

The M. A. C. Record.

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EQUIPMENT FOR THE STUDY OF PHYSICS.

PROF. PHILIP B. WOODWORTH.

A visit to the College should always include a call at the Physical Laboratory. Here will be found the youngest department of the College, and an interesting exhibit of models and apparatus used to illustrate a science which has suddenly expanded into wide commercial applications, marking out new fields and creating new industries.

The apparatus in the Physical Laboratory has been carefully gathered and affords excellent facilities for teaching physics and electrical engineering.

The main floor has a lecture room, with chairs for one hundred students, an office and a work room. The lecture room is a study. In this one room there must be arrangements to make experimental proofs of the principles and modern industrial applications of heat, sound, light, mechanics, and electricity. The lecture table and surroundings are lighted by a sky-light. A large mirror is set to give every student a top view of every thing on the table. For the subject of light the room must be very dark for a large number of the experiments. Shutters are provided so that the room can be darkened on short notice. The room and blackboard are lighted by incandescent lamps, operated from a storage battery or some one of the half dozen dynamos on the lower floor. When the room becomes too warm to be comfortable an electric ceiling fan is operated, which serves to stir the air and cool the heads of transpiring students. Set in the wall opposite the lecture table is a large heliostat, capable of brilliantly illuminating a 15x15 screen. The heliostat is often used to show lantern or microscopic slides. A red glass placed in the heliostat converts the whole room into a photographic dark room, where instruction can be given one hundred students at once. The illustration on this page was developed before the class shown in the picture. The picture was taken of the class as they appeared at the entrance of the Laboratory one morning. The plate was developed before the class to illustrate photographic manipulation and how a group should not be arranged. The illustration of each physical agent requires many special appliances. Arranged at the hand of the lecturer are connections for gas, steam, air blast, vacuum and water. The lecture table is a hydraulic elevator operated from small valves, so that the table can be set at any height from the level of the floor up to five feet. In front of the lecture table is a solid pier from the basement, not touching the lecture room floor. For work with delicate galvanometers and mirror indicating apparatus. Near one end of the table are the switches and controllers for dynamos, storage and other batteries, so that the wires can be used on the table to produce innumerable electrical experiments. The room with the apparatus makes it possible to clearly and rapidly demonstrate the laws of physics.

On the same floor is the office and apparatus room. The cases contain a fine collection of instruments, valued at several thousand dollars. Probably the

most interesting feature of the exhibit to the general public is the Roentgen Ray outfit. A large number of successful photographs have been made by students. For several years the Crooke's tubes have been on the top shelf of a certain case and the photographic material on the bottom shelf of the same case. Now, we wonder why the effect of one on the other was not tried long ago. During the past year many new and important additions have been made to the apparatus. One is a fine testing set of high range for locating faults in electrical circuits. Another is a portable wattmeter for determining the horse-power delivered by any dynamo or received by any motor. The other day the class in electrical work took this wattmeter to the city of Lansing and made a determination of the power necessary to run each machine in a machine shop, and at one of the laundries, of the power to operate a centrifugal clothes dryer, run by an electric motor. The apparatus is not for show only, but each piece is intended for actual work, and students are expected to assist the apparatus. The practice is often hard on the apparatus, but good for the student.

On the lower floor is a suite of rooms for experimental work; a dark room with lockers where ten students can develop plates at once; a room with boiler and 15-horse power engine and various types of dynamos and motors. The storage batteries used for lighting and on the lecture table, the nickel-plating plant, and the primary batteries are all by themselves.

Another room, 15x50 feet, has tables for the laboratory work, which supplements the class room work.

The exercises are largely taken from dairy, farm, and shop. Special attention is given to working illustrations and explanations of such subjects as physics of soils, of fuels, cream separators, ice machines, hydraulic rams, condensation of milk, heat motors, construction and management of dynamos, electric lights, electro-plating and electric heaters. Electrical circuits have terminals in the room from the Lansing telephone exchange, the Western Union telegraph, the College electric time system, the Lansing street railway circuit, the College lighting plant and the Laboratory dynamos and batteries.

The aim of the course is to prepare young men in such a practical way that they can be relied upon to build or operate the apparatus they will undoubtedly come in contact with in mechanical, electrical or agricultural engineering.

Physical Department.

One morning in the garden bed,
The onion and the carrot said

Unto the parsley group:
"Oh, when shall we three meet again,
In thunder, lightning, hail or rain?"
"Alas," replied, in tones of pain,
The parsley, "in the soup."

—Drake's Magazine.

Yale is called the "poor man's college," but the average expense of its students last year was \$1,132.—*Et.*

AN AFTERNOON'S WORK FOR THE SOPHOMORES.

AS SEEN BY THE PROFESSOR IN CHARGE,
PROF. C. D. SMITH.

The extraordinary and abnormal earliness of the season has concentrated the farm work usually done in six or eight weeks into two or three. A great variety of operations must therefore be carried on simultaneously on the farm. I am asked by the editors to outline the work for a single day performed by the students on the farm department. I have chosen, rather by force than by choice, the first day of July.

One sophomore was running the self-binder in rye. Four others were cutting, handling, weighing and spreading out lathyrus silvestris, preparing it for hay and determining its per cent of shrinkage. Six men were at work caring for the plots of corn, of which they have charge, and which are connected with special experiments, cultural and otherwise. Twelve men were engaged in that branch of educational labor which is immediately related to live stock. Seven of this class were judging horses, and five were at work with the poultry. Seven students were at work in the dairy, either milking in the morning and at night, separating or setting the milk at that time, or were testing milk and ripening cream and churning it between one o'clock and half past three.

Another group of men were studying the art of fence building, and on this particular day were stretching the wires on the 94 rods of fence between Nos. 11 and 13.

Of the remaining members of the class, two were weighing up for the last time in a very interesting experiment, the amounts of hay gathered from two contiguous plots of the same size, one cut eight times during the season and the other but once; another was counting the hills afflicted with smut in the special corn plots set aside for that experiment; another was hoeing mangels in an experiment with roots; another was weighing the food material and waste from a certain club, in a dietary experiment being conducted by Prof. Peebles, of Connecticut; still another was working on the "curiosity strip," watching the development of the curious plants there growing and caring for it generally; and finally two others were working in the office of the Experiment Station, assisting in making calculations for a bulletin soon to be issued and for the permanent record of the Station; and a third was taking an inventory of the tools in the students' tool room.

Farm Department.

AS SEEN BY ONE OF THE SOPHOMORES,
F. W. ROBISON '98.

One o'clock: The bell is ringing and the sophomores are reporting for farm work. Soon after the bell stops ringing the last one has reported. We follow them and first encounter Nichols and Hale, who have an experiment to determine, "Which are the most profitable—pigs, lambs, or calves." Nichols is feeding a couple of lambs with a bottle, while Hale is listening to the satisfied grunts of his small porkers. They report the pigs ahead at present.

At the experimental barn are A. B. and C. M. Krentel, who have just finished their experiment to determine which has the greater value—hay left until maturity or that kept close by stock. Results, they say, show that hay left until maturity has the greater yield in the ratio of 20:170.

In the poultry house are Loomis, Kedzie, Thompson and Eldridge, judging silver penciled Hamburgs. They are seated on barrels trying to learn, by the aid of Mr. Brooks, to distinguish between a good fowl and a bad one.

Passing on a little farther we find Backus, Landon, H. A. Williams and A. C. Krentel doing their best to fill up the two and one-half hours allotted to them, by thinning out ruta bagas and incidentally learning to be farmers.

To the east about fifteen rods is Lundy harvesting *Lathyrus silvestris*. As Prof. Crozier was close at hand and Lundy's time was apparently well occupied, we did not get an opportunity to speak to him and so passed on to the "Curiosity Strip" where Richmond and a gang of freshmen, who are trying to take the place of Becker, who has been very sick, are endeavoring

oring to keep American weeds out of foreign plants.

Attracted by the noise of machinery we pass on and find C. H. Van Auken, whose fortune heretofore never led him in the line of farming, wrestling with the mysteries of a self-binder.

We then cross the river and down between Nos. 11 and 13, we see Morrow, Mills, and Force building wire fences. Retracing our steps we turn in at No. 6, and near the middle of the field is Woodworth, who with a couple of freshmen is hoeing corn on his experiment to determine the value of salt as a fertilizer. Near them are Calkins, Campbell, and Townsend, who are also hoeing experimental corn.

In company with these boys we then cross the dam to the boiler-house, and after posting a guard to prevent surprise by Mr. Fulton, we indulge in a refreshing draught of water. Leaving the boys at this place, we proceed on our way to the tool room, where Marsh is busily engaged taking an inventory of the tools.

In the farm office we find Robison, who is assisting Prof. Peeples, of Storrs' Agricultural College, in preparing a bulletin on the economy of board.

In the horse stable is Seeley, judging stock with the freshmen. Fairfield and Lapham are in the dairy, and Ainger is assisting Mr. Conway in the office. F. T. Williams is in Prof. Mumford's office determining the amounts of fats, proteids, and carbo-hydrates in the feed for the experimental sheep. Hankinson is away with Prof. Wheeler, working on a corn-smut experiment.

Feeling pretty tired over our afternoon's journey, we depart feeling that the sophomores, at least, earn their 8 cents an hour.

AT THE COLLEGE.

The union meeting of societies will occur July 31.

It seems good to see A. B. Peebles, '97, again on the grounds.

Miss Belle Locklin spent Sunday with her brother, W. E. Locklin, '99.

C. P. Wyckes, '99, received a visit from his father and brother last Wednesday.

H. M. Howe departed for his new field of labor, with D. M. Ferry & Co., yesterday morning.

Dr. Mary E. Green of Charlotte visited her daughter at College last Wednesday and Thursday.

Chas. Nichols, with '92, Lansing, called at M. A. C. with some friends on Monday of last week.

Next Sunday evening the Y. M. C. A. meeting will be conducted by the Try and Trust Circle of King's Daughters.

Mr. and Mrs. R. S. Campbell, '94, left this morning for Port Huron, after visiting friends at M. A. C. for several days.

Blank cartridges were used by the military department July 1. Report has it that the freshmen were seen to close their eyes and receive the "kick."

C. M. Hallock, with '98 m, has been spending a few days at M. A. C. He is now engaged on a fruit farm near Shelby, but hopes to return to M. A. C. for study in the fall.

At M. A. C. the Fourth passed without notable event. The only attempts at demonstration were the fireworks in front of the Terrace in the evening—excepting, of course, the small boy and his fire cracker.

Hon. C. W. Garfield, '70, gave us an excellent talk in chapel last Thursday morning, "The brightest spot in the whole course of your life will be your college days—when you turn the transit over and look back."

Over one hundred Lansing bicyclists, ladies and gentlemen, took a run to the College Monday evening of last week. At the Agricultural Laboratory they were treated to buttermilk and lemonade by Pres. Snyder and Prof. Smith.

On some of the College walks bicycling is prohibited, and the rule is quite generally observed. But there seem to be a few in our own community who disregard it, with the effect of bringing undeserved reproach on bicyclists in general.

Lieut. E. A. Lewis has been granted a four months' leave of absence from his regiment. This makes it possible for him to remain at the college until the close of this term, after which he will visit in Amherst, Mass., before going to his regiment in Texas.

The faculty and students, and doubtless the alumni are included, will not forget to heed the urgent request to contribute something to the *Heliostat*, the Junior annual. Good wholesome jokes needed. We bespeak a fine production, knowing well the members of the class.

Mr. George Krentel has just completed the monogram occupying the central position of the new floor in the Olympic rooms. This is an extra fine piece of workmanship and much praise is due him for his skill in planning the same. Mr. Rice did the oil finishing very satisfactorily.

The latest addition to our Alumni Library is an *Inductive Manual of Straight Line and Circle*, by W. J. Meyers, '90 m, professor of mathematics in the Colorado Agricultural College. We wish that books of this kind might come in more rapidly, for we want to make as good a showing as possible in our alumni corner.

Bulletins 133, 134 of the State Agricultural College Experiment Station have just appeared. They treat "Tuberculosis" and "Pasteurization of Milk," and were prepared by Dr. E. A. A. Grange and Prof. Clinton D. Smith, respectively. Not far from 20,000 names are now on the list for all bulletins published. They are distributed without cost to those who apply.

Prof. Edwin De Barr, '91, of Oklahoma University, at Norman, Oklahoma, was on the College grounds a short time last Thursday. His mission to this state was a sad one, that of laying his wife to rest in the old home cemetery at Battle Creek. Her death on June 25th, came quite suddenly, from a severe attack of peritonitis. Many friends at the College will sympathize with Prof. De Barr and the two motherless children in their loss.

T. J. Mairs, one of this year's graduates from the Agricultural course of the Missouri State University, and A. J. Sears, a junior from the same institution, are taking special work at M. A. C., the former in dairying, botany, and chemistry, the latter in chemistry and physics. It is especially gratifying to us that these gentlemen should come to our College from such a distance when there are good opportunities nearer home. They give good reports of Prof. F. B. Mumford, '91, and C. M. Conner, '92, both of whom hold positions in the Agricultural department of the Missouri University.

The Whatsoever Circle of King's Daughters of Lansing, and the local Try and Trust Circle, met in a joint lawn social at the College on Wednesday afternoon. The occasion was arranged for the better acquaintance of the members. About thirty of the city circle were present and about twenty from the College. Part of the afternoon was spent in visits to points of interest on the grounds, finishing with a repast spread in the shade on the lawn near the president's house. Addresses were made by the officers of the two organizations and the exercises were enlivened by recitations by Miss Slocum, of Lansing, and by songs charmingly rendered by a quintette of ladies of the city circle.

Athletic interests at this College would surely be advanced and more life and spirit appear in them, if there were provided a separate piece of ground for an athletic field that could be fenced in, and in whose limits could be built seats and covering for spectators. There are a number of tracts near the College that would serve the purpose admirably, and whose valuation is as yet quite low. Of course, it is not expected, nor would it be right that College funds should be used to supply an athletic field. At some Colleges the provision has been made by gift from private parties; sometimes the gift serves as a memorial to a class; or, as in one case recalled, a monument to a student who lost his life in saving the lives of others. Is there not some wealthy alumnus or friend of the College who could be induced to loose his purse strings and supply a need so worthy? Think of the generations of sturdy young men who would continue to bless the name of such a benefactor.

STATION NOTES.

The lathyrus from a measured acre, drawn to the scales as fast as cut, weighed 12 tons.

A half acre of rape is cut and put in a small silo, from which it will be fed to sheep or cattle next fall.

The southwest six acres of No. 18, which is also the southwest corner of the farm, was sown to rape July 3.

The alfalfa in No. 6 was cut for the second time this season July 1. Its height was then about two feet, and the yield considerably less than the first cutting.

A patch of crimson clover, sown this spring, is in full bloom and one foot high. Another half acre was cut late in June and the second crop is now promising.

J. H. Brown, the associate editor of the *Michigan Farmer*, visited the College on the 30th of June to inspect the new varieties of wheat imported from Australia or Europe.

The English sparrows are harvesting the wheat in No. 5. The frequency and extent of their depredations render all experiments with cereals north of the river extremely precarious.

No. 16, which has lain in rough pasture since it was cleared off, is now bearing its first crop, corn. The members of the Board expressed themselves as highly pleased with its appearance.

The oats and peas sown for forage in Nos. 14 and 6 were cut June 30, instead of in the expected drouth in late July and August. The best laid plans of the farmer "gang aft aglee" because of an unexpected early season.

Haying was finished on the farm in June, and the rye harvest began the 1st of July. In gathering the hay crop nearly all of the labor of pitching on was saved by the use of the hay loader, preceded by the side delivery rake. The latter tool is a most excellent one and serves well the double purpose of a tedder and a rake.

The cow, College Dame Le Brocq, 79449 (A. J. C. C.) is a Jersey cow four years old. She has been giving milk nine months. She has been in the habit of giving rich milk and this month breaks the record, giving three messes that test over 10 per cent fat and one that tested 10.9 per cent. Naturally the quantity yielded is not large, being 107.3 lbs of milk and 9.1 lbs of butter for the week. In the 38 weeks of this milking period she has given 370 pounds of butter, or nearly 10 pounds per week.

As a demonstration for the seniors in practical bacteriology, a post-mortem was held in the afternoon of June 30, on the yearling Red Polled bull, which had reacted but .1 of a degree on the first application of the tuberculin test on the first of April. Later, on being re-tested the 11th of May, he reacted in a typical manner indicating tuberculosis. The animal had appeared perfectly healthy after the inoculation as far as any visible signs of disease were concerned. The post-mortem revealed on microscopic examination, indications of the presence of tuberculosis in one gland of the posterior pharyngeal region.

The early harvest millet is the earliest variety of *Setaria Italica* that the College has ever grown. It is introduced for the first time this year and is now in full head. It is east of the roots and early clovers, directly east of the large grain barn, and every visitor should notice it. On the "Curiosity strip" the "curiosity" of the week is another millet (in this case a variety of *Panicum miliaceum*) the seed of which came from Siberia through the Department of Agriculture. In that country the seasons are short, the forage plants small and early maturing. Following the habits of its ancestors this millet is heading out, though but eight inches tall.

Agricultural Department.

DIETARY OF STUDENTS' BOARDING CLUBS.

For a long time farmers have discussed the experiments of stockfeeders who were seeking well balanced rations for various kinds of domestic animals, with the view of feeding them in the most profitable manner. More recently in this country considerable attention has been given to finding the proper selection and proportion of foods for the table, having in mind a good living at the least expense.

Prof. Peebles, '77, of Storrs' College, Conn., has furnished us the following regarding his investigation now going on at M. A. C.:

The object of this investigation is to determine as accurately as possible the nature and composition of the food actually consumed by students.

An inventory is taken of food materials on hand in a club. A careful account is kept of everything purchased during the period, for the table. At the conclusion another inventory is taken. The waste and refuse matter for each meal is hashed into a uniform mixture and weighed. This is sampled, an aliquot part taken, dried, and finally ground, and analyzed. With this data it becomes possible to determine the relative proportions of animal and vegetable matter consumed; the carbohydrates, fats and protein compounds. The proper balancing of ration for students is a matter of some importance. It is desired to have as full data as possible of each student. The age and weight of each is taken at beginning and close of the dietary. A period of two weeks is all that can be allowed for each dietary. On account of the shortness of the time, it is specially desirable that normal conditions shall prevail during the fourteen days.

TROUBLES OF ARMENIA.

A PAPER READ BEFORE OUR COLLEGE Y. M. C. A. BY
OUR ARMENIAN STUDENT.

(Concluded.)

The most important Christian nation which yet groans under the yoke of the Turk is Armenia. For five hundred years the Armenians have been the most faithful subjects of the Turkish throne, and generally have not uttered a least word of complaint until the last thirty years, when some Armenians thought, not to put aside the Turkish yoke, but only to have some reforms for their situation, which is wholly opposite to the spirit of the times and to the progress of the age.

Now, let us see what is the demand of the Armenians. They claim that their honor, bodies, and properties ought to be protected from the Kurd and Circassian robbers, who live without any art but with spoils taken from Christians. Armenians claim that they must have Christian governors in those cities where Christians are in the majority. They claim that they must have freedom of thought, meeting, and press. These are our claims. How do you find them? Is there any unjust thing in them? I believe most of you would say: "They are very moderate." But as a member of that nation, I confess that if we had secured only one-half of our claims we should be contented for the present moment.

Alas! we wanted reforms and get massacres; we wanted bread and life and we get death and taxation. The Turkish government is a decayed body, lingering on the edge of her grave; but she has a blind dagger in her hand, which is the fanatic Mohametan people, who tend a hereditary hatred against Infidels or Christians. This decayed body used the fanaticism of her people to strike all branches which were her life veins.

Many people, reading the terrible news, say to each other, "You know the Turks are killing the Armenians; thousands of them are slain; journals write that horrible things are happening." That is all. Let a few days pass and every impression is put out. But, my friends, do not be indifferent. If you please, let us pay a visit to that bloody field, with the heart of a Christian and the eye of a philanthropist. These plains of Armenia have been the graves of 50,000 human beings, who all died crying the blessed name of Him whom we both adore. See the ruins of those thousands of villages! Their inhabitants were not the crows which you see now there; they were human beings like both of us. They had their sweet, sweet homes; they had their beloved ones, they had their churches and schools. Those fields were not red as you see now; that is the color of Christian blood, which is yet hot and which will be an ornament of blame and hate to the glorious career of the nineteenth century. Those fields were green and blooming as yours. Their old men are buried alive in deep ditches. Their old women are thrown in rivers. Their priests are skinned, then slain. Their young men, who were giving life to these plains by their songs and activity, are either burned or are roaming under the shades of Ararat without finding a place to rest their miserable heads. Their married women are given up to the soldiers and Kurds to satisfy their bestial lusts and then to be slaughtered. Their maidens are hunted up for the harems of provincial governors and ministers in Constantinople. Their children, who were creeping up the stairs of the twentieth century—hope and joy in heart, are put in rows by dozens to test the force of the bullets of Mauser rifles. Their babies are thrown into the air to fall on the lances of soldiers, or are boiled in water to be the food of their wretched and maddened mothers.

I do not want to multiply the scores of hideous crimes that are committed. I am not able to find words exactly explaining those horrible events. Only I say, the Sodom of the Bible is centralized in Armenia, with the addition of such crimes as are the specialty of the followers of Mahomet. I do not know when God will rain on them brimstone and fire.

Imprisoned Armenians are not less in agony. Turkish inquisition, under protection of Christian governments, surpasses the Spanish inquisition. If the executors of Spanish inquisition were alive and present at any torturing ceremony of Turkish prisons, they would admire the development of the science of torturing. Excepting some unusual cases, this persecution in Turkey is for all Christians, but Armenians are specially aimed for.

I am convinced that this last disaster of my nation is only for the sake of Christianity. Nobody can say that if the Armenians had been Mohametans they

would be slaughtered so. If these victims of Mohametan fury had claimed Mohamet as their prophet, most of them would surely have escaped death, but they did not and died. A priest of old age, having been forced to make his choice between Mohamet and Christ, or life and death, knelt down and cried out: "O God, forgive them, because they do not know what they do." The sword of execution gave an immediate end to his life.

Is the Sultan ordering these massacres or not? I will put before you only two of the proofs which I know. First, about five years ago the Sultan organized fifty regiments of cavalry from those Kurdish races which were long notorious for their cruelty toward Armenians, and called them after his name, Hamidie, keeping for himself the honorary commandership of this army of vagabonds. He presented their chiefs precious swords and silk flags and gave them the best arms. This Hamidie cavalry has done the greater part of the massacres in all parts of Armenia. Next, after these wholesale butcheries the Sultan rewarded all the commanders and governors of those provinces of which Zeki, Shakir, and Bahri pashas received the highest decorations of merit and gold and silver medals, in appreciation of their good services to the country in clearing it of Armenians. There is no doubt that these slaughters were planned by the Sultan himself.

What is the estimate damage to Armenians after these troubles? You can have some idea when I say that there are about two and one half millions of Armenians in Turkey, of which one and a half million are now in the utmost degree of starvation; one million are damaged more or less; and the other million have lost much. I am one of the least damaged Armenians, and I paid more than \$200, not counting what my uncle and brother-in-law paid for me. This is an estimate in sound money, not taking in account the loss of houses, property, farms, etc.

What is the responsibility of the Christian world to Armenia; and especially, what have Americans to do for this suffering people? I am not to advise you. Americans know their duties better than I do. But as an Armenian, I feel myself obliged to express my gratitude publicly for the efforts which Americans have made and are making to help Armenians.

P. G. HOLDEN '89, RECEIVES A GOOD APPOINTMENT.

Prof. E. Davenport, '78, of the University of Illinois, writes:

"I know you will be glad to hear that P. G. Holden, '89, was elected to the position of assistant professor of Agricultural Physics. This will give him charge of the field agriculture here and connect him with the agriculture of the greatest agricultural state of the United States. He will be chief in the department and a member of the faculty, with a certainty of advance in both salary and title if successful. Prof. Holden was born and reared to the life of the farm. He knows the business and its people, their condition and their needs. He graduated from Michigan Agricultural College, the oldest of its kind in America, in 1889, and spent the next four years in the same institution in active work in the agricultural department. He has recently given special attention to pedagogy, the better to enable him to reduce this new subject to a teaching basis. He is an enthusiast in both investigation and instruction and abundantly possessed with faith in the future of agriculture.

"He comes to us from influential relations, and consented to sever those relations and come to the University only upon the express understanding that this new department should have the largest possible opportunity for advancement. He will take immediate and absolute control of all matters relating to the field and its crops, and the farmers of the state and their sons may be assured that in Prof. Holden they will have an able and enthusiastic champion and friend."

PROF. CHARLES M'KENNY.

The state board of education yesterday selected Prof. Charles McKenny of Olivet, principal of the new State Normal school at Mt. Pleasant. Prof. McKenny is a graduate of the M. A. C., ['81], and Olivet college and is considered one of the brainiest educators in the state. He was born and reared near Dimondale and up to the time of his selection to the important position at Mt. Pleasant was a prominent candidate for superintendent of public instruction. His selection makes pretty clear sailing now for Jason E. Hammond.

—State Republican.

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WHAT THE BOARD DID AT ITS LAST MEETING.

The State Board of Agriculture met at the college on Tuesday and Wednesday of last week, and the following business was transacted.

A request of Pathmaster Beal for road work by College team was referred to the President and Secretary, with authority.

The Director of the Experiment Station sent in a communication regarding proposed experiments with tuberculosis in cattle, which was approved and adopted, and the experiments will be carried out on the lines mentioned. The following is the work as laid out:

1. Investigations concerning the avenues of infection and means of transmission of the disease from one animal to another, or from animals to man. Under this head come:

- (a) Examination of the milk for bacilli;
- (b) Examination of foecal matter for the same;
- (c) Examination of urine for the same;
- (d) Examination of saliva and sputa generally;
- (e) Examination of milk by feeding to healthy calves.

2. Investigation for the tuberculin test as diagnostic agent. This involves the somewhat frequent testing of the herd and possible slaughter of suspected animals.

3. Search for means of preventing and curing the disease. Exposure of the cows to sunlight, frequent injections with tuberculin the use of rock oil in the feed, heating to above the thermal death point of the microbe, and inoculation and subsequent treatment of Guinea pigs, are lines of experiments suggested and partly begun.

4. Investigation of the heredity of the disease or at least its transmission from mother to progeny through antenatal influences.

5. Investigations of the life history, thermal death point, methods of reproduction, possible spore formation and other peculiarities of the microbe causing the disease.

The President and Director were authorized to appoint a bacteriologist to assist Dr. Grange in the investigations.

The President and Secretary were authorized to arrange Abbot Hall for the use of the Woman's Department, and President Snyder was authorized to select a matron and teacher, whose title will be "Professor of Domestic Economy and Household Science."

The President was authorized to engage an engineer in place of Mr. Edgerton, and also a foreman of the machine shop in place of Mr. Newell, resigned.

The Director of the Station was instructed to close up the Apairy work in charge of Mr. R. L. Taylor of Lapeer, as soon as satisfactory arrangements can be made.

The apportionment of funds for the different departments for the next six months was made as follows: Salaries, \$18,500; heating, cleaning and lighting, \$5,500; Farm, \$2,500; Horticultural, \$1,800; Mechanical, \$1,600; English, \$50; History and Political Economy, \$25; Chemistry, \$600; Botany, \$500; Zoology, \$400; Mathematical, \$125; Physical, \$300; Veterinary, \$100; Drawing, \$50; Military, \$100; Offices, \$1,100; Library Books and Binding, \$500; Periodicals, \$300; Contingent, \$1,500; Deficiency, \$450; Total, \$36,000.

The erection of a forcing house for the Horticultural Department was authorized. The location of this house will be back of Wells Hall near the grapery.

The board voted to discontinue the practice of pay-

ing expenses of the College people to various meetings and conventions.

The President and Secretary were authorized to partially furnish some rooms in Abbot Hall if deemed advisable. They were also authorized to consider the advisability of raising the roof of the rear wing of Abbot Hall for the purpose of making room for a suitable kitchen for the Women's Department.

The Mechanical Department was authorized to purchase a lathe.

The Farm Department of the Experiment Station was authorized to purchase some glass jars for soil experiments.

Mr. C. F. Wheeler, at present assistant in botany and consulting botanist of the Experiment Station, was appointed assistant professor of botany, his work to continue, however, as at present.

A committee was appointed for the purpose of considering the advisability of leasing lots on the college ground or farm to people who may wish to erect houses for the accommodation of students or professors, or others connected with the college, to report at some subsequent meeting, and if favorably considered, to prepare some rules and regulations which shall govern such leases.

AN ENCOURAGING LETTER.

Department of Chemistry, University of Idaho, June 20.
To the Editors M. A. C. RECORD:

The M. A. C. RECORD is rapidly winning a warm place in the hearts of the alumni of the College, and in the esteem of the friends of the school in general. It should have been born when the "Speculum" had a creation. The College has needed just such an exponent all these later years.

I am gratified to learn that M. A. C. has emerged from her swaddling clothes and has come out into the sunshine of co-education; also that the College vacations are made to conform with those in other prominent institutions. I cannot help feeling that a period of great usefulness and wide influence awaits the College, and I congratulate the faculty and State Board, who have been instrumental in effecting the change. May a copy of the RECORD never fail to bring a weekly message to our desk.

We are located many hundreds of miles from our alma mater, but thought quickly spans the distance, and memory recalls many happy and fruitful years passed at dear old M. A. C. in undergraduate and postgraduate study. Many have been the changes in the personnel of the faculty and the perspective of the campus since the spring of 1878, when I first found myself riding over a frozen, log road en route to the College, there to enroll as a student. How full of thought and inspiration and manly development were those years. It was at times a most severe and disheartening struggle on the part of many of us to obtain the funds to maintain ourselves at the College; but the quality of the instruction, the kind and helpful work of the dear old president, Dr. Abbot, long since gone to his reward, and the inspiration and stimulus gained by daily association with the veteran scholars and accomplished teachers, Kedzie, Beal and Cook, sustained us. Many are the young men now holding honorable positions in Universities, Colleges and Experiment Stations, that imbibed their first love for knowledge at the feet of these men, and we congratulate them as they are passing down the shady side of life on the vast throng of noble sons and daughters who represent them upon the farm, in institutions of learning, and best of all, in the sweet, quiet, pure, successful homes dotted all over these United States, which their words and instruction and Christian bearing have largely helped to create. Surely the true teacher lives even unto the end of time in the lives of his students.

Would that I could be in attendance at the next commencement of our dear alma mater, but distance and the duties devolving upon me as chemist of the Experiment Station, and the character of instruction to be given next year in my department, hold me here.

The University of Idaho has just closed a most successful year, the fourth in its history. From a faculty consisting of two men on the day of its opening, Oct. 3, 1892, and about 40 students, all preparatory, it has grown in four years to number a faculty of 20 professors and assistants, an enrollment of 300 students, 78 taking the collegiate courses, and has graduated its first class of four. The University is rapidly forging to the front among the best schools on the Pacific coast, for the quality of its instruction and the enthusiastic mental and physical qualities of the studies.

With best wishes,

C. W. McCURDY, '85.

NEWS FROM GRADUATES AND STUDENTS.

Prof. Luke Colburn, '88, is now at Bangor, Mich.

Lee Chapman, with '97, is still very sick at his home in Lake Odessa.

W. G. Merritt, with '92, is doing chemical work at Lewis Run, Penn.

John Toan, with '90, is spending the summer on his father's farm, near Portland.

Walter Williams, with '97, is traveling for a wholesale grocery house of Chicago.

Prof. F. B. Mumford, '91, and wife, are spending the summer in Southern Michigan.

A. J. Bruen, with '98 m, is employed in the hardware store of A. M. Porter, Lansing.

J. M. Barnay, with '98 m, is working for a mechanical firm at 59 Nassau street, Brooklyn, N. Y.

Clark H. Lamoreaux, with '96 m, is now with the printing firm of Ray & Irving, Lansing, Mich.

A. C. Sly, '91, of Roscommon, visited us last week. He reports crops in that county in extra fine condition.

J. R. Sayler, with '96 m, is engaged with Frazer & Chalmers, manufacturers of mining machinery, Chicago.

H. W. Lawson, '95, superintendent Lawton schools, will enter the U. of M. summer school for some modern language work.

Dr. Geo. A. Waterman, '91, of Storrs Agricultural College, Conn., will spend the vacation in Michigan, taking special studies at the University.

Dean F. Griswold, '75, a successful farmer of Northville, is furnishing material for the condensed milk factory of that young city. He rejoices in the success of THE RECORD.

H. B. Fuller, '92, Com. of Schools, Montmorency county, is at his home near M. A. C. for a few days. He will attend the N. E. A. and return to Lewiston to conduct a summer school.

Benj. H. Halstead, with '97, says board at Bloomington, Ind., is \$2.35 the year round. The boarding house keeper furnishes as good board as the clubs at M. A. C. and makes money at it.

J. E. Clark, principal of the Shelby schools, who was a summer student here last year, writes that it did him so much good that he is coming again this year. He is at present attending the N. E. A.

Prof. A. G. Gulley, '68, is the successful head of the Horticultural Department at Storrs Agricultural College, Conn., and is developing the work in all useful lines to the entire satisfaction of the institution.

Joe T. Merkel, with '97 m, is in Manistee working for the City Electric Supply Co. He makes patterns and does draughting and says: "Mechanicals, get all the shop work you can, it will do you good."

A. R. Maynard, with '97, is now in Battery "M," 5th Artillery, U. S. Army. At present he is at Ft. Presidio, Cal., which guards the Golden Gate. After July 16, he will go into camp at Yosemite Park for three months.

O. C. Wheeler, '90, has charge of the Dewitt, Clinton county, creamery, and is now receiving 9,000 lbs milk per day. He buys the milk from the farmers and pays for the butter fat according to the test as shown by the Babcock tester.

At the last meeting of the Oregon Board of Regents, Prof. U. P. Hedrick, '93, was re-elected and advanced to a full professorship. One of the significant things about this action of the Board is that Prof. Hedrick will now receive a salary of \$1,500 instead of \$1,200, as formerly.

The city fathers of Grand Rapids have just engaged two young botanists living in that city, L. J. Cole, with '98, and E. Mulliken, to destroy all the Russian thistles and Canada thistles to be found within the city limits. This is an excellent example for other cities and towns to follow.

C. M. Weed, D. S., '83, professor of Zoology and Entomology in the New Hampshire College of Agriculture and the Mechanic Arts in *Education for May* writes, "On the Use of the Laboratory Note Book." We commend the article as valuable for teachers and students of botany, zoology, English and drawing.

Chicago, Ills., June 25, '96.

We received the M. A. C. RECORD today. It is good and I feel sure that it will help the College more than anything else that you have tried in a long time. The idea of "writing up" the departments one after another with pictures to illustrate is excellent. I hope my brother H. will get down to the College this fall.

RAY S. BAKER, '89.

"O. C. Hollister, '89, is now getting some valuable experience in mountain climbing. He left Cheyenne the 6th of this month [June] and is now in the heart of the Wind River mountains, running a solar compass with a government surveying party. The outfit consists of 35 men, and 40 pack animals to transport supplies, etc. Hollister will not return until some time in October."—From a letter by F. J. Niswander, '89, Deputy Auditor of Wyoming.

George G. Torrey entered this College at its opening in 1857, from Birmingham, Oakland county. For the past thirty-one years he has been with C. H. Little, 340 East Atwater street, Detroit. On Monday, he paid the College a visit. He was conducted about the campus and shown some of the improvements. He said that he held the plow drawn by seven yoke of oxen to break up several portions of what now constitutes the campus. Not unfrequently the plow would get so wedged in between the small stumps, "grubs," that the leading team had to be hitched on the rear of the plow to pull it loose. When plowing, not far from the old boarding hall, in the hollow north of the Veterinary Laboratory, the swamp was so soft that the plow and teams could scarcely do anything. He was at the College nearly three years, and thinks the boys had rather a rough time of it, with poor board, hard work, digging stumps and ditches, and logging. He had recently seen Hiram Hodges, who was the first foreman of the farm, and now lives on a farm at Eden, Ingham county. Mr. Torrey helped to set out the old orchard, and remembered one point that came up for discussion while the boys were at work, and he did not think they ever settled the question, whether a pole ten feet long should be called a "ten-foot pole" or a "ten-feet pole."

BEGINNING BOTANY.

B. O. LONGYEAR.

The majority of students are found to be very deficient not only in the ability to see well, but also in the ability to describe well what they see. The work in beginning botany in this College has been planned to supply these deficiencies by cultivating and exercising the powers of observation and description, which might otherwise remain dormant.

The student is first given an entire plant and is then asked, often to his surprise, what he sees, instead of being told what is to be looked at. Many of the answers are amusing and often very indefinite. For instance, the term round is used to describe circular, cylindrical, spherical and egg-shaped objects, and occasionally a student says he sees nothing.

After a few lessons to open the eyes of the student, he is given soaked seeds of beans, peas, buckwheat, corn, and many others to dissect and compare. Some of the seeds are also planted in clean sand in flower pots or boxes and kept where the students may watch their germination, the different ways in which the plants get out of the soil, and their subsequent growth. Experiments are made to show the effects of light, temperature, and air on germination and growth of seeds and plants, and no explanations are given by the instructor until the students are asked to give their ideas.

Often several weeks are spent in this kind of work, each student keeping a note book in which drawings and notes are made. Later on the different types of roots, stems, leaves, buds, and branches are illustrated by specimens. Then comes the typical flower, complete in all its parts, and all its parts simple and distinct; along with this the deviations from the type, and then the various parts taken up in an ascending order. The various forms of fruits are illustrated with specimens which may be in season at the time or have been preserved in dilute alcohol or formalin. Some of the various contrivances by which flowers effect the transfer of pollen from one to another through the agencies of wind or insects are made subjects for observation. During the term each student is assigned some subject for special investigation, and his observations, with drawings, are presented before the class in a short essay, the student being placed on his own resources in doing the work.

Technical terms are given to things only after they have been examined and described in the student's own language. The same plan of work is pursued throughout the term, the constant aim being to develop habits of careful and independent observation, while the mere accumulation of facts and scientific terms is kept subservient to this aim.

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 Professor of Domestic Science.
 MRS. LINDA E. LANDON,
 Librarian.
 GAGER C. DAVIS, M. S.,
 Instructor in Zoology.
 CHARLES F. WHEELER, B. S.,
 Instructor in Botany.
 A. L. WESTCOTT, B. M. E.,
 Instructor in Mechanical Engineering.
 DICK J. CROSBY, B. S.,
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 Instructor in Botany.
 CYRUS C. PASHBY, B. S.,
 Instructor in Mathematics.
 GORDON H. TRUE, B. S.,
 Instructor in Dairying.
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 THOMAS DURKIN,
 Foreman of the Horticultural Department.
 CHARLES E. HOYT,
 Foreman of the Wood Shops and Foundry.
 H. M. HOWE,
 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:

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 Jonathan L. Snyder, Ph. D., Pres.....Ex-officio.
 L. R. Taft, M. S.....Horticulturist.
 Robert C. Kedzie, M. A., M. D.....Chemist.
 Ira H. Butterfield.....Secretary and Treasurer.

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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.
 E. A. A. Grange, V. S.....Consulting Veterinarian.
 G. C. Davis, M. S.....Consulting Entomologist.
 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-Presi-
 dent. 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. F. N. Jaques, President. T. C.
 Chittenden, Secretary.
Delta Tau Delta Fraternity—Meets Friday evenings
 in the chapter rooms on fourth floor of Williams Hall,
 at 7:30. A. C. Krentel, President. J. M. Barnay,
 Secretary.
Eclectic Society—Meets on fourth floor of Williams
 Hall every Saturday at 7:30 P. M. W. R. Vanderhoof,
 President. W. Newman, Secretary.
Feronian Society—Meets every Friday afternoon at
 2:30 in U. L. S. Hall. Miss Bertha Baker, President.
 Miss Ellen Vaughn, Secretary.
Hesperian Society—Meetings held every Saturday
 evening in the society rooms in the west ward of Wells
 Hall at 7:30. W. T. Barnum, President. D. J. Hale,
 Secretary.
Olympic Society—Meets on fourth floor of Williams
 Hall every Saturday evening at 7:30. C. A. Jewell,
 President. F. J. Kling, Secretary.
Phi Delta Theta Fraternity—Meets on Friday even-
 ing in chapter rooms in Wells Hall, at 7:30. C. K.
 Chapin, President. J. W. Michen, Secretary.
Union Literary Society—Meetings held in their Hall
 every Saturday evening at 7:30. J. T. Berry, President.
 F. V. Warren, Secretary.
Tau Beta Pi Fraternity—Meets every two weeks on
 Thursday evening in the tower room of Mechanical
 Laboratory. E. D. Partridge, President. J. H. Steele,
 Secretary.
Club Boarding Association—I. L. Simmons, Presi-
 dent. H. A. Dibble, Secretary.
M. A. C. Grange—Meets every two weeks in the Col-
 umbian Society rooms. G. H. True, Master. H. W.
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INITIATION AND BANQUET OF T. B. P.

A memorable event in the history of the honorary society Tau Beta Pi occurred last Thursday evening when three new members were received and a banquet was served to the members and their ladies. Professors Weil and Vedder and E. H. Sedgwick of the Junior class are the newly elected members. After the initiatory ceremonies, which were held in the Mechanical Building, an adjournment was taken to Abbot Hall, where the ladies joined in attentions to the comforts of the table. There were present Mesdames Weil, Chamberlain, Holdsworth, Babcock, Woodworth, Westcott, and Vedder, Misses Wheeler, Truman, Steele, Cowley, and Singleton. After refreshment and a musical selection by Mrs. Chamberlain and Mr. Partridge, Prof. Holdsworth, as toastmaster, proposed sentiments which were responded to as follows: "Honors," by Mr. Pashby; "Greek and Grease," by Mr. H. E. Smith; "A Look Ahead," by Mr. Partridge; "The Engineer," by Prof. Weil; and "The Ladies," by Prof. Vedder. Another pleasing musical duet brought to a close a most delightful and instructive program.

FARM HOME READING CIRCLE OF THE MICHIGAN AGRICULTURAL COLLEGE.

The Michigan Agricultural College maintains a College extension course of reading designed especially for farmers, gardeners, fruit growers and stock breeders. This course is open to all who are interested. The State Board of Agriculture is especially earnest in its desire to bring the College nearer to the farmer by a thorough dissemination of the latest knowledge relating to agriculture. We invite the co-operation of all progressive farmers in this matter. The Farm Home Reading Circle offers a course in systematic reading on subjects of practical interest to every farmer. There are no expenses to members except the purchase of books. We have already a large and rapidly increasing number of readers and the enthusiasm of those who have taken up the course is very gratifying. Send a postal card for full information to
H. W. MUMFORD,
Agricultural College, Mich.

HE LACKED CAPACITY.

To every College will drift now and then a person, who for some reason or other, fails to make progress in his studies. An instance is mentioned in the address of E. B. House, president of the graduating class at the State University.

It is the story of the moneyed youth from the "wild and wealthy west." "This gentleman came to College with money, not brains, and he never learned a lesson. He studied as only a freshman can study, but he couldn't do it. Before many weeks a letter went to the father, saying: 'Your son seemed unable to do the work required in his courses. If he does not improve, it will be necessary for him to discontinue his work at the University. He studies hard and works faithfully, but seems to lack capacity.'

"To this the father replied:

"My dear professor:—

"Your letter concerning my son at hand. Now, I'll put up the money, you furnish the capacity."

M. A. C.

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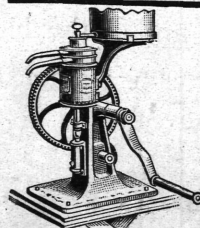
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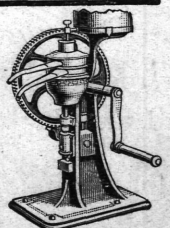
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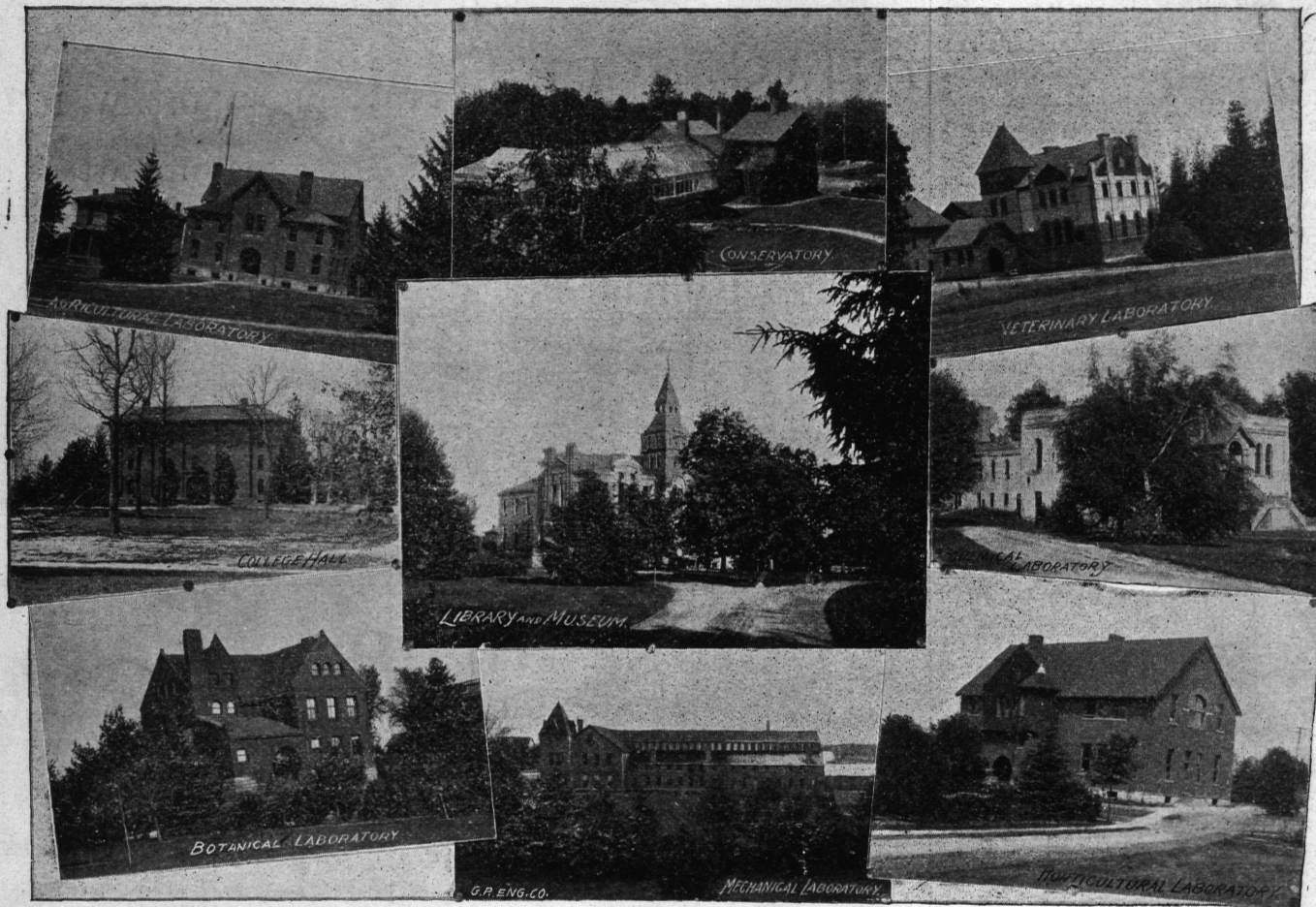
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