The M. A. C. Record.

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THE COLLEGE LIBRARY.

MRS. L. E. LANDON, LIBRARIAN.

The many expressions of surprise which we hear from strangers visiting our library for the first time, and the peasure manifested by our old students, returning after a lapse of many years to revive memories of College days, have lead us to hope that a few words upon this department, may not be wholly without interest.

The College library occupies two rooms in what is known as the Library and Museum building, and contains over 19,000 bound volumes, and many thousand pamphlets; the accumulations of nearly forty years. It is undoubtedly of greater importance to the general welfare of the College than any other department; since upon it do all the other departments depend in a large degree for material to supplement and broaden the work of the class room and laboratory.

In the spring of 1882, after twenty-five years of existence, the College had accumulated a library of 6,100 volumes, and was valued at about $12,000. It was at that time removed from its corner in College hall to its present location, and in the nearly fifteen years that have since elapsed, it has grown to more than three times that number of volumes, and is valued at about $40,000. But it is not of the number of volumes that we are proud, nor yet of the great money value which it represents, but rather of the quality of the material which has been collected; for while no effort has been made to obtain rare books, valued only as curios, special attention has been given to the needs of the institution and to works of practical value to the students.

The arrangement of the library is quite simple. At the left as you enter, is the office of the Librarian, a cosy corner, well equipped with whatever will aid in the administration of the library. Cases are placed along two sides of the room, on the main floor and in the galleries above, for the accommodation of the books, which are grouped together by subjects, and under each subject alphabetically arranged by authors. Let us walk through the library and take a glance at the books—we may find just what we have long desired to see. In the first case at the right will be found the works on civil, electrical, and mechanical engineering, steam, and the steam engine That the collection is a good one, any one familiar with these subjects will admit. The works on agriculture, horticulture, veterinary art and their allied subjects follow. The collections in these departments are especially fine, embracing the best works upon the past history, the progress, and present condition of these sciences, together with the results of the most recent experiments along these lines. The sections devoted to zoology, physiology, and entomology are full of good things. The works on bacteriology are few in number, but the science itself is new, and has but recently been included in the curriculum. This department and the new department of domestic science will be improved as rapidly as means will permit.

Our professors of botany, chemistry, mathematics, and physics, have collections of which they may justly be proud. These subjects, with the works on general science, some of which date back to 1665, occupy the cases on the south side of the library. Philosophy and religion occupy the first case on the north side of the room, and are followed by an exceptionally good collection of biographical works, literary essays, criticism, and a valuable collection on Shakespeare and the drama.

The educating influence of good fiction is everywhere felt, and a few of the best works, from authors of recognized ability, find a place on our shelves. Our old friends, the poets, are here in large numbers, and many with whom we are less familiar, invite our acquaintance.

Language, oratory, and the history of literature are conspicuous, and, as we pause before the library of political economy, we see an up to date collection, worthy of more than a passing glance. The fine arts collection (a good one by the way), brings us to the stairs leading to the gallery above. Here we find ourselves among the literary periodicals (a whole library in themselves), the works on military science and a most carefully selected library on pedagogy. The south side gallery is given over to public documents and the library of the Experiment Station. Every department is supplemented by periodical literature, which enables us to keep in touch with the latest and most advanced thought. On returning to the first floor of the library, we find ourselves at the entrance to the reading room. Here will be found all of the leading literary and scientific periodicals, numerous agricultural and horticultural papers and magazines, several daily papers, and THE RECORD exchanges. This room is well lighted with electricity, supplied with steam heat, furnished with chairs and tables for the accommodation of its patrons; the walls are adorned with oil portraits of past and present College officials, and is altogether a delightful place in which to pass an hour or two. The library proper is also well heated and lighted, the greatest possible freedom is accorded to all in the use of the books—free access to the shelves, and the privilege of drawing books for use in one's own room is freely granted. Dictionaries, encyclopaedias, reference books of all kinds, and a catalogue as easily consulted as a dictionary render the use of the library a pleasure.

MUSHROOMS AND TOADSTOOLS.

PROF. C. F. WHEELER.

The abundance of fleshy fungi on the College grounds this summer has led many persons to take an interest in these uncanny members of the vegetable world.

Every day someone asks, "What is the difference between a "mushroom" and a "toadstool?" These terms are used indefinitely and often as synonyms, but there is a general notion abroad that a mushroom is good to eat while a toadstool is "pizen."

There is no general means by which an edible mushroom may be distinguished from a poisonous one.

A careful study of the different species so that they may be identified is the only safe way of knowing the edible kinds from the poisonous ones. To the lover of nature in field and forest, the brilliant coloring and the odd shapes of these vegetable creatures are full of interest. To study them requires a great deal of patience.

The name fungus comprises a large group of lowly organized plants that never have any leaf-green or chlorophyll in their structure. They have learned how to get a living without working for it. They are found growing on rotting logs, stumps and decaying vegetable matter everywhere. One group of them has learned how to steal its subsistence from living plants and animals; for example, rusts, smuts, and bacteria, becoming parasitic thereby.

Of the edible mushrooms, the sort which has been so abundant and is still to be found everywhere on the lawns, is known as the fairy-ring mushroom. There are at present over 100 of these fairy-rings on the campus. This is one of our most excellent edible sorts. It is also found in Europe where it is much esteemed, and large quantities are annually collected and dried for use in winter.

This fairy-ring Champignon grows in pastures and grass lands in the form of rings which begin from a central cluster and spread outwards, constantly enlarging, and after some years become several feet in diameter.

The decay of the mushrooms in the ring seems to enrich the soil adjacent, but in the course of the ring all sorts of vegetation except quack grass is killed.

During the year a number of edible mushrooms may be collected in the College woods and fields.

Appearing in the spring the morel is abundant and delicious. In August the common meadow mushroom, the horse mushroom, much larger than the former, the puff balls, all of which are edible when young, the parasol mushroom, the Chanterelle, several of the boleti, and many other sorts, furnish delicious and nutritious food, which all goes to waste for the want of a little practical knowledge to enable one to know the good from the bad.

Rev. Dr. Curtis, of North Carolina, who experimented on this subject many years, wrote a short time before his death, "I can safely say that I have eaten a greater variety of mushrooms than any one on the American Continent. I have collected and eaten forty species found within two miles of my house."

Dr. Curtis published the names of 111 species of edible fungi known to inhabit North Carolina, and remarked that he believed there could be found forty or fifty more in the mountainous parts of the state.

No doubt 100 species of edible mushrooms are to be found in Michigan. This would supply a large amount of nutritious food which might be added to our present dietaries, as soon as the people can be taught to distinguish the safe kinds.

One of the last works of that charming artist, author and naturalist, the late William Hamilton Gibson, "Our edible Mushrooms and Toadstools and how to distinguish them," has been added to the College library. This beautiful book is illustrated with upward of thirty full-page colored plates from water-color drawings by the author.

With this book in hand, the mushroom lover will easily be able to separate the poisonous from the esculent sorts.

Botanical Department.

AT THE COLLEGE.

The grading of the lane is now nearly completed to the D., L. & N. railroad.

A number of the class of '93 enjoyed a picnic at Leadley's Park last Saturday afternoon.

The oat crop upon the College farm has been considerably damaged by the recent rains.

E. S. Good, J. S. Conway, F. C. Kenney, and J. W. Rigterink purchased new bicycles last Saturday.

B. O. Longyear was quite ill for several days last week. He is now better, and has gone home for a vacation.

W. P. Bowen, who took special work here in the summer of '91, stopped at the College Saturday, on his way awheel to St. Johns.

Prof. Weil treated the mechanical seniors to admission tickets to Buffalo Bill's Wild West last Saturday. We understand this was to take the place of a reception.

"Saengerbund" from Berlin, Canada, twenty-two in number, visited the College, previous to the convention in Lansing, and on the next day they came in crowds.

The number of copies of THE RECORD has varied some with the different issues, but for the past five weeks it has not been lower than 4,000, and for some of the time 4,500.

A. A. Crozier visited Kent county last week in search of some pure Clawson wheat. He found one farm on which this variety had been grown and kept pure for nearly twenty-five years.

On Saturday, August 1, the Sunday school of Williamston Centre drove to the College, arriving in the midst of showers, to take in the sights. There were about fifty of them, and they reported a good time, especially in the latter part of the day.

For two lessons last week each Agricultural freshman examined some plant in the Botanic Garden, with the attempt to learn how the pollen was transferred to the stigma; in other words, how the flowers are fertilized. Other lessons of a similar character occupied the week.

Director Smith has just received a letter from Wilmer S. Clawson, of North Hector, N. Y., giving a complete history of the origin and introduction of the White Clawson wheat. This variety was picked up by Wilmer Clawson and his father, Garrett Clawson, in a field of Fultz on the adjoining farm belonging to Mr. Isaac Clawson, in Seneca county, N. Y., in 1865.

A. G. Boehringer, of Bay City, took advantage of an excursion to visit Mr. Gunson, and some of his former teachers in horticulture and botany. He is engaged, with his brother, in growing roses, carnations and other cut flowers and plants. From all we can learn he is making substantial progress, though he began the business a poor man. Still, we often hear a young person say that he can't do much because he has no capital.

The literary societies have elected officers for next term as follows: Eclectic society—President, Clinton D. Butterfield; vice president, F. W. Newman; secretary, Manning Agnew, and treasurer, A. S. Eldridge. Olympic—President, H. W. Hart; vice president, A. M. Patriarche; secretary, C. J. Perry, and treasurer, Geo. C. Campbell. Feronian—President, Miss Sadie Champion; vice president, Miss Clara Steele; secretary, Miss Marie Bellis, and treasurer, Miss Myrtle Peck. Union Literary—President, E. A. Robinson; vice president, F. V. Warren; secretary, S. F. Edwards, and treasurer, F. T. Williams. Hesperian—President, J. D. McLouth; vice president, C. W. Loomis; secretary, R. M. Osborne, and treasurer, H. A. Eldridge. Columbian—President, E. H. Sedgewick; vice president, R. E. Morrow; secretary, C. F. Austin, and treasurer, C. E. Townsend.

The Feronians gave their annual reception last Friday evening in the Olympic Society rooms. After an excellent program, consisting of a piano solo, by Mary E. Green; "A Dream," by Myrtle Peck; an oration, by Marie Belliss; a prophecy by Clara Steele, and a piano solo, by Loa Renner, dancing was indulged in until near midnight.

PRODUCTIVENESS OF WEEDS.

There are thirteen or more prominent peculiarities of plants, either one of which helps to make them weeds. Many plants are assisted to become weeds by producing an enormous number of seeds. The present Agricultural Juniors have been examining each a single species with reference to its productiveness.

They examined a single plant, counted the heads or the capsules on a branch, took the average number of seeds in several heads or capsules, and thus found approximately the number of seeds per plant. The area covered by each plant was noted and all reduced to the same scale, viz., to learn the number of seeds to the square foot of land. Here are some of the figures:

Hedge Mustard	6,000
Ribgrass. Narrow-leaved Plantain	12,604
Bouncing Bet. Soapwort	14,000
One of the broad-leaved Plantains	26,020
Mayweed	26,080
Horse-weed Mare's tail	45,000
Peppergrass	49,259
Common mullein	74,600
Silver-weed	144,000
Prickly lettuce	160,375
Toad flax	318,720
Daisy fleabane	336,000
Moth mullein	450,000

If the estimate for the last one is correct there are more than 3,100 seeds to each square inch.

PRESS BULLETIN NO. 10.

WHEATS.

MICHIGAN EXPERIMENT STATION,
Agricultural College, Aug. 10, 1896.

[We extract the following:]

The wheat yield on the College farm this year was below the average, owing to a severe attack of the Hessian fly. An examination before harvest showed that over 50 per cent of the plants were attacked by that insect. Owing to favorable weather, however, the straw stood up well and promised a good yield and only at threshing time did the large percentage of shrunken grain show the extent of injury done. Below are the yields of six leading varieties as grown in plots of one acre or more each, side by side for the past three years upon the College farm:

Variety.	1894.	1895.	1896.
White Clawson	34	11	14
Red Clawson	32	13.5	14.5
Rudy	36	9	18
Poole	38	11	22
Egyptian	38	9.5	17
Delhi-Mediterranean	36	12	15.5
Currill	.....	6	18

Currill, the last variety named, came highly recommended from the Kansas Experiment Station, but the results of the two years' trial here vary so widely that it needs further testing.

Two varieties from near Grand Rapids have been grown this season for the first time. One of these, called Corinth Clawson, was first brought to notice last year by a miller of Grand Rapids, to whom a load was brought for sale by a farmer living near the village of Corinth.

The other variety from the same source is Buda Pesth, a red, bearded variety introduced by Mr. C. G. A. Voigt, of Grand Rapids, four years ago from Hungary, and now grown by a number of farmers in Kent county. The variety does not appear to be quite as hardy as the White Clawson, and wheats of that class, but is probably sufficiently so for most parts of the state.

Perhaps the most promising of the varieties of recent introduction is Dawson's Golden Chaff, originated by Mr. Robt. Dawson, of Paris, Ont., about ten years ago. This variety has been carefully tested throughout Ontario for a series of years, under the direction of the Ontario Agricultural College, with uniformly good results, and it is now more largely grown in that portion of Canada than any other variety. The climate of Ontario being similar to that of Michigan, it was believed that this variety would succeed here. Accordingly, in 1894, the Station purchased from the originator ninety bushels of this variety and distributed the greater part of it to farmers through the state for trial, sowing eight acres of the same upon the College farm.

The yield at the College was very satisfactory, considering the season.

One unfortunate fact connected with this variety is that it appears to be everywhere more or less affected with smut. To farmers located where none of this fungus exists, however, we feel like uttering a word of caution against growing this variety at present.

The Station is fortunate in having obtained from one of its smaller plots a stock of seed of this variety entirely free from smut, and in due time will doubtless be able to supply applicants with clean seed of this desirable sort.

Foreign Wheats: Of the six varieties introduced last season from Germany, only one proved entirely hardy, and this came originally from Russia. It has a plump, hard, red berry, with bearded heads and very small, short straw. It ripened much earlier than any other variety on trial. The name by which it was received was simply "Russian." For a locality requiring an extremely early, hardy variety we consider it worthy of trial.

A number of other varieties of Russian and Australian origin were grown in a small way, but all appeared more or less tender. Some of these, however, will be tested further.

X RAYS.

The Physical Department is now supplied with the latest and most improved X ray apparatus, including several kinds of fluoroscopes, which act as screens to ordinary light and enable the user to look through objects placed between the fluoroscope, and the Crookes tubes. Your reporter, together with several friends, visited the Laboratory one evening last week, and Prof. Woodworth kindly allowed us to use the apparatus. In spite of the fact that we had heard so much about this wonderful phenomenon, we were a little skeptical; and we were a little startled when, upon putting a hand or an arm in front of the fluoroscope, we could see our bones as plainly as though they were encased merely in oiled paper. Looking through a half-inch board did not perceptibly dim the ghastly outlines of our skeletons. Upon putting a foot enclosed in a shoe in front of the Crookes tube we could see not only the internal structure of the shoe—the nails and springs—but the skeleton of the foot almost as well as though no shoe surrounded it.

The Laboratory is becoming a popular evening resort for those who have bones that have been broken, or who sport base ball fingers.

KEROSENE FOR KINDLING A FIRE.

DR. R. C. KEDZIE.

It is shocking to read the accounts of horrible accidents by kerosene explosions, in the daily papers, by which persons are burned to death or dreadfully mutilated. In nearly every case the accident is caused by *pouring kerosene from a can* upon the fire; the oil takes fire and follows the stream back to the can, when the mixture of air and inflammable vapor in the can explodes and the burning oil is thrown over the dress, and deplorabe results follow.

This is unnecessary, and with the use of common sense and prudence may be avoided. Kerosene is indeed a very handy and tempting kindler for a slow fire or in starting a new one. If the oil required for kindling a fire is poured from an *open cup*, and not from an oil can, there is no chance for an explosion, there being no chamber to be charged with explosive

gases. When poured from an open cup the worst that can happen to such oil is that the flame may reach the cup and burn the kerosene sticking to its sides.

There is of course some risk in using so inflammable a material as kerosene in lighting a fire, and especially when poured upon a fire, or into a heated stove, where vapor is rapidly formed and an explosion within the stove becomes possible. But this risk is much less than by using the kerosene can. If the oil must be used, pour it into a teacup, set away the can, and then pour out your cup of oil for kindling and escape a frightful peril. Avoid the use of the murderous kerosene can in kindling your fires.

Chemical Department.

TENDENCIES IN COLLEGIATE INSTRUCTION.

The average number of undergraduate students in the colleges has scarcely been doubled in fifty years. In 1836 the college under review had one hundred and sixty-eight undergraduate students; it has less than three hundred today. The number of undergraduate students now at Amherst, Williams, Dartmouth, Middlebury, Bowdin, Bates, Colby, Trinity, will today average only slightly over two hundred. John S. Hopkins has but one hundred and ninety undergraduates. Columbia (Arts) but two hundred and sixty, New York University (Arts) but one hundred and eighty-one, according to the last catalogues.

The equipment has increased because the character of the college education has changed. College education has changed in at least three respects. The college of today teaches young men instead of boys; it develops all faculties instead of the intellectual and moral faculties alone; it undertakes to train its students for many professions and occupations, instead of for but one or two.

The modern college undertakes to develop the student in directions not within the plan of training of the earlier colleges. The physical, side for example, is cared for. In 1839, many of these students even before their study was completed, were so enfeebled as to be unfitted for enjoyment or usefulness. But a new day has certainly come. Physical education is now a regular part of every college curriculum, and the gymnasium dominates the campus.

Significant also is the lessening of the importance of the individual graduate at commencement. He used to deliver an oration, to receive flowers, applause, congratulations, to be considered a completed and important example of learning. Now, in the midst of a crowd of classmates, he silently takes his degree, and passes almost unnoticed to join the ranks of the workers in the world.—Francis Hovey Stoddard in the *Outlook*.

THE "CURIOSITY STRIP."

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

This is the name familiarly applied to a strip of land four rods wide and forty rods long which has been set aside for the cultivation of small plots of the more interesting or less known agricultnral plants of various kinds. It is always a locality of interest to visitors and a source of much instruction to the students. Each year two students of the sophomore class are detailed to take immediate and complete charge of all the planting, cultivating and harvesting, with only general suggestions from the instructor and occasional help when needed from other students. The strip is divided into two parts, one containing most of the leguminous and other forage plants and the other the miscellaneous plants. One student has charge of each division. Last year Mr. Rogers had charge of the forage plants and Mr. Rigterink the remainder of the strip. The following notes were taken on the plants grown on the "curiosity strip" in 1895, and will be interesting for comparison with many of those same plants now growing upon the "strip."

Prickly Comphrey. (*Symphytum asperrimum.*) A broad-leaved fodder plant used for soiling purposes. The plot contained about 1-40 of an acre, from which two cuttings were taken this season, aggregating 504 pounds of green fodder. It was ready to cut a third time when killed by frost. This plant lives for many years and is propagated by cuttings of its fleshy roots.

Alsike Clover, (*Trifolium hybridum.*) This plot was from last year. Early in the spring it was raked over and more seed sown. It was with this, as with the other clovers sown this spring, the dry season kept it back, but it made a better showing than most of the others. In general appearance this clover is intermediate between red clover and white clover. The stems are rather small and spreading, and the pinkish blossom heads closely resemble those of white clover, but are a little larger. Honey bees which are unable to reach the nectar of red clover, work on this species freely.

Crimson Clover. (*Trifolium incarnatum.*) This clover is an annual, living but one year. Seed was sown as early as possible, which proved too late to get a catch. Only a few seeds started. The blossoms on these few plants, however, brought forth many comments on their beauty. They are a deep crimson and can never be mistaken when once seen. Last year a better stand was obtained and the plants grew about eight inches high and matured an abundance of seed.

Bokhara Clover. (*Melilotus alba.*) This is the clover known to many as sweet clover. In some parts of the state it grows as a weed. The seed was raked into an old plot of the same clover and a good growth obtained. The object of growing it was to see if it made good fodder, as some had claimed that stock would not eat it. This claim was disproved, although the cattle to which it was fed had to "learn to like it." The plot contained 1-40 of an acre, and from it were cut two crops of forage, weighing when green 324 pounds, and in addition a crop which was threshed for seed and yielded nearly one-half bushel.

Alfalfa, Lucerne. (*Medicago sativa.*) This plant attracted much attention from its ability to stand dry weather. At the beginning of the season it "got away" from all other plants. When about 20 inches high it began to blossom. The flower is of a pretty blue color and very fragrant. Two crops were cut for hay and a third for seed. The green fodder from the two crops weighed 316 pounds, which in drying shrank to 91 pounds, making a yield of over one and three-fourths tons of dry hay per acre, besides the seed crop. The plot was seeded last year.

Japan Clover. (*Lespedeza striata.*) This made a poor stand this year and grew so small as to be entirely worthless as a forage plant. It seems to us no better than a weed.

Yellow Suckling Clover. (*Trifolium filiforme.*) This is a slender-stemmed clover with small yellow blossoms, sometimes grown in England. Owing to the dry season and lateness of planting the seed this year failed to germinate.

White Clover. (*Trifolium repens.*) A fair stand was obtained, but no definite results, owing to the dry weather. Toward the close of the season, when the weather was more favorable, it grew finely.

Select June Clover. (*Trifolium pratense.*) A portion of a plot, containing plants from selected seeds of June clover, was left over from last year. It grew finely, but about June 25 the plants were all destroyed by the root borer.

Yellow Trefoil Clover. (*Medicago lupulina.*) A small patch of this clover was sown May 1. In spite of all drawbacks it started and grew well, making a thick matted growth nearly a foot high. We consider it quite promising.

Sainfoin. (*Onobrychis sativa.*) This fodder plant is sometimes classed among the clovers. It is largely grown in France and is said to be valued chiefly as a fertilizer. The old plants from last year grew very well and produced a good crop of seed. Each seed is inclosed by itself in a small prickly pod, which, when ripe, generally remains closed.

Burnet. (*Poterium Sanguisorba.*) This is a forage plant of the rose and strawberry family, having compound pinnate leaves, and flowers in dense round heads. It grows about two feet high and stands drought very well.

Caterpillars. (*Scorpiurus vermiculatus.*) This is a small leguminous plant with strap shaped leaves, yellow blossoms and a thick, coiled, rough-coated seed pod which looks not unlike a caterpillar. It is grown only as a curiosity, though the pods are sometimes mixed for sport in salads and pickles.

Snails. (*Medicago scutellata.*) This, like the preceding plant, is grown only as a curiosity, on account of its large, snail-shaped pods. The seeds this year failed to germinate.

Villous Vetch. (*Vicia villosa.*) Quite an amount of this plant came from the self sown seeds of the last year's crop. These plants were left and matured quite early. More seed was sown in drills about two feet apart. This grew finely, and ripe seed was gathered from it. The plants produced an abundant growth, the trailing stems often reaching four and five feet in length. The vines remained in blossom for nearly four months, producing successive clusters of small blue flowers, followed by the small pea like pods, containing black shot-like seeds. We believe this would make an excellent forage plant.

Lentils. (*Ervum lens.*) A small, annual leguminous plant, used in Europe as food for pigeons, and also largely for soups. It made a poor growth this year, but matured some seed. The blossoms are white.

Horse Beans. (*Vicia Faba.*) These started well but were attacked by blister beetles. By the use of kerosene emulsion the beetles were driven off and the plants finally succeeded in blossoming. No seed was produced. Last year ten pounds of the seeds were planted on heavy soil, June 4. During the summer the plants suffered badly from drought, but in the fall they came on rapidly. They then blossomed, but the blossoms, and also many of the leaves, were attacked by blight (a species of *Macrosporium*) and no seed was formed except on a few plants in a low, damp spot.

Soja Bean. (*Glycine hispida.*) Two varieties were sown, both of which grew well and produced a large amount of fodder, but no seeds. Last year one variety produced seeds abundantly, and the other did not. The plants stand dry weather well.

Salzer's German Coffee Berry. (*Glycine hispida.*) This proved to be nothing more nor less than the larger of the two varieties of soja bean, mentioned above. The two plots were side by side and the plants were identical in appearance from first to last. The beans are said to be sometimes used as a substitute for coffee.

Cow Peas. (*Dolichos Sinensis.*) These are extensively used in the Southern States for forage and fertilizing purposes. They started slowly, but came on rapidly toward the last, and produced a large amount of dark green foliage. The pods failed to ripen.

Mummy Peas. An excellent variety of field peas, producing exceedingly large pods. The seed came to maturity, and appeared to contain no weevils.

Peanuts. (*Arachis hypogœa.*) Two rows were planted May 28, in hills three feet apart each way. The plants started well and grew nicely and would have produced a large yield had the season been a little longer. As it was, many of the pods failed to ripen. If the plants are hilled up like potatoes with loose soil the young seed pods, after the pale yellow blossoms fall, bury themselves in the earth there to complete their growth. If by any means they are unable to enter the ground the young pods perish.

Fenugreek (*Trigonella fœnum græcum.*) A medicinal plant, the seeds of which are used among other purposes as an ingredient in condition powders for cattle and horses. Its slender, upright pods are filled with numerous seeds which retain their peculiar fragrance for a long time. The plant is easily grown.

Pearl Millet. *Pennisetu m typhoideum.*) This was sown in drills, on rich sandy ground June 14th. It came on rapidly and produced a very large amount of coarse fodder. Most of the plants were over 7 feet high and were just in blossom when killed by frost. Last year a few seeds matured.

African Millet. (*Andropogon sorghum* var. *durra.*) This is a coarse looking fodder plant, with leaves much resembling Indian corn, but with seeds in a large terminal spike. It would seem to be more valuable for the seeds than for the fodder.

Golden Millet. (*Setaria Italica.*) This was sown on deep, rich, sandy soil, and grew finely all summer, producing an immense amount of fodder. Some of the plants were over six feet high and some of the spikes a foot long and many of them ten inches. It is my ideal of a late fodder plant.

German Millet. (*Setaria Italica.*) This grew by the side of the Golden Millet and proved to be practically the same. The only difference noticed was a little more of a reddish tinge on the spikes of this variety. It was harvested for seed, though not fully ripe when killed by frost.

Kaffir Corn. (*Andropogon sorghum* var. This is a stout looking fodder plant, resembling the African millet and the Rural Branching sorghum. It grew well and was but little affected by the dry weather. It was planted May 24, and was just in blossom when killed by frost.

Early Amber Sorghum. (*Andropogon Sorghum* var. *vulgare.*) This is the variety most largely used for making sorghum sugar and syrup. It made a fine growth, some of the canes measuring 11 feet.

White or Rural Branching Sorghum. (*Andropogon sorghum* var *durra.*) This is grown for both seed and fodder. The "branching" consists mainly in throwing up several stems from each root. The stems themselves rarely branch. If cut while green a second growth is produced.

(To be continued.)

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.

WE CALL attention to an excellent article in this issue by Dr. Mary E. Green of Charlotte. It should be read by every parent who has a daughter to send to school.

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THE NEXT issue of the RECORD will contain a full account of the exercises of commencement week. It will be the last issue until the opening of the next year, September 14.

* * *

M. A. C. is proud of her Alumni. THE RECORD, in behalf of the Board of Agriculture and faculty, expresses a desire to see numerous associations of alumni, and other who may have been students. There is no good reason why there should not be such an association in each one of many of the counties of the state. The advantages to the College would be many, the value to the members worth all the effort. Such associations need not be large nor expensive. We hope the President of the College will receive numerous letters regarding this subject.

* * *

Be true to the interests of your employer. Not 'nfrequently we hear the expression from some one working for small wages: "I earn all I am paid for." The person who works on this principle makes a great mistake and is not likely to be promoted, nor recommended to others for a higher salary, although he may often wonder why. An employe can never tell what act of faithfulness—though ever so small—may win the esteem of his employer, or some one else in the vicinity. This confidence and esteem is good capital.

* * *

The time draws near in which the class of '96 will receive many congratulations and much advice. For four years they have been taught, encouraged, reproved, threatened and very rarely disciplined by their teachers. In most cases they have learned to consider the faculty as their superiors, but from now forward they are to be considered more on an equality. It has often been said that parents think more of their children than the children can ever think of their parents. We believe much the same rule will hold regarding teacher and pupil. At this time we beg the attention of those about to leave us as alumni. We certainly voice the sentiment of all members of the faculty in saying that we shall watch your course in the future with lively interest. We pray you to remember this fact. It matters not whether you have been a brilliant student or one of moderate ability, whether you soon occupy a chair in some prominent College or take a position in some Experiment Station or manufactory, whether you begin the management of a new farm or a small shop, or whether you engage for a time as a day laborer, we want to hear from you often. Very likely we may be able to assist you in some way, and certainly you can assist your alma mater. We shall rejoice with you in success and sympathize with you in misfortune.

PROGRAM OF COMMENCEMENT WEEK.

JOINT CELEBRATION OF COLLEGE SOCIETIES AND FRATERNITIES.

Tuesday, August 11, 8 P. M.

Music.

CONTEST FOR DECLAIMER'S MEDAL.

"The Boat Race,".....O. W. Holmes
Miss Sadie D. Champion, Feronian Society.

"The Present Crisis,".....J. R. Lowell
Mr. Clinton D. Butterfield, Eclectic Society.

Music.

CONTEST FOR ORATOR'S MEDAL.

"Our Politics,".....Mr. N. M. Morse, Olympic Society

"The Abolition of War.".....
.....Mr. O. P. West, Columbian Society

"The Universal Brotherhood,".....
.....Mr. L. D. Sees, Hesperian Society

Music.

CONTEST FOR DEBATER'S MEDAL.

Resolved: That United States Senators Should be Elected by Direct Popular Vote.

Part I.—Prepared Argument.

Affirmative ....
....Mr. B. A. Bowditch, Phi Delta Theta Fraternity

Negative...Mr. L. S. Munson, Union Literary Society

Music.

Part II.—Refutation (Extempore).

Negative.....Mr. Munson

Affirmative.....Mr. Bowditch

Note.—The Medals will be awarded on Commencement Day, August 14.

Wednesday, August 12, 3 P. M.

Review of the Battalion by the Governor and his Staff.

8 P. M.

Reunions of the Societies and Fraternities in their rooms.

SENIOR CLASS DAY PROGRAM.

Thursday, August 13, 3 P. M.

Music.

President's Address.....Geo. W. Williams

History.....L. P. Fimple

Music.

Oration.....C. A. Jewell

Paper.....N. M. Morse

Music.

Poem.....L. D. Sees

Prophecy.....R. B. A. Buek

Music.

Address to Under Graduates.....R. E. Doolittle

8 to 10 p. m., President's Reception.

COMMENCEMENT PROGRAM.

Friday, August 14, 10 A. M.

Music.

Invocation.

Music.

Address, "Transportation".....E. D. Partridge

Address, "Sir John Laws".....C. H. Briggs

Music.

Address, "Industrial Education the Need of the Commonwealth,".....
.....W. M. Kent, A. M., M. E., of Engineering News

Music.

Presentation of Medals.

Music.

Conferring of Degrees.

Music.

HOUSEHOLD ECONOMICS.

DR. MARY E. GREEN, VICE-PRESIDENT FOR MICHIGAN OF THE NATIONAL HOUSEHOLD ECONOMIC ASSOCIATION.

It is one of the most hopeful things noted for the advancement of women that some of our educational institutions are paying attention to a higher—nay, the highest course of study it is possible to outline, namely, Household Economics. The Michigan Agricultural College has been the first to place a special course of study in its calendar for young women. This course is given in connection with a literary course of high merit, including mathematics, literature, language, chemistry, botany, music, drawing, etc., making the course of study superior to that given in any other school in the state—that is, looking at it from a woman's point of view. Any woman so fortunate as to receive this four years' course of study is to be especially congratulated, as it will fit her for life as no other course of study will. This course of study deserves the thoughtful consideration of every parent who is about to send a daughter to school, for it tends to build up the physical part of life; thus it is certain to promote spiritual growth, and character building of the most lasting kind is developed. * * *

Ruskin tells us "there is no wealth but life." Household Economy teaches us how to live. It perfects life; hence it not only enriches the individual, but the home, and through the home the nation. We are a people of great waste, a dyspeptic people, a people having an alarming increase of insanity, an exceptionally nervous people. How much of all these is due to a lack of knowledge of how to live?

The problem of poverty will be largely solved when people know how to live. Thrift on the one hand with wastefulness is equaled by poverty on the other with equal wastefulness. Statistics show that in Massachusetts the laboring man of family earning $1,000 a year, spends over one-half of that for food alone.

There is a crying need that Household Economy be taught in every public school in America as a means of saving money, as a factor in health, and to correct a waste of food in two ways, by not throwing it away, and a worse waste, by not over-eating.

What will be the value of such a course of study to woman? What would be the value to the country in a few years if our women all understood these things pertaining to home better? Everyone can answer the last question.

There is always an "objector" in every community, and here is one who says: "I don't want my daughter to go to school to learn to cook; her mother can teach her that." How much this man's ill temper and dyspepsia is due to chance, luck and ignorance in the kitchen no one will ever know. He has tried all the patent medicines and stoutly declares that if it were not for them he would have been dead years ago. While he objects to scientific teaching about household affairs, he believes in science in farming. Agricultural reports are his Bible; he reads them week days and Sundays. He is regarded as an authority on grains, fruits, soil and fertilizers; knows all about cholera, whether in chickens or swine; can give you a preventive and remedy. He will talk of the microbes which cause lumpy jaw or tuberculosis, will tell you the value of ensilage, just what food to give young animals for growth, just what to fatten stock, and many a time has given a talk at the grange on the best method of making butter, is regarded by many as a sort of dictionary, but doesn't "set much store" on women educating themselves; says Bertha can get along; her mother always has, and a woman doesn't need much. "She ain't like a man and the chances are she'll get married some day."

That's just why Bertha's mother feeds her children on salt pork, poor bread and pastry. Her children don't get the milk—but the pigs and the calves do, because she doesn't know a thing about food. She has been all these years keeping house, and feeding the family, having no scientific knowledge, but on the "luck and chance" plan. Her housework has never been lifted above the hardest drudgery. She is mentally dwarfed and bodily worn out, with a spirit as broken as the overworked cart horse.

If women know how to do things aright there is as much pleasure in keeping a home as there ever was in childhood days in arranging tea parties for dolls and the neighborhood playmates. Science is an exact truth; it will not tolerate experiments. Science will aid a woman to cook better and more hygienically in a few weeks than ages have done when we followed tradition and ruined the stomachs of a race—experimenting. Physicians have told us that nine-tenths of all disease is preventable; hence hygiene and sanitation should be understood by every housekeeper.

Household Economics is of vastly more importance than most of the branches taught in our high schools and colleges; it affects health, and is a factor in our social economy. The idea is to elevate home life and home duties, to teach women that whatever detracts from the home is but the ignus fatuus luring on and on until the miasma of unrest overtakes them.

There is no place so attractive, none which develops so pure a social life, none which gives so perfect a life as a well-ordered home.

Domestic Science should be taught in our public schools. It would fit girls to know and do something well; it would tend to make girls satisfied with home duties, instead of feeling that domestic labor is degrading. They would realize that to be an inmate of a well-ordered home, with the protection it affords, is far better and more self-respecting than the restless, unsheltered, unprotected life of office or store work.

In Boston the pupils in the public schools must graduate from a course of scientific cooking before entering the high school. We have not advanced that far in Michigan, yet our woman's clubs are now studying Household Economics and realize its importance and helpfulness.

To the Michigan Agricultural College, then, is due the credit for the initiatory step of placing this most attractive and useful course within the reach of everyone. This school has long been valued for its efficient work along scientific lines and it is not too much to predict that the department of home science work will be one of its most valuable features.

To the young women of the state I most heartily

recommend this school, as it will fit them for life's work better than schools which have not the feature of Household Economics.—*Detroit Free Press.*

ROBERT S. WOODWORTH.

AN EXTRACT FROM THE ADDRESS OF C. J. FOREMAN, '94.

There are times in our lives when the most sacred thoughts uttered seem empty; words fail to portray the feelings we would express. I would that I could describe to you the flood of sympathy that was awakened at the College when the sad news was received that our boy was dead.

It was in those first days of college life, when far from home and friends; when surrounded by strangers, one yearns for companionship, that I first formed the acquaintance of Robert Woodworth. And the ties of friendship, woven then, ripened into bonds of the strongest affection as we plodded together throughout our college life.

As a companion, I found him modest, yet frank; courteous to all, generous and loyal to his friends, and always governed by the highest sentiments of love, honor, and respect for his associates.

As a member of our society, I found him to be a man of strong, sturdy, and conservative character; honorable in life, and possessed of exceptional clearness of thought and readiness of expression which soon made him one of the great working factors of our Society.

In his college duties, he was a steady, earnest, and reliable worker. He won the admiration of his equals, and the respect of his superiors by his strong intelligence, his manly nature, and his warm heart. With all these traits, do you wonder that we loved him?

It was in those first days of college life, that there was formed a little circle of us boys. There were three of us. We shared together the pleasures of college life, and battled for each other in its storms. But this little circle was rudely broken during our Sophomore year by the illness, and then the death, of my room mate. And it was here, in our sorrow for our classmate, at a time when the veil which separates men's souls is drawn apart, that I realized the nobler, sterner material of which Rob Woodworth was formed. I found there a spirit that was bright and happy, but just and upright unto severity; a character that was noble and clear unto transparency, and rounded o'er all were those outer virtues which made him beloved by every man in college.

And today, when the sad intelligence of his death shall reach those classmates—those boys of '94—scattered over this land, there will come a pause, the paper will fall, and through their minds will flood those cherished memories of college days; and those little traits in his every day life that made him so dear to them, will stand forth in burning letters of gold, to leave a deeper and more lasting impression for good throughout their entire lives.

It is with a feeling akin to joy that I know of one, who has guarded so zealously the spirit which God has given him, who has builded slowly, day by day, with each little thought and action, for its habitation, so noble and grand a mould as this, and what must be *his* joy when at death, he can bear forward and upward a soul of such crystal purity to the God who gave it?

A FEW WORDS FROM PROF. C. D. SMITH.

It had long been the cherished idea of Robert Woodworth that he was by nature fitted for the work of a physician. He came to M. A. C. to obtain the fundamental scientific education, intending afterwards to complete the medical course at the University. Brought up on a farm, he understood the practical details of farm management; but the scientific aspects of agriculture attracted his attention early in his course and developed in him a love for farming as a vocation strong enough to overcome his leaning towards medicine; and when he left college he was as determined to succeed as a farmer as he was bound to be a doctor when he entered.

On his return home after graduation he was placed in charge of a farm which had been rented for several years and was, for that reason, run down in fertility and with buildings and fences out of repair. Devoting his energies principally to the raising of sheep, to the selection and care of a dairy herd and to the growing of peas for seed, Robert undertook by wise administration and hard work to restore the fertility of the farm, repair its fences, build new buildings and at the same time lay up some money. At the time of his death he was succeeding most admirably. In these days when old and well established industries find it difficult to eke out a bare maintenance, this young man, fresh from College, had not only been able to make the farm pay, but had built new barns and added other costly improvements.

One of his characteristics which had contributed to his success, was his unusual ability to control men. He succeeded in arousing the enthusiasm of his employes and winning for himself at the same time their highest regard. One of the most pathetic incidents at his funeral was the sincere grief of his co-laborers on the farm.

CROSSING INDIAN CORN.

A. A. CROZIER.

One of the interesting things to be seen now on the experimental grounds is the result of crossing dent corn upon pop corn. Last year among the plots of corn planted to test the yields of varieties was a plot of rice pop corn. This ripened early, but some of the ears were late enough to be crossed with pollen from an adjoining plot of Hathaway Yellow Dent. No change appeared in the size or shape of the kernels of the pop corn, but some of the kernels were of a more or less pronounced shade of yellow. One of these mixed ears was taken at planting time this year, and a row of hills planted from some of its unchanged kernels. By the side of this was planted a row from yellow and yellowish kernels from the same ear. The results at this date, July 27, are quite striking and are shown in part in the following table:

	No. of plants.	No. of suckers.	No. of tassels in sight.	No. of tassels shedding pollen.	No. of stalks in silk.
Uncrossed row..	137	45	108	18	8
Crossed row.....	138	13	66	0	0

But the most apparent difference between the two rows is in size. Of course they cannot be weighed at present, but it is easy to see that the plants in the crossed row will average fully twice as large as those in the uncrossed row. They are even larger on the average than those of a row of large white dent which grows upon the opposite side. The vigor of the crossed plants, as long ago pointed out by Darwin and others, is therefore greater than the average vigor of the varieties crossed. Crossing itself has added vigor as well as produced other changes.

Experiment Station.

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

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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.
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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-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. F. N. Jaques, President. T. A. 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 evening 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, 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.

Miss Marion weed, '91, is visiting in Lansing. She attended Baccalaureate services Sunday.

Charles E. Hollister, '61, Laingsburg, drove over to College last Sunday to attend the Baccalaureate service.

C. P. Close, '95, is spending a few days at the College. He will return shortly to his work in the Geneva Experiment Station, N. Y.

A. B. Cook, '93, and Miss Otie Cook, with '95, came over from Owosso, Saturday, to participate in the '93 picnic, and are now visiting friends at M. A. C.

D. W. Trine, '92, Assistant Professor of Botany at Corvallis, Ore., is at his home in Springport, Mich., and will spend commencement week at the College.

Charles Alvord, '95, stopped at the College on his way home from the Republican convention at Grand Rapids. He is devoting his energies to farming this summer.

L. C. Slayton, with '93 *m*, will be married today to Miss Whitten, the daughter of his employer. R. M. Kedzie, with '93 *m*, and W. F. Hopkins, with '93 *m*, will act as best men.

Hon. Jason E. Hammond, '86 Superintendent of Public Instruction. That looks pretty well, and as we speak the name it sounds well. We expect him to win and fill the position with eminent success.

"Hurrah, Hurrah, Hurrah. Uz, Uz, Uz, M. A. C."

E. E. Gallup, with '96, was at the College Sunday and Monday. He has been spending the summer in the employ of Matthews, Northrop & Co., publishers and map engravers, a part of the time in their Grand Rapids office and a part of the time on the road. He will return to his work with this company in a few days, to remain until time to begin teaching.

PROF. BLAISDELL'S LECTURE.

An entertainment of commendable merit was given a College audience last Monday evening by Mr. Blaisdell, Professor-elect of English literature in the University of Nebraska.

His theme, "Eugene Field," attractive in itself to Western people, was discussed in a way enjoyed by all. In making clear the character of Deity to the people, the speaker remarked, a great writer has used the attribute most intelligible to them in saying "God is love." It is in this quality of loving that Eugene Field is remarkable. After giving an account of the early life and training of the poet, the speaker then took up the characteristics of his subject. Mr. Field was especially a lover of children. He courted their company. On his wedding day bride and guests were obliged to wait while Mr. Field settled a dispute between some street gamins. The poems which have given him most fame are those concerning children, such as: "Little Boy Blue" and "With Trumpet and Drum." Mr. Field, professionally, was a journalist. He contributed each day a column to the Chicago *Record*, entitled "Sharps and Flats." He was also a student of the classics. In appearance the poet was long and angular. He took no interest in business management. He was known and loved by all Chicago. After reading some selections illustrative of the poet's work, the lecturer closed with the injunction that the lesson of Mr. Field's life be not overlooked—that from such a life of love all of us should gain inclination to be more kindly, to be regardful of others.

Miss Annie Delafield is spending commencement week with Prof. and Mrs. Babcock.

Last week R. A. Pearson, Assistant Chief of the Dairy Division, U. S. Department of Agriculture, was a visitor, sent especially to learn what M. A. C. was doing for the dairy. He had been to Pennsylvania, New York, and Canada, inspecting the dairy schools and a few of the larger establishments where butter and cheese were manufactured. He left here for Illinois, Wisconsin & Montana, and perhaps other states.

During the Odd Fellows' picnic two young ladies expressed disappointment after learning that —— —— one of the favorite instructors, was not in the laboratory, and their disappointment seemed to shade off into anxiety, when they were told that he was most likely at that very moment, doing his best to entertain a group of fine young ladies on the campus, for he will do just that sort of thing.

"I drove to the [illegible] and left my horse, taking the cars to Lansing. My wife and I now wish we had driven over, for we shall get tired out walking so far."

Did it Ever Occur to You That

"We may live without poetry, music, and art;
We may live without conscience, and live without heart;
We may live without friends; we may live without books;
But civilized man can not live without cooks.
He may live without books,—what is knowledge but grieving?
He may live without hope,—what is hope but deceiving?
He may live without love,—what is passion but pining?
But where is the man that can live without dining?"

And yet how infinitely better it would be to find books, music, art, conscience, love, and a good cook, all in the same home.

This is what the

WOMEN'S COURSE AT M. A. C.

CONTEMPLATES.

THE MODEL KITCHEN

is now in the course of construction. It will be ready for use when school opens September 14.

FOR YOUNG MEN WE OFFER TWO PRACTICAL COURSES

AGRICULTURAL AND .....MECHANICAL

each of which requires four years; also four short courses during the winter terms.

You can take an examination for entrance to any course in your own county. Go to the teachers' examination, August 20, and ask your commissioner for Agricultural College entrance examination questions. A third grade certificate will also admit you to any course.

For catalog and particulars, address,

J. L. SNYDER, President.