

The M. A. C. Record.

VOL. 4.

LANSING, MICHIGAN, TUESDAY, NOVEMBER 15, 1898.

No. 10

Some Actions of Bacteria.

At the meeting of the Natural History Society last Wednesday evening Mr. Marshall gave an interesting half-hour talk on some actions of bacteria. After a few introductory remarks on the study of bacteria from the morphologic, physiologic and chemic points of view, he proceeded to explain more at length the chemic action of bacteria and to describe the formation of one important chemic product, lactic acid.

Pasteur discovered in 1857 that lactic acid was the result of fermentation and that it was produced by a specific germ although he did not isolate the germ in a pure culture. Previous to this time and for a few years after, it was believed by Liebig and others that it was the result of oxidization.

The most common example of its production is in the souring of milk. Lactic acid germs are found all around the dairy—in the utensils, on the sides and udders of the cows, in the dust of the stable. They get into the milk, where owing to the warm temperature and the presence of lactose or milk sugar, they multiply very rapidly. The action of the bacteria is upon the milk sugar, the molecules of which are split up in such a way as to form lactic acid. Milk sours more rapidly in warm weather because the temperature is more favorable for the growth of bacteria. With proper milking the speaker said milk would keep ten or eleven days, while with ordinary milking it sours in two or three days. By proper milking he meant cleaning the sides and udder of the cow and keeping them damp during the time of milking, so that no dust or hairs will fall into the pail. The latter and all other utensils that at any time come in contact with the milk should also be sterilized. The important thing is to keep the bacteria out of the milk; if this be done the milk will not sour.

Lactic acid is also found in butter, cheese, beer, wine, vinegar, sauerkraut, canned fruit, sour bread, etc. It is found in the stomach in cases of dyspepsia, and it causes the teeth to decay. Under the tartar of the teeth the bacteria act on particles of nitrogenous food to produce lactic acid, which in turn unites with the calcium of the teeth and forms calcium lactate, and thus a cavity is produced. To prevent decay the teeth should be kept free from tartar.

Mr. M. W. Fulton Takes Up Farming for Himself.

Mr. M. W. Fulton has handed in his resignation as Instructor in Agriculture and Experimenter in Soil Physics, to take effect at an early day.

He came to the Farm Department directly from the graduating platform in 1895. By his faithfulness to duty and conscientious devotion to his work he has succeeded not only in deserving the public approbation of the College authorities but in winning a large place in the affection of both his co-workers in this department and the students that have reported to him.

For several terms Mr. Fulton has had immediate charge of "student labor." He has made that function of appreciated value to the students and a pleasure to the teachers.

The result of his long and painstaking series of experiments on cultivation and soil moisture and on the draft of wagons and other farm implements will be published in two forthcoming bulletins.

Mr. Fulton leaves the College to take charge of the Fulton farm at Highland Park, almost within the city limits of Detroit. He goes to his work armed with the combination of scientific training and practical experience, which added to natural ability, will insure success in the intensive farming adapted to proximity to a large city.

The best wishes of the College population go with Mr. and Mrs. Fulton on their return to their old home.

C. D. S.

A Touch of Winter.

The heavy snow-fall of last week has given to our campus every appearance of winter. Wednesday night about midnight snow began falling, and it did not cease until six o'clock Thursday evening. Eight or nine inches of snow fell and the snow-plow was kept busy nearly all of Thursday and part of Friday forenoon, clearing paths to the various buildings. The warm sunshine Friday afternoon and Saturday aroused a hope among our football enthusiasts that we might be able to play the game scheduled with Olivet yesterday afternoon, but Sunday more snow came and they were forced to the conclusion that another week must pass without a game. This was a sore disappointment, for our team is sadly in need of the practice such a game would have given, to prepare them for the hard game with Ypsilanti here next Saturday.

The American Volunteer.

The distinguished soldier, General O. O. Howard, will lecture in Lansing Nov. 17th on "The American Volunteer," with facts about the recent war. No man is better qualified by ability or experience to speak on this timely and inspiring theme. The generation of leaders in our civil struggle are fast passing away and this is a rare opportunity to hear one of the sturdiest. General Howard's lecture is given for the benefit of the new building of Pilgrim Congregational church. It is hoped that a generous patronage will be given. The lecture is held in Plymouth church. Tickets are 50 cents.

Thanksgiving Excursion to Kalamazoo.

The most important football game in the M. I. A. A. this season will be our game at Kalamazoo Thanksgiving Day. Both colleges recognize this fact, and both are putting forth strenuous efforts to put a winning team on the field that day. Both teams have won from Albion and Olivet, but our score has been much the larger in each case. By all the indications we ought to win.

If we do the cup is ours. We know that every member of our team will "fight to the last ditch" for that game. But we must not ask them to do all the work without our loyal support.

How can we give that support? By encouraging the players; by showing them that we believe in them; by going with them Thanksgiving morning, 200 strong; by cheering them on to victory. No man on the team will lie down while he has breath to go ahead, if he knows there are 200 men on the side lines who believe in him. Kalamazoo students will forego their trip home in order to be at the game. If 150 of our 400 students will be as sacrificing, we can have a special train with a rate of \$1.50 for the round trip. Many of the faculty and many of the students—nearly 100 in all—have already signified their intention of going. Hand in your name at once to the committee. Let us show that we can loyally support a winning team.

Good News from One of Our Graduates.

Office of Superintendent, Pima School.

SACATON, ARIZ., Nov. 4, 1898.

Dear Sir:—I was transferred from Omaha Agency, Nebraska, on the first of September and am now settled very cosily with my wife and little son three months old, at this place. My transfer was an unexpected promotion whereby I receive an increase of \$200 per annum; hence I rejoice. I am now in the land of the famous "Giant Cactus," "Gila Monster," etc.

No rain has fallen since my arrival and, with the exception of a few days after my arrival which were rather warm, the weather has been very pleasant. The universal opinion concerning this climate, is, that, with the exception of the three months of intense heat during the summer, it is very healthful and delightful.

I have missed the RECORD very much and shall be pleased to receive it at the above address.

With best wishes for the continued prosperity of the Michigan Agricultural College, fond memories of which I will continue to cherish wherever I may wander, I am

Yours very sincerely,

D. D. McARTHUR, '94.

A Deer Park at M. A. C.

Workmen are erecting a park wire fence, seven and one-half feet high, around the wood-lot north of Prof. Weil's residence and a part of the arboretum, which will henceforth be our deer park. We have arranged to secure three deer from Belle Isle and later may add elk and buffalo.

Complimentary to the Women's Department.

The following resolution was adopted by the State Federation of Women's Clubs at its annual meeting, held recently in Manistee:

WHEREAS, important, valuable and greatly needed instruction in

household economics is being afforded by the Women's department of the Michigan Agricultural College, therefore,

Resolved, That we heartily commend the same to the club women of Michigan and urge a larger acquaintance with the institution and patronage of the same in the interest of better homes for our commonwealth.

The Literary Societies.

ECLECTIC SOCIETY.

On November 5th, the Eclectic Society gave the following program:

Washington was quoted.

Current Events, D. Macdougall.

Declamation, "Lasca,"

Custer Carland.

Article, "Life of Washington,"

D. B. Finch.

Original Declamation, "'Ticdom' of Forty Years Ago,"

Jos. A. Bulkeley.

Extemporaneous Talk, "Co-eds,"

E. S. Good.

Critic for the evening was,

M. G. Hillman.

The society was agreeably surprised during the business meeting by a call from G. B. Wells, who at present has charge of athletics at Alma.

FERONIAN SOCIETY.

On Friday evening, November 11, the Feronian society entertained their friends of the Hesperian society in the rooms of the latter. The following literary program was rendered:

Quotations from Agricultural Papers.

Oration—"The Prevalence of Modern Fiction is an Advantage"—Miss Bristol.

Select Reading from De Quincy's "Joan of Arc"—Miss Monroe.

Music—Miss Rich.

Society Paper, illustrated by Miss Frances Farrand—Miss Robson.

Critic—Miss Fay Wheeler.

Light refreshments were served and the guests amused themselves by games and dancing until the party broke up at the early hour of 11 p. m.

Miss Florence Hedges with '01 is taking a course in Latin, German, Greek, English, and history at the University.

Miss Pearl Kedzie '98 enjoys her work at Wellesley very much. She is taking language and music principally.

Several interesting letters have been received from Miss Lillian Wheeler '93, who is spending the winter in Washington, D. C. She is taking advantage of the Congressional Library, and recently enjoyed a pleasant trip to Mt. Vernon.

The legislature of Maryland has appropriated for the use of Johns Hopkins University the sum of \$50,000 a year for two years, without conditions, so that for the present the University can continue its work without contraction of its activities or reduction of its teaching force.—*Ex.*

It takes tact to determine when advice is advisable.—*Puck.*

THE M. A. C. RECORD.

PUBLISHED WEEKLY BY THE
MICHIGAN AGRICULTURAL COLLEGE.

EDITED BY THE FACULTY,
ASSISTED BY THE STUDENTS.

SUBSCRIPTIONS SHOULD BE SENT TO THE SEC-
RETARY, AGRICULTURAL COLLEGE, MICH.

SUBSCRIPTION, . . . 50 CENTS PER YEAR.

Send money by P. O. Money Order, Draft,
Registered Letter. Do not send stamps.

Business Office with LAWRENCE & VAN BUREN
Printing Co., 122 Ottawa Street
East, Lansing, Mich.

Entered as second-class matter at Lansing, Mich.

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 postoffice, for no charge will be made for it. The only way, however, to secure THE RECORD regularly is to subscribe.

Official Directory.

Y. M. C. A.—Regular meetings Sunday evenings at 6:00 and Thursday evenings at 6:30. F. N. Lowry, President. C. H. Parker, Cor. Secretary.

Y. W. C. A.—Weekly meetings for all ladies on the campus, Tuesday evenings at 8:00, in Abbot Hall. Sunday meetings with the Y. M. C. A. Edith A. Smith, President; Elizabeth Johns, Cor. Secretary.

KING'S DAUGHTERS—Meet alternate Wednesdays. Mrs. C. L. Weil, Leader. Mrs. M. L. Dean, Secretary.

NATURAL HISTORY SOCIETY—Meets alternate Wednesday evening at 6:30 P. M., in the Zoological Lecture Room. W. B. Barrows, President. A. J. Cook, Secretary.

BOTANICAL CLUB—Meets Monday evenings at 6:30 in the Botanical Laboratory. H. C. Skeels, President. Miss Marie Belliss, Secretary.

SHAKESPEARE CLUB—Meets Wednesday evenings at 7:30. Dr. Howard Edwards, President.

COLUMBIAN LITERARY SOCIETY—Meets every Saturday evening at 7:00. Fourth floor, Williams Hall. F. E. West, President. George Severance, Secretary.

ECLECTIC SOCIETY—Meets every Saturday evening at 7:00, Fourth Floor, Williams Hall. J. Bulkeley, President. F. L. Radford, Secretary.

FERONIAN SOCIETY—Meets every Friday afternoon at 1:00, West Ward, Wells Hall. S. Gertrude Lowe, President. E. Winifred Cannell, Secretary.

HESPERIAN SOCIETY—Meets every Saturday evening at 7:00, West Ward, Wells Hall. W. D. Hurd, President. C. H. Smith, Secretary.

OLYMPIC SOCIETY—Meets every Saturday evening at 7:00, Fourth Floor, Williams Hall. F. R. Crane, President. W. R. Wright, Secretary.

PHI DELTA THETA FRATERNITY—Meets every Friday evening at 7:30, East Ward, Wells Hall. H. B. Clark, President. A. B. Krentel, Secretary.

THEMIAN SOCIETY—Meets every Tuesday afternoon at 4:00, Phi Delta Theta Rooms, East Ward, Wells Hall. Irma Thompson, President. Coral Havens, Secretary.

UNION LITERARY SOCIETY—Meets every Saturday evening at 7:00, U. L. S. Hall. John Severance, President. G. E. Towar, Secretary.

TAU BETA PI FRATERNITY—Meets on alternate Thursday evenings, Tower Room, Mechanical Laboratory. W. H. Flynn, President. P. S. Rose, Secretary.

CLUB BOARDING ASSOCIATION—John Severance, President. H. S. Putney, Secretary.

M. A. C. ATHLETIC ASSOCIATION—E. W. Ranney, President. R. M. Norton, Secretary.

Klein Wanzleben.

Berlin, Oct. 18.

Dear Record:—On invitation of U. S. Consul Henry W. Diederich, of Magdeburg, I accompanied him on a visit to the Seed Farm and the Beet Sugar Works at Klein Wanzleben. As a great deal of the beet seed sown on the College Farm and throughout Michigan came originally from this place, an account of what we saw there may be of interest. Last Thursday morning we took the train from Magdeburg, and as Klein Wanzleben does not lie on a direct railway from Magdeburg, we should have changed cars at Blumenberg, but when two Americans meet in Europe they have so much to talk about you will not be surprised to learn that we did not pay close enough attention to "where we were at"—passed Blumenberg unnoticed—and dismounted first at

Oschersleben. After apologizing to the Station Master for our neglectfulness (he probably thought it was simply American eccentricity) and paying extra fare for the additional railway mileage enjoyed, we did the only thing possible under the circumstances, hired a livery and were driven across the country to Klein Wanzleben.

Leaving the stone paved streets of Oschersleben we were soon on a good German country road. This differs from our roads in being much narrower and has two varieties of roadbed side by side; one paved with cobble stones the other a well built dirt road. The sides of the roadway are planted with fruit trees placed at exact distances. The country through which we were driven is as fertile as perhaps any part of the Empire and the two principle crops are sugar beets and chicory. Looking out over the fenceless fields as we passed, our eyes rested on immense stretches of sugar beets—the lively feature of the landscape being the sugar beet harvesters at their work. The sight was a novel one to an American. Picture to yourself groups of women, twenty to thirty in each group—distributed over the landscape,—armed with spades, digging at the roots with one hand, pulling on the tops with the other, and *no man* in sight to help or give encouragement by his presence, and you have the harvest picture as it appeared. As soon as the beets are out of the ground and lying in rows on the surface, there comes next a woman, crawling on her hands and knees, armed with a tool like a meat cleaver, who trims off the crown of the beet. The beets are then either piled in heaps or stacked like stove wood, then covered with beet tops or earth according as they are to be immediately hauled to the factory or are to be stored for a time. In our drive of eight miles I saw several hundred women at work in the beet harvest and just two men. One was pitting beets and the other smoking his pipe and "looking on."

The "hired man" in Germany is a woman. In the beet harvest she gets 25 cents per day and usually boards herself. This woman with her head wrapped in a shawl, digging and working on her hands and knees in the dirt of the fields,—looking so uncomfortable—is the important factor in the cheap production of sugar in Germany.

At a little after 1 o'clock we drove into the court yard of the Wanzleben Works. The plant is located on an ancient estate or "gut" as they call it, which has been the family inheritance of the principle stockholders for many generations. It consists of six large buildings, many smaller ones and a kind of "manor house."

We were welcomed by Director Rickmann, who saying that dinner had been waiting for us for a long time conducted us to the "Manor," where we met Mr. and Mrs. Director Giesecke and were dined by them with lavish German hospitality. Naturally enough the main topic of conversation at the dinner table was the future prospects for the beet sugar industry both in Germany and the U. S. The directors agreed that the export trade for German sugar would be entirely cut off should American enterprise push the possibilities for sugar production in Hawaii and the West Indies.

Director Giesecke, a young man who has not forgotten his experi-

ence in the German military service and who like most German gentlemen is much interested in military affairs, could not find words to express his astonishment over the outcome of the Spanish-American conflict. He didn't expect much from the Spanish but he nor anyone else here were prepared for such victories as those achieved at Manilla and Santiago.

After dinner the first part of the plant visited, very naturally, was the chemical laboratory, where beets and nothing but beets are being constantly analyzed. The product of Klein Wanzleben industry is two-fold:

1. Production of beet seed.
2. Production of sugar.

Both branches of work require a great amount of analytical investigation on the part of the chemists employed. An idea of the magnitude of this work may perhaps be gained from a few figures. During the busy season, November to January, the number of sugar determinations *made daily* varies between 5,600 and 6,400.

The greatest care is exercised in getting the samples for analysis, the amount taken being about two bushels. The sample is carefully weighed, then the crowns cut off and the bodies and crowns again weighed separately to insure greater accuracy. The skin from about one-eighth of the surface of each beet is then removed by a revolving wheel rasp which instantly rasps out about one-eighth of the beet body. A mixture of the raspings thus taken from each beet in the whole two bushels, makes the sample which is used in the chemical analysis for sugar. The sugar is determined by the polariscope, but in any doubtful case the method of extraction with alcohol is employed to secure absolute certainty.

"Anyone can grow sugar beets and if they plant the beets the second year they will have some sugar beet seed, but not everyone can produce beet seed which will yield profitable sugar beets," said Director Rickmann to me while inspecting some photographs of beets. We had stepped into an office room at one side of the main laboratory. One side of this room was taken up by an immense fire-proof vault; from this vault Mr. Rickmann had brought out a large number of photograph albums, each filled with pictures of beets; nothing but beets. There was no picture of Pa and Ma, nor Charlie with his pet dog, it was just a collection of pictures of "Mothers" and "Grandmothers" in genealogical succession,—reaching back for years.

The beets planted for the production of seed the second year are called "Mother beets." In making the selection of these beets for planting, as many points must be considered as if we were to select an animal for establishing a herd of dairy cattle. Among the various things considered are: The size and shape of the beet, its specific weight, shape of the leaves, number of leaves, relative weight of leaves and body, finally the richness in sugar. This last factor is determined in each individual beet by rasping out a hole two-thirds of an inch in diameter directly through the thickest part of the beet, and determining the per cent of sugar in the raspings. If the per cent of sugar is satisfactorily high and the beet answers the other re-

quirements, it is carefully stored until the next year and then planted for seed production. Seed obtained from this beet is sown, and if the "daughters" obtained are as sweet and good looking as the mother—they are planted for seed and the process as described repeated year after year until we have reached the great, great, great, great, great, great granddaughter of the original mother. If this descendant is equal to or excels her remote ancestor in points selected in determining the breeding type the seed breeder considers it to be satisfactorily fixed and the seed produced from these beets fit to be placed on the market. On the other hand if the descendants deteriorate and the various generations do not retain the shape, size and sugar producing qualities of the original, the entire generation (and descendants) is rejected for seed production. Many strains must be thus thrown out from year to year in order to raise the standard of sugar richness. The family photograph album has a very important place in this work of selection, showing as it does at a glance whether the race shape is persistent. By this constant study over every feature of the beet plant only is it possible to raise the percentage of sugar in the beet from nine or ten where it originally was up to over nineteen—a figure yielded by many beets at Klein Wanzleben this year. Every law of breeding by selection which one might think applies only to the animals must be observed in this work of improvement. In-and-in breeding, crossing of established breeds produce as uncertain and disastrous results as in animal industry. Each year \$125,000 is spent here on the work of seed growing and improvement alone.

Leaving the laboratory and its records we went next through the large seed storage warehouses. The seed is threshed in the field—then brought to the warehouse where by means of machinery driven by an electric motor it is elevated, cleaned, screened and transferred to the drying house adjoining. The drying of the seed is an operation requiring constant watchfulness on the part of the attendants. The seed is carried back and forth on an endless belt through a steam heated room. The proper amount of moisture must be abstracted, sufficient to insure the product from attack of mould, but not too much moisture must be removed—otherwise the capsule becomes too hardened and prevents the contained seed from germinating. After drying, the seed is once more screened and is then ready for storage. Before it goes on the market each different lot must be tested. We next visited the building where this is done. Here we found the inspector busy at his work. Taking a sample of several pounds, by means of a simple device he divides the sample down, getting finally a small sample which is a fair representative of the original seed taken. One hundred seeds from this fraction are then taken, soaked in distilled water 48 hours, then planted in sterilized sand, contained in plates, covered with a plate of glass and placed in a room constantly warmed to germinate. At the end of seven days the plates are examined, the seeds which have germinated removed to a second plate, after having the sprouts thrown out removed, and both plates returned to the germination room

for another seven days. The points noted in the seed testing are:

The per cent of seeds germinating, the number of sprouts sent out from each capsule, the effect of pinching off the sprouts, and the number of seed contained in one gram's weight. Each sample must conform to a standard or it is not considered fit for market.

Like all highly cultivated races the sugar beet is susceptible to a multitude of diseases of a fungoid nature. A specialist in this branch occupies a room in the seed testing building—studying with the microscope the habits of these enemies to the beet sugar industry. So far as I could learn from observation and inquiry the sugar beet has no formidable insect enemy.

As we stepped out of the seed house I remarked on the presence of what looked like an electric wire circuit stretching out across the fields.

"Yes, that is what it is," said our guide. "We have under cultivation for our beet production several thousand acres. Lately we have found it economical to operate our gang plows by electricity; what you see are the wires running from the 50-horse power generator in the engine room of the sugar factory out to the gang plow. We find it an economical success."

We called next at the photograph gallery where the family records are made. I thought as I looked at the glass skylight overhead, here is a photograph gallery where no one has ever been asked to "look pleasant and smile a little." The photographer is also a chemist and spends a portion of his time in the analysis of soils upon which seed beets are grown. Naturally enough it has been found that a difference in soil affects the character of the beets and so, at Klein Wanzleben, they are constantly experimenting to determine what relations exist between soil composition and beet composition.

We next went through the sugar factory. As we now have in Michigan just established such a factory I shall not enter into a detailed description of this one so far away. The beets worked up come from the Klein Wanzleben farm of six thousand acres but is bought from other growers, brought in by wagon and train loads. The price paid this year for the trimmed beets at the factory is 25 cents per hundred.

After the sliced beets have had the sugar soaked and squeezed out of them the pomace is carried out of the factory by an elevated electric tramway and dumped into immense silos where it is stored and from which it is fed out to the herd of beef cattle which may be considered an important part of the plant, as they convert into beef not only the waste pomace but also much of the molasses produced in the sugar factory and for which there is no market.

The factory tour completed, we visited last the scientific library. Here we found everything pertaining to sugar beet culture and in addition a very complete chemical and botanical reference library. The growth of the Klein Wanzleben enterprise has been no mushroom affair. In 1859 Messrs. Giesecke and Rabbethge began growing sugar beets and selecting those beets for seed-producing purposes which were the heaviest when tested in a solution of salt and water.

In 1861 they began the use of the polariscope to determine the amount of sugar in the mother beets. Their descendants have continued the work, using every available scientific fact and method,—calling to their aid the best trained men obtainable,—striving each year to persuade the beet root to be *little sweeter* than its two years previous parent.

In the 39 years of work the sugar percentage in beets has been more than doubled. What will be the results in the years to come? That I will leave to some other visitor to Klein Wanzleben to describe later.

F. S. KEDZIE.

At the College.

Advertised letters—Byron Driver, Herman Nelson.

A new furnace and radiators are being put in at Abbot Hall.

Miss Grace Townsend is entertaining her sister Mable, of Ionsa.

Miss Maud McLeod received a visit from her father and sister, Saturday.

The botanic department has received from Harvard eighty plants for the botanic garden.

Correspondence shows the entering mechanical class at the College to be larger than that in any similar institution in the vicinity.

The class of 1900 will publish an annual, of which Miss Harriette Robson will be editor-in-chief and Carl H. Smith business manager.

At an adjourned meeting of the freshman class last Wednesday, Miss Myrtelle Moore was elected secretary and Mr. W. V. Robinson, treasurer.

The mechanical seniors have completed an apparatus, for testing the steam consumption of engines. The vertical engine in the testing room will be tested this week.

Upper classmen in the mechanical course are contemplating a trip to Chicago, for the purpose of visiting the Illinois Steel Works, and other large establishments of the kind.

President Snyder, Dr. Kedzie and Secretary Butterfield are in Washington attending the annual meeting of the American Association of Agricultural Colleges and Experiment Stations.

Sunday morning we listened to a very forceful and scholarly address by Dr. J. G. Roger, ex-president of Benzonia College, on "Science and the Bible." In the evening he talked to the Christian associations.

The Shakespeare Club met at Dr. Kedzie's Wednesday evening. By request Mrs. Kedzie gave a very interesting and instructive talk on ceramics, illustrating with a fine collection of pottery of various kinds, several pieces being very rare. At the close of the meeting the club expressed its appreciation of the treat by a rising vote of thanks.

At the Natural History Society last Wednesday evening, Prof. Barrows exhibited a recent addition to the museum, a trio of horns from the head of a cow. There were the two ordinary horns and between them, projecting forward, a third horn, in shape and appearance much like a cocoa nut. Someone asked if the cow produced two kinds of milk.

**The M. A. C.
Special Hat**

Is now on sale; much nicer hat than last season; better material and workmanship—the price remains the same, Fifty Cents.

If you want up-to-date neckwear I would have great pleasure in showing you the most complete line of natty ties in Lansing.

Sweaters, Golf Hose, Caps, Hats and Shirts are lines in which I lead.

Students' patronage respectfully solicited.

Elgin Mifflin,
The Outfitter.

SIMONS DRY GOODS CO.

We make a special effort to sell only the best

KID GLOVES

The Monteford

Our \$1.00 Ladies' Kid Glove we fit and guarantee, in black and new fall modes, 2 clasp; or for

**The Zettie \$1.25 Glove.
The LeClarion \$1.50 Glove.**

We have a large line of
Lined Mittens and Gloves

—At 50c pair,
Gentlemen's Woolen Mittens.
—At \$1.00 pair,
Ladies' Heavy Gauntlet Gloves

Our Underwear Department

Offers exceptional values in
**Ladies' Winter Underwear.
Ladies' Muslin Underwear.**

Carpet Department

Offers 100 30x60 Moquette Rugs
For \$1.75 Each.

Simons Dry Goods Co.

R. B. Shank & Co.,

Leading Grocers and Confectioners.

Be Sure and See Us

If you need anything in the **FURNITURE LINE.**

We Can Save You Money.

Cowles Bros.

319 Washington Avenue South.

Goods Delivered Free at College.

Gymnasium Shoes

The Gymnasium or Tennis Shoes which have been so long delayed in transit have finally arrived. On account of the delay we will make

A Special Price, for balance of this week, only, at..... **39c a Pair**

After this week the price will be as usual.

MEN'S SIZES

The 75c grade, price this week only, - 48c.

C. D. WOODBURY,

108 Washington Ave. S.

News from Graduates and Students.

W. C. Stewart with '98 is visiting at the College.

Born, Thursday, to Mr. and Mrs. M. W. Fulton, a son.

C. E. Townsend, '98, visited his friends at the College a few days last week.

C. E. Ingerson with '79, visited over Sunday with his cousin, S. L. Ingerson '99.

The wife and daughter of L. A. Clinton '89, of Ithaca, N. Y., are visiting in Lansing.

Ira T. Sayre with '80, Flushing, will represent the 13th Senatorial District in the next legislature.

C. B. Collingwood '85, Lansing, was elected State senator in the 14th Senatorial District by a majority of about 900.

Allegan county will be represented in the next legislature by two M. A. C. graduates; H. F. Buskirk '78, re-elected, and B. A. Nevins '75.

L. J. Cole with '99 is doing 20 hours a week as assistant in the department of zoology at Ann Arbor. He is also carrying 12 hours of university work and has joined the zoological, botanical, and field clubs.

Prof. H. T. French '85, of the Idaho Agricultural College, called at M. A. C. Friday. He was on his way to Washington, D. C., to attend the annual meeting of the American Association of Agricultural Colleges and Experiment Stations.

Dr. A. E. Smith '81, Olean, N. Y., has been appointed clinical assistant surgeon in the nose and throat department of the New York Post Graduate Medical College. As the position will not require Dr. Smith's presence in New York more than a few weeks each year, he will keep up his practice in Olean.

G. H. Hicks '92, first assistant botanist in the U. S. Department of Agriculture, has prepared and is now sending out to the various agricultural colleges and experiment stations, sets of economic seed samples for use in the identification and study of seeds. Three sets, each containing 100 bottles of seed, are now ready for distribution.

Colleges and Exchanges.

Lake Erie College and Seminary has a new skating pond but no boys—nothing but girls.

Although not apparently a bad class, still the men of 1902 follow in the footsteps of the Naughties in being Naughty-two.—*Ex.*

President Elliot prophesies that college fraternities will, in time, cause American universities to be broken up into colleges after the English plan.

Mr. Rockefeller has offered \$2,000,000 more to Chicago University on condition that an equal amount be raised elsewhere. Of this latter sum \$1,500,000 has been secured.

Notre Dame University has just spent \$20,000 on a gymnasium, and wants to dedicate it with a triangular indoor meet between Michigan, Chicago and Notre Dame Universities.

Albion College has a trophy room and general rendezvous for athletes, in the basement of Central

Building. They hope to have some use for it as a *real* trophy room this year.

New Spellings Authorized.

An important step was taken by the directors of the N. E. A. when, by formal vote, they instructed the the secretary of the association to use the following reformed spellings in all publications of the association:

Program—(programme); tho—(though); altho—(although); thoro—(thorough); thoro fare—(thoroughfare); thru—(through); thruout—(throughout); catalog—(catalogue); prolog—(prologue); decalog—(decatalogue); demagog—(demagogue); pedagog—(pedagogue).

"Good-bye," said the gun, "I'm going off." And it wasn't a minute before everybody heard the report.—*Ex.*

BICYCLES REPAIRED FOR SALE OR TO RENT.

Also complete line of Cycle Sundries for Sale.

F. J. COLE,

Bell 'phone 445. 411 Michigan Ave. E.

Alsdorf & Son...

THE DRUGGISTS.

Everything First Class,
Fresh and Up to Date.

Lawrence & VanBuren PRINTING CO.,

Ottawa St. E. Lansing, Mich.

CHAS. A. PIELLA,

DEALER IN

DIAMONDS, WATCHES, JEWELRY,
Clocks, Silverware, Art Goods.

121 Washington Ave. N., LANSING, MICH.

HERRICK BROTHERS

Fine GROCERIES and MEATS

Everything guaranteed first-class.

219 N. Washington Ave. Opera House Block

ALL MEATS....

May look alike to you, but there is a very great difference in the quality we handle and that sold by some other markets. We handle none but the very best. Like the pudding, the proof of good meats is in the eating. A trial will convince you that you ought to trade with us.

BOTH PHONES. Careful attention given to phone orders.

GOTTLIEB REUTER.

Washington Ave. South.

Employees of M. A. C.

Desiring to build should
not purchase their material be-
fore consulting with

Hiram Rikerd,
Lansing, Mich.

Lumber of all kinds.
Interior Finishing a specialty.

PRICES RIGHT.

Office and Factory, Mill St.
Both Phones.

... At the ...

DAVIS CLOTHING STORE

104 WASHINGTON AVENUE NORTH,

You can buy Sweaters, Supporters, Foot Ball Pants,
Foot Ball Jackets, Gymnasium Suits, and the finest line
of Tailor Made Clothing in the City.

Come in and see us any way.

Furniture Headquarters.

Cots at - - \$1.25, \$1.50, \$2.00 and \$2.50
Wire Springs at - - \$1.50 and \$2.00
Mattresses from - - \$2.00 up
Tables, Rockers, Bureaus, Iron Beds.

All goods delivered free to College.

M. J. & B. M. Buck.

FURNITURE DEALERS.

M. J. & B. M. BUCK.—Furniture. Cor. Wash-
ington Avenue and Ionia Street. See ad.

GROCERS.

R. B. SHANK & CO., 200 Washington Ave. S.
The leading grocers. Both phones. Daily
delivery to the college.

HACK AND BAGGAGE LINES.

M. A. C. STUDENTS—Don't forget W. H.
PORTER, the Hack and Liveryman. Rubber
tires a specialty. 300 Capitol Ave. S. Both Phones.

HARDWARE, STOVES AND TINWARE.

JACOB STAHL & SON.—Wholesale and Re-
tail Hardware and House Furnishings. 211 and
213 Washington Avenue North.

NORTON'S HARDWARE—General Hardware,
Stoves, Tinware, Granite, Cutlery, etc.
111 Washington Ave. South.

HOTELS.

THE NEW GRAND—R. M. Renner, Propri-
etor. Special rates to students. Washington
Avenue S.

INSURANCE.

THE DYER-JENISON-BARRY CO., LTD.,
(Incorporated) 108 Michigan Ave. West. All
kinds of the best insurance. Strongest agency in
the city.

JEWELERS.

B. P. RICHMOND—Watchmaker, Jeweler and
Engraver. 200-202 Washington Avenue N.

LAUNDRIES.

THE VAN GORDER PALACE LAUNDRY.
C. H. Hilton, Agt., Wells Hall, Room 97.
Irving Gingrich, Agt., Room 47, Williams' Hall.
S. P. Lantz, Prop.

LUMBER DEALERS.

H. W. RIKERD.—Lumber Dealer. Mill Street.
See ad.

MERCHANT TAILORS.

WOODBURY & SAVAGE.—Tailors. Student
trade solicited. Opposite Hotel Downey, North.

JOHN HERRMANN. Fine Tailoring. 218
Washington Avenue N.

MILLINERY.

MRS. L. S. HUDSON, Hudson Block, where
you can find the best styles in simple as well
as elaborate Hats at lowest prices.

OCULISTS.

JOSEPH FOSTER, M. D.—Eye, Ear, Nose and
Throat. Hours 9 to 12 A. M., 2 to 4 P. M. Sun-
days, 12 to 1. City National Bank Building, Lan-
sing.

PHYSICIANS.

A. D. HAGADORN, M. D.—Office hours, 11 to
12 A. M., 2 to 4 and 7 to 8 P. M. Office at 212
Washington Avenue S.; home 419 Seymour St.

PHOTOGRAPHERS.

SPECIAL PRICES to M. A. C. Students.
Hatton, Photographer, over State Savings Bank.

RESTAURANTS.

GILBERT M. HASTY.—Proprietor Hasty's
Gem Lunch. Best meals and lunches in the
city. 113 Washington Avenue S.

DIRECTORY

LANSING BUSINESS and
PROFESSIONAL MEN

The names in this Directory, as well as
those of all our other advertisers, are of reli-
able parties. We hope that the faculty and
students will take pains to patronize those
who patronize us.

ARCHITECTS.

MEAD & WHITE—Architects, Lansing, Mich.,
115 Washington Ave. N., and Harbor Springs,
Mich., Clark Block.

BARBERS.

J. H. WOOD—Barber. 106 Michigan Avenue E.
College work especially solicited.

BOOKS AND STATIONERY.

LANSING BOOK AND PAPER COMPANY.
Books, Stationery, Wall Paper, Engravings
and Frames. 120 Washington Ave. N.

BOOTS AND SHOES.

C. D. WOODBURY.—Boots and Shoes. We
shoe the students. See ad.

BICYCLES AND MUSIC.

PIANOS, Organs, Sheet Music, Guitars, Banjos,
Violins, etc. Bicycles, new or second hand,
for sale or rent. Repair shop complete. Bicycles
and Guns to rent. Holmes Music and Cycle Co.

GEO. H. RICHMOND. Pierce Cycles. Full
line of sundries. Repairing and renting at
reasonable rates. 200 N. Washington Ave.

CLOTHING.

LOUIS BECK.—Clothier. Gents' Furnishings,
Hats and Caps. 112 Washington Ave. North.

A. E. DAVIS.—Clothing and Gentlemen's Fur-
nishings. See ad.

CROCKERY AND GLASSWARE.

H. LARNED.—China, Glass and Lamps.
105 Washington Ave. S.

DENTISTS.

R. W. MORSE, D. D. S.
Hollister Block, Room 517.

DR. DAWLEY, M. D., D. D. S. Office over
Postal Telegraph Co., Michigan and Washing-
ton aves.

DRUGGISTS.

C. J. ROUSER—Capital Drug Store. 123 Wash-
ington Avenue South.

DRY GOODS.

SIMONS DRY GOODS COMPANY.—Dry
Goods and Carpets. See ad.

FURNISHING GOODS.

ELGIN MIFFLIN.—Ladies' and Gentlemen's
Furnishing Goods. See ad.