The M. A. C. Record.

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For various reasons THE M. A. C. RECORD is occasionally sent to those who have not subscribed for the paper. Such persons need have no hesitation about taking the paper from the post-office, for no charge will be made for it. The only way, however, to secure the RECORD regularly is to subscribe.

FALL TERM ANNOUNCEMENTS.

Algebra.—Mechanical freshmen; Prof. Babcock; Van Velzer & Slichter's University Algebra. First meeting of Class on Tuesday at 11 A. M.; second floor, south side of College Hall. See bulletin board in College Hall for first lesson.

Algebra.—Agricultural freshmen; Instructor Pashby; Van Velzer & Slichter's School Algebra. Class room; third floor College Hall. See bulletin board in College Hall for division into sections and first lesson.

Analytical Chemistry.—Juniors, Agricultural Course. Prof. F. S. Kedzie. Analytical room Chemical Laboratory, 10 to 12 A. M. No text for first week.

Botany (*Parasitic Fungi*).—Elective for Seniors. Dr. Beal. Hours to be arranged.

Botany.—Agricultural Sophomores, Prof. Wheeler. Meet in Botanical Laboratory, class room 12, daily, from 10 to 11 A. M.

Botany.—Agricultural Freshmen. Instructor, Longyear. Meet in Botanical Laboratory, in class room 8, two hours per day; division A. at 1 P. M.; division B. at 3 P. M. Text, Beal's Hints to Beginners in Botany.

Civics (Moral Philosophy in Catalogue).—Agricultural Juniors. Prof. Hedrick. Meet Tuesdays, Wednesdays and Fridays at 9 A. M. English class room. Text, Fiske. This takes the place of Stock Breeding.

Cooking.—Prof. McDermott. All students in cooking will meet at Abbott Hall at 1 P. M. Thursday.

Descriptive Geometry. — Mechanical Sophomores; Prof. Holdsworth; 10-12 A. M., Mon., Wed., Fri.; Drawing Room, 2d floor Mechanical Laboratory.

Elementary Kinematics.—Mechanical Juniors. Instructor Westcott. Text-book, Stahl and Wood. Mondays, Wednesdays and Fridays, 8 A. M. Prof. Noble's recitation room.

English History.—Special class for Agricultural Juniors who have not passed the subject. Prof. Hedrick. Meet in English class room at 7 A. M. Text, Montgomery's Leading Facts in English History.

English Masterpieces.—Senior Agriculturals; Dr. Edwards; time to be determined; north room, second floor of College Hall; daily. Pancoast's Introduction to English Literature.

Experimental Laboratory. — Mechanical Seniors. Prof. Weil. No text-book. Mondays and Fridays, 1 to 3 P. M.

Farm Labor.—All Agricultural Juniors and Sophomores. Meet at 1 P. M., Tuesday, at the Agricultural Laboratory for assignment to labor.

Farm Management.—Juniors. Prof. Smith. Meet in Veterinary class room at 8 A. M., Tuesday.

French.—Junior Mechanicals; Dr. Edwards; time to be determined; north room; 2d floor of College Hall. Edgren's French Grammar.

German.—Junior Mechanicals; Dr. Edwards; 10-11 A. M., daily; north room, second floor of College Hall. Thomas' German Grammar.

Garden Labor.—Agricultural Seniors meet at the Horticultural Laboratory at 1 P. M. for assignment to labor.

Grammar.—Freshmen; Prof. Noble. Meet in southwest corner room; 3d floor of College Hall; Division A. at 11 A. M.; B. at 9 A. M.; Mechanicals at 10 A. M. Text, Maxwell's English Grammar.

Graphic Statics.—Mechanical seniors; Prof. Vedder and Mr Pashby; Engineering class room on first floor of College Hall. Text, Roofs and Bridges, by Merriman & Jacoby. First meeting of class on Wednesday at 9 A. M., for which the lesson will be the first four articles of the text-book.

Graphical Statics of Mechanism. — Mechanical Seniors. Instructor Westcott. Text-book, Hermann-Smith. Mondays and Fridays, 10 to 12 A. M. Drawing room.

Integral Calculus.—Mechanical juniors; Prof. Babcock. Text, Johnson's Integral Calculus. Class will meet Tuesday at 9 A. M. on second floor, College Hall, south side. No lesson assigned for first meeting.

Junior Anatomy and Physiology.—Prof. Barrows. Class will meet in Zoological lecture room at 4 P. M., Tuesday. Text-book, Foster & Shore's *Physiology for Beginners.*

Live Stock.—Freshmen. Instructor Mumford. Meet 10 hours per week in Agricultural Laboratory. Division A. at 8 A. M., and division B. at 10 A. M.

Machine Design.—Mechanical Juniors. Instructor H. E. Smith. Text-book, Klein. Tuesdays and Wednesdays, 1 to 4 P. M. Drawing room.

Mechanical Drawing.—Freshmen; Prof. Holdsworth; 1-3 P. M. daily; Drawing Room, 2d floor Mechanical Laboratory.

Metallurgy.—Mechanical Juniors. Prof. Weil. Hour and place of meeting will be announced later.

Meteorology.—Elective for Seniors; Dr. Kedzie; meet daily at 8 A. M. in Chemical lecture room. Come prepared to take notes.

Orations.—One oration will be required of each Junior and Senior during the present term. For appointment call at the English office in the Library Building between 3 P. M. and 5 P. M. of any afternoon during the first week of the term.

Physics.—For all Sophomores. Prof. Woodworth. Meet in Physical Lecture Room at 9 A. M., first four days in the week.

Psychology.—Agricultural Sophomores. Prof. Hedrick. Meet at 11 A. M. in English class room. Text-McLellan.

Rhetoricals.—Freshmen, Instructor Crosby. Two days per week at 3 P. M. in the Chapel. Text, Hamill's New Science of Elocution and Irving's Rip Van Winkle. Agricultural division meets Mondays and Wednesdays. Mechanical division Tuesdays and Thursdays.

Rhetoricals.—Sophomores. Instructor, Crosby. Text, Webster's Reply to Hayne. Meet in Chapel one day per week. A. Agriculturals meet Fridays at 11 A. M.; B. Agriculturals, Fridays at 9 A. M., and Mechanicals Thursday at 10 A. M.

Senior Zoology.—Prof. Barrows. The Senior elective for the fall term is Zoology, not Geology as stated in the catalogue. No text-boox required. Hours to be fixed later.

Shakespeare.—Junior Agriculturals; Dr. Edwards; 4-5, Thursdays; north room, 2d floor of College Hall. Romeo and Juliet (Rolfe).

Shop Practice.—Mechanical Seniors. Instructor Leonard. Tuesdays and Wednesdays, 1 to 4 P. M. Machine shop.

Shop Practice.—Mechanical Juniors. Instructor Leonard. Mondays and Fridays, 1 to 4 P. M. Machine shop.

Shop Practice.—Mechanical Sophomores, Sec. B. Instructor Hoyt. Except Friday, 1 to 4 P. M. Foundry.

Shop Practice.—Mechanical Sophomores, Sec. A. Instructor Theodore. Except Monday, 1 to 4 P. M. Blacksmith shop.

Shop Practice.—Mechanical Freshmen. Instructor Hoyt. Daily, 8 to 10 A. M. Wood Shop.

Shop Methods.—Mechanical Sophomores. Instructor Leonard. No text-book. Tuesdays and Thursdays, 11 A. M. Recitation room.

Solid Geometry.—Agricultural Sophomores; Prof. Babcock. Continuation of the geometry of the summer term for the same students. Beman and Smith's Geometry is the text-book. Class will meet for registration on Tuesday at 8 A. M., on 2d floor, south side of College Hall. No lesson for first meeting.

Steam Engine Design.—Mechanical Seniors. Instructor Westcott. Text-book, Klein, Tuesdays, Wednesdays, and Thursdays, 10 to 12 A. M. Drawing room.

Stock Breeding.—Agricultural Juniors. Transferred by consent to last half of winter term.

Surveying. — Mechanical juniors; Prof. Vedder. Text, Hodgman's Surveying. Class will meet on Tuesday and Thursday in Engineering class room at 11 A. M. Field work on Thursday, 1 to 3 P. M. Lesson for Tuesday, first ten pages of the text.

Thermodynamics.—Mechanical Seniors. Prof. Weil. Text-book, Peabody. Daily at 8 A. M. Recitation room.

Trigonometry.—Mechanical sophomores; Prof. Vedder. Meet daily at 8 A. M. Text, Wentworth's Trigonometry. Lesson Tuesday, first three pages. Provide a note book to be used exclusively for notes on this subject.

Valve Gears.—Mechanical Seniors. Prof. Weil. No text-book required. Tuesdays and Thursdays, 9 A. M. Recitation and drawing room.

Veterinary Science.—Elective for Seniors. Dr. Grange. Meet in Veterinary class room at 11 A. M.

SIR JOHN LAWES AND HIS WORK FOR AGRICULTURE.

COMMENCEMENT ADDRESS BY C. H. BRIGGS.

In the great field of agricultural science, no more earnest workers are found than those at the experiment stations. Of all these stations in this country and Europe, the one worthy of the greatest praise is Rothamsted. No station has been directed more carefully, faithfully, and judiciously than this noted station in England. No station has achieved more marked success, proved of more benefit to agriculture, or become more famous than this. These facts would not be surprising if the station were backed by England herself, but our admiration increases still more when we learn that all this is the gift of one individual—one man who has furnished all the means for the undertaking, and — far more important — has devoted his whole life to the study of this science. The name of this distinguished man is Sir John B. Lawes.

Scarcely can we study any line of investigation without finding him one of the foremost experimenters on the subject. Article after article has been published in magazines, volumes have issued from Rothamsted, but many of the results reached during fifty years of experimenting at this wonderful station still remain unpublished. The extent of these investigations, the amount of work they represent, can hardly be realized. It is only when we give them careful study that our appreciation grows, in some degree commensurate from the hill to the mountain.

Rothamsted station is the second oldest in existence. For fifty-three years it has been disclosing nature's secrets. It was preceded by Boassingault's station, and was followed by the first German station in 1852, and the first American station at Middletown, Connecticut, in 1875. Representative as it thus becomes of the most advanced agriculture of our day it is certainly worthy of our attention for a few moments.

In taking up the study of any important work, it is always interesting to trace its beginning. To apply this process to our subject it is necessary to go back to 1834 and consider a bold youth of twenty, John B. Lawes, Esq., as we find him, fresh from Oxford, and just come into possession of the Rothamsted manor. The old manor house teems with the chivalry of its previous owners. The front hall bristles with its armor and many trophies of the chase. But a new ruler has come into power. He is a young scientist and first startles the repose of his mother by fitting up the best bedroom into a chemical laboratory. His attention is drawn to the composition of drugs. Accordingly he sows on his farm many different plants, such as poppies, henbane, belladonna, etc., from which to make his drugs. Now he wastes a great deal of time and money in endeavoring to manufacture calomel and corosive sublimate on a large scale by burning mercury in chlorine gas.

Soon his attention is drawn to the plants themselves and he applies his chemistry to agriculture by testing the effect of various fertilizers on plants grown in pots. Here he makes his first important discovery. He notices the marked benefits obtained from phosphates which have been previously treated with sulphuric acid. In other words he has discovered the superphosphates. He transfers his experiments to the field and increases the number every year. Henceforth, for fifty years, he may be found endeavoring to solve scientific problems. Thus we see the undirected energies of this ambitious youth wander into the scientific field which has since been so enriched by the mature man.

In 1843, Dr. J. H. Gilbert was employed as chemist, and the foundation of the Rothamsted station dates from this year. Indeed Dr. Gilbert has proved almost a partner in the undertaking. He has had much to do with the conduct of the experiments, and is responsible for many of the published reports. The experiments are always known as those of Lawes

& Gilbert. With this brief look at the foundation of Rothamsted, let us now turn our attention to the station and its work.

Rothamsted manor is situated about twenty-five miles north of London, and comprises about 500 acres. Of this thirty-nine acres are divided into experimental plots. The plan of the experiments is unique. In no other station are they carried out in the systematic way or on such a large scale. You find no conclusions drawn from one-year experiments; but they are repeated on the same ground and under the same treatment year after year, until the conclusions drawn are sure to be correct. Wheat, for example, has been grown on the same ground for fifty years, part under exactly the same conditions and part under different conditions according to the nature of the experiment. Samples of the soil for analysis, are taken from each plot every year, as also samples of crop grown and fertilizers applied. This permits the study of many questions besides the particular experiment;—such, for instance, as soil exhaustion, the permanent effect of fertilizers, and the effect of season on produce. A single field experiment, thus thoroughly and patiently carried out, touches half of the domain of agricultural chemistry, and supplies information of the most solid and valuable kind.

The matter of the preparation and analysis of samples is no minor part of the work at Rothamsted. Three persons are constantly employed during the summer in collecting and preparing samples. Over 40,000 samples of soils, plants, ashes of animals, etc., are preserved in separate bottles in the laboratory. Three chemists are employed in analyzing these samples, and often analytical work is done in London. At first, an old barn was used for a chemical laboratory, but in 1855, a new laboratory was erected and presented by the prominent agriculturists, as a token of appreciation.

The investigations at Rothamsted have been made mainly along two distinct lines, viz., Animals, and Plants. Besides these, considerable work has been done in the analysis of rain water for ammonia and nitrates, and drainage waters for the elements contained.

The experiments with animals are almost the first of the kind. They consist of many feeding experiments, which have furnished much of the foundation for our present principles in stockfeeding. Also many laborious analyses were made to determine the composition of the bodies of animals, and the composition of the increase in the bodies of fattening animals.

The first experiments with plants were made largely to disprove Liebig's mineral-ash theory. This theory, which was generally accepted, held that certain ash elements were essential to the growth and development of the plant, and that such substances must be furnished to it by the soil. The necessity of a certain quantity of nitrogen was recognized; but it was imagined, since wild plants could thrive without any artificial supply of nitrogen, that a sufficient amount of that element existed in the air to render it unnecessary to take any steps for increasing the supply. The important discovery made by Mr. Lawes of the absolute necessity of the presence of nitrogen in the soil in order to maintain its fertility was a contradiction of this view, and led to the opening of a new field of agricultural investigation.

The sources of nitrogen was the next problem to be solved. It was thought that rain water might be one of the sources, since it contained both ammonia and nitrates. A rain gauge having an area of 1-1000 of an acre was made, and the rain carefully collected for several years. The analyses showed that the amount of nitrogen furnished in this way was very small. Indeed, the analysis of drainage waters during the same time proved that almost as much nitrogen was carried away in the form of nitrates as was brought down by the rain. Thus this theory was likewise exploded.

Many more investigations with nitrogen followed, progressing as science progressed, and always pushing ahead.

The subject of nitrification, or the changing of ammonia into nitrates ready for assimilation by the plant, was carefully studied. It must be remembered that nitrogen in the forms of ammonia and organic nitrogen cannot be taken up by plants, but must first be converted into nitrates. This essential service is performed by a bacterium called the nitre-plant. These bacteria, extremely minute in size, but making up for this by their enormous number, permeate all fertile soils, and convert the ammonia and organic nitrogen into forms convenient for the plant.

As soon as the discovery of these bacteria was announced, experiments were immediately commenced at Rothamsted. One of the first experiments shows very plainly the work of the nitre-plant. A weak solution of ammonia salts was prepared and placed in four pint bottles. Two of these were placed in a window and two in a dark cupboard. To one under each condition was added a grain of fresh pasture soil. After some time the solutions were examined. The ammonia in the solution seeded with soil and kept in darkness was completely nitrified, while the other solutions remained unchanged. The experiment was repeated, and the result as before was that the solution in darkness nitrified while that in the light did not.

This experiment is a good example of Rothamsted investigations. A great many such experiments are performed, many proving fruitless and giving no reward, but others proving of inestimable value to science.

The scope of these investigations can hardly be realized. They extend far into other sciences, for the broad field of agriculture requires it. The number may partly be judged from the publications of the results. These publications are so numerous that the titles of the articles alone would cover several pages. Yet this magnificent work is not yet completed. The venerable man who founded the undertaking and carried it on so successfully for fifty years, has now become decrepit and laid his work aside; but as a final offering to the science he loves so well, he has given £500,000 for the continuance of the station.

It is needless to say that the efforts of this earnest man have been appreciated. He has received many of the highest honors, both from his own country and foreign admirers. Parliament has frequently shown its esteem, and the queen, as an evidence of her esteem, made him a baronet.

England has only one experiment station, Rothamsted, and that a private institution. This station has achieved marked success, and the progress of agricultural science has been rapid. In the United States today there are nearly fifty such stations, though many are still in their infancy. How great indeed must be the progress of this science in another fifty years if we but follow the example so nobly set by Lawes & Gilbert!

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Clerk to President.
CHACE NEWMAN.
Clerk of Mechanical Department.

Aside from the State Board of Agriculture given above, the following are the officers of the Experiment Station:

STATION COUNCIL.

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Jonathan L. Snyder, Ph. D., Pres.....Ex-officio.
L. R. Taft, M. S.....Horticulturist.
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ADVISORY AND ASSISTANT STAFF.

A. A. Crozier, M. S.....Assistant in Agriculture.
Herbert W. Mumford, B. S..Assistant in Agriculture.
H. P. Gladden, B. S.....Assistant in Horticulture.
M. L. Dean.....Assistant in Horticulture.
Thorn Smith, B. S.....Assistant in Chemistry.
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Chas. F. Wheeler, B. S.....Botanist.
Mrs. L. E. Landon.....Librarian.
T. T. Lyon, So. Haven.....In charge of Sub-Station.
R. L. Taylor, Lapeer.....In charge of Apiary.

SUB-STATIONS.

Grayling, Crawford county, 80 acres deeded.
South Haven, Van Buren county, 10 acres rented; 5 acres deeded.

OFFICIAL DIRECTORY.

Sunday Chapel Service—Preaching at 2:30 P. M.

Y. M. C. A.—Holds regular meetings every Thursday evening at 6:30 and Sunday evenings at 7:30. S. H. Fulton, President. C. W. Loomis, Cor. Secretary.

Natural History Society—Regular meeting second Friday evening of each month in the chapel at 7:30. L. R. Love, President. J. W. Rigterink, Secretary.

Botanical Club—Meets first and third Friday of each month in Botanical Laboratory at 7:30. C. F. Wheeler President. B. Barlow, Secretary.

Dante Club—Meets every Wednesday evening at 7:30 in Prof. W. O. Hedrick's office, College Hall. Prof. A. B. Noble, President.

Students' Organization—S. H. Fulton, Vice-President. H. L. Becker, Secretary.

Columbian Literary Society—Regular meeting every Saturday evening in their rooms in the middle ward of Wells Hall, at 7:30. E. H. Sedgwick, President. C. F. Austin, Secretary.

Delta Tau Delta Fraternity—Meets Friday evenings in the chapter rooms on fourth floor of Williams Hall, at 7:30. W. Judson, President. C. P. Wykes, Secretary.

Eclectic Society—Meets on fourth floor of Williams Hall every Saturday at 7:30 P. M. C. D. Butterfield, President. Manning Agnew, Secretary.

Feronian Society—Meets every Friday afternoon at 2:30 in U. L. S. Hall. Miss Sadie Champion, President. Miss Marie Belliss, Secretary.

Hesperian Society—Meetings held every Saturday evening in the society rooms in the west ward of Wells Hall at 7:30. J. D. McLouth, President. R. H. Osborne, Secretary.

Olympic Society—Meets on fourth floor of Williams Hall every Saturday evening at 7:30. H. W. Hart, President. C. J. Perry, Secretary.

Phi Delta Theta Fraternity—Meets on Friday evening in chapter rooms in Wells Hall, at 7:30. W. G. Amos, President. F. H. Smith, Secretary.

Union Literary Society—Meetings held in their Hall every Saturday evening at 7:30. E. A. Robinson, President. S. F. Edwards, Secretary.

Tau Beta Pi Fraternity—Meets every two weeks on Thursday evening in the tower room of Mechanical Laboratory. G. A. Parker, President. E. H. Sedgwick, Secretary.

Club Boarding Association—I. L. Simmons, President. H. A. Dibble, Secretary.

M. A. C. Grange—Meets every two weeks in the Columbian Society rooms. G. H. True, Master. H. W. Hart, Secretary.

Try and Trust Circle of King's Daughters—Meets every alternate Wednesday. Mrs. W. B. Barrows, President. Miss Lilian Wheeler, Secretary.

NEWS FROM GRADUATES AND STUDENTS.

Fred Sharp, with '95, of Perry, Mich., visited the grounds on Labor day.

L. C. Brooks, '92, *m.*, is second engineer on the new lake steamer Sacramento.

Prof. D. W. Trine, '92, spent a day at the College on his way back to Corvallis, Oregon.

H. E. Ward, '95, expects to return to College this fall to take work in Bacteriology.

Peter Ross, '95, is gardener and florist for a mining company in East Helena, Montana.

E. O. Ladd, '78, Old Mission, has been renominated by the republicans for register of deeds.

Alex. Moore, '89, Port Huron, has been renominated for Circuit Court Commissioner of St. Clair county.

L. J. Briggs, '93, Washington, D. C., is spending a week with his parents and brother at Lacey, Mich.

R. H. McDowell, '74, professor of agriculture and horticulture in the University of Nevada, called on us Sept. 3.

H. F. Buskirk, '78, Wayland, is the republican nominee for representative to the State legislature from Allegan county.

A. S. Hume, '74, with family and friends visited M. A. C., August 28. Mr. Hume is a farmer living west of Lansing.

O. J. Root, '89, *m.*, Lansing, has been appointed assistant superintendent of the Iron and Engine works of Watertown, N. Y.

A. T. Cartland, who entered with '96, has been at the College during vacation. He expects to remain and graduate with '97.

A. W. Mather, '83, Hammond, Ind., visited the College week before last. He is in the employ of the Armour Company of Chicago.

Glen Perrigo, '88, Fort Scott, Kansas, has been spending a short vacation at his home in Portland. He called at the College last Friday.

William Petrie, '90, m., superintendent of the electric lighting system at St. Johns, Mich., called at M. A. C. with his wife last Wednesday.

G. W. Corey, with '98, m., of Detroit, spent a few days at the College during vacation. He goes to the Mich. Mining School at Houghton soon.

H. E. Van Norman, '97, as representative of the State Dairymen's Assn., will judge the dairy products at the Ionia Co. Fair on the 16th and 17th.

E. Joy Heck, '95, was married recently to Miss Gertrude M. Powell of Monterey. He will remain as principal of the Grandville schools another year.

A. L. Bemis, with '83, editor of the *Carson City Gazette*, has been nominated by the republicans of the eastern district of Montcalm county for representative in the State legislature.

M. A. C. men are taking a very active part in Ionia county politics this fall. C. I. Goodwin, '77, for register of deeds; Grant Morse, with '75, for judge of probate; and W. K. Clute, '96, for circuit court commissioner, are three of the nominees on the republican ticket. C. P. Locke, '91, opposes W. K. Clute on the tripocratic ticket.

THE TENNIS TOURNAMENT.

The tennis tournament which occurred at the close of last term—some of the games running into vacation—brought out some very sharp contests and developed quite an interest in the game. Such a tournament held just before the annual field-day, with good prizes at stake, would not only help develop an interest in this excellent sport a M. A. C., but would bring out the best material for the field-day contests.

Eight teams entered in the doubles, in the finals of which Briley and Brown won from Crosby and True by a score of 5:7, 6:4, 6:4. The prize to each of the winners in this contest was a Slocum Jr. raquet given by the Lansing Book and Paper Co. and Elliott and Stocoum. Crosby and True were each given a pair of white duck pants with belt, by Davis & Co.

In the singles there were sixteen entries and the games had not been finished when school closed. In the first section of the preliminaries Hagadorne won. In the second Jaques and Sears each won a set, when Jaques was obliged to leave for home and forfeited to Sears. Sears then forfeited to Hagadorne, who received a Delmar raquet from J. H. Larabee. The second prize was a pair of white duck pants given by Elgin Mifflin.